

Bureau of Local Roads and Streets Manual



Illinois Department of Transportation

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**Illinois Department of Transportation
Bureau of Local Roads and Streets
Manual**

**Prepared and Published by
Illinois Department of Transportation
Bureau of Local Roads and Streets**

Springfield, Illinois

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PREFACE

The Bureau of Local Roads and Streets Manual (the Manual) has been prepared to provide uniform practices for local agencies, Bureau of Local Roads and Streets central office (Central BLRS), Bureau of Local Roads and Streets district offices (district), and consultant personnel in preparing reports and contract plans for local agencies projects. The Manual presents most of the information normally required in the development of a typical local agency project. The designer should attempt to meet all criteria and practices presented in the Manual. The designer should develop roadway designs that meet IDOT's operational and safety requirements while preserving the aesthetic, historic, or cultural resources of an area. Designers must exercise good judgment on individual projects and, frequently, they must be innovative in their approach to roadway design. This may require, for example, additional research into the highway literature.

DOCUMENT CONTROL AND REVISION HISTORY

The Bureau of Local Roads and Streets Manual is intended to provide current design and environment policies and procedures for use in developing local agency highway projects. To ensure that the Manual remains up to date and appropriately reflects changes in IDOT's needs and applicable requirements, its contents will be updated on an ongoing basis.

Central BLRS will be responsible for monitoring changes in the federal and State laws and regulations as well as in highway design and environmental requirements and will ensure that those changes are appropriately addressed through the issuance of revisions to the Manual. As changes in laws, policies, procedures, directives, and/or criteria occur between the issuance dates of new editions of the Manual, these changes will be distributed via Procedure Memorandums. When a page is revised, it will have revision marks in the outside margin indicating where the change occurred; furthermore, the page's section will indicate the latest issuance date for that section in the upper outside corner of each page.

In addition, it is important that users of the Manual inform both Central BLRS and district BLRS of any inconsistencies, errors, needs for clarification, or new ideas to support the goal of providing the best and most up-to-date information handbook. Attached is a form entitled BLRS Manual Comments and/or Corrections to be used in submitting any comments and/or suggestions.

The user should retain and refer to the interim memorandums when using the Manual until they are superseded or incorporated into an updated edition of the Manual.

This 2005 Edition of the Bureau of Local Roads and Streets Manual, dated April 2005, replaces the IDOT Federal-aid Procedures for Local Highway Improvements Manual and the Manual of Administrative Policies of the Bureau of Local Roads and Streets.

Distribution

This manual is available as a Portable Document Format (PDF) on the Illinois Department of Transportation's website. Hard copies of this manual are uncontrolled.

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MANUAL FORMAT/UPDATE

December 2018

Revision History

The Central Bureau of Local Roads and Streets maintains archived copies of the Procedure Memorandums issued to update the manual.

<u>Revision Date</u>	<u>Description</u>	<u>Approval</u>
July 7, 2016	Updated Chapters 19 and 22 to address the new descriptions of Categorical Exclusions.	Salmon Danmole
July 29, 2016	Updated Chapters 27 thru 33.	Salmon Danmole
June 1, 2017	Updated Chapter 5 – Agreements, for new federal requirements with regard to Qualifications Based Selection of professional services.	Maureen Kastl
November 29, 2017	Updated Chapter 5 – Agreements, to further refine the local public agency requirements with regard to Qualifications Based Selection.	Maureen Kastl
June 30, 2018	Updated Chapters 1-4, 6, 7, 18, 21, and 44. Corrects hyperlinks, the table of contents and PDF bookmarks in Chapters 19, 22, and 27 thru 33.	Maureen Kastl
December 10, 2018	Updated Chapters 9,10,12,14, 15, and 17.	Maureen Kastl

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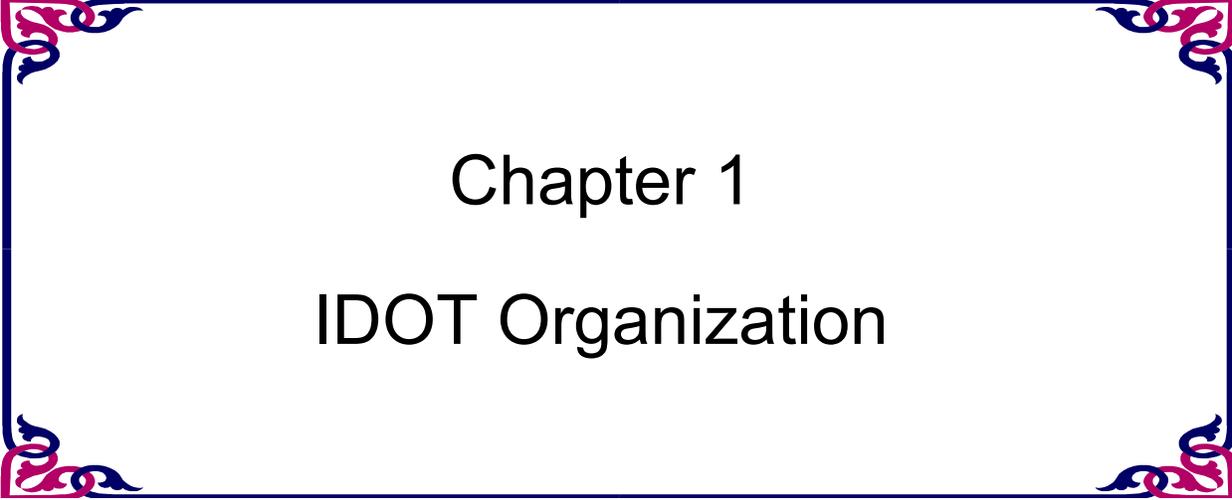
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IDOT Organization

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Chapter 1

IDOT ORGANIZATION

Chapter 1 discusses the organization and functions within the Illinois Department of Transportation (IDOT), and how they interact with the Bureau of Local Roads and Streets (BLRS) and local public agencies (LPAs).

1-1 ILLINOIS DEPARTMENT OF TRANSPORTATION (IDOT)

1-1.01 Organization

IDOT is organized under the supervision of the Illinois Secretary of Transportation. IDOT consists of various offices, each of which is administered by a director. These offices are headquartered at the Harry R. Hanley Building, 2300 S. Dirksen Parkway, Springfield, Illinois, 62764, unless otherwise noted. Figure 1-1A presents the organization of IDOT, and the following sections provide brief descriptions of functions of the various offices and bureaus. For guidance on other IDOT units and bureaus, visit [IDOT's website](#).

1-1.02 Office of the Secretary

1-1.02(a) **Mission Statement**

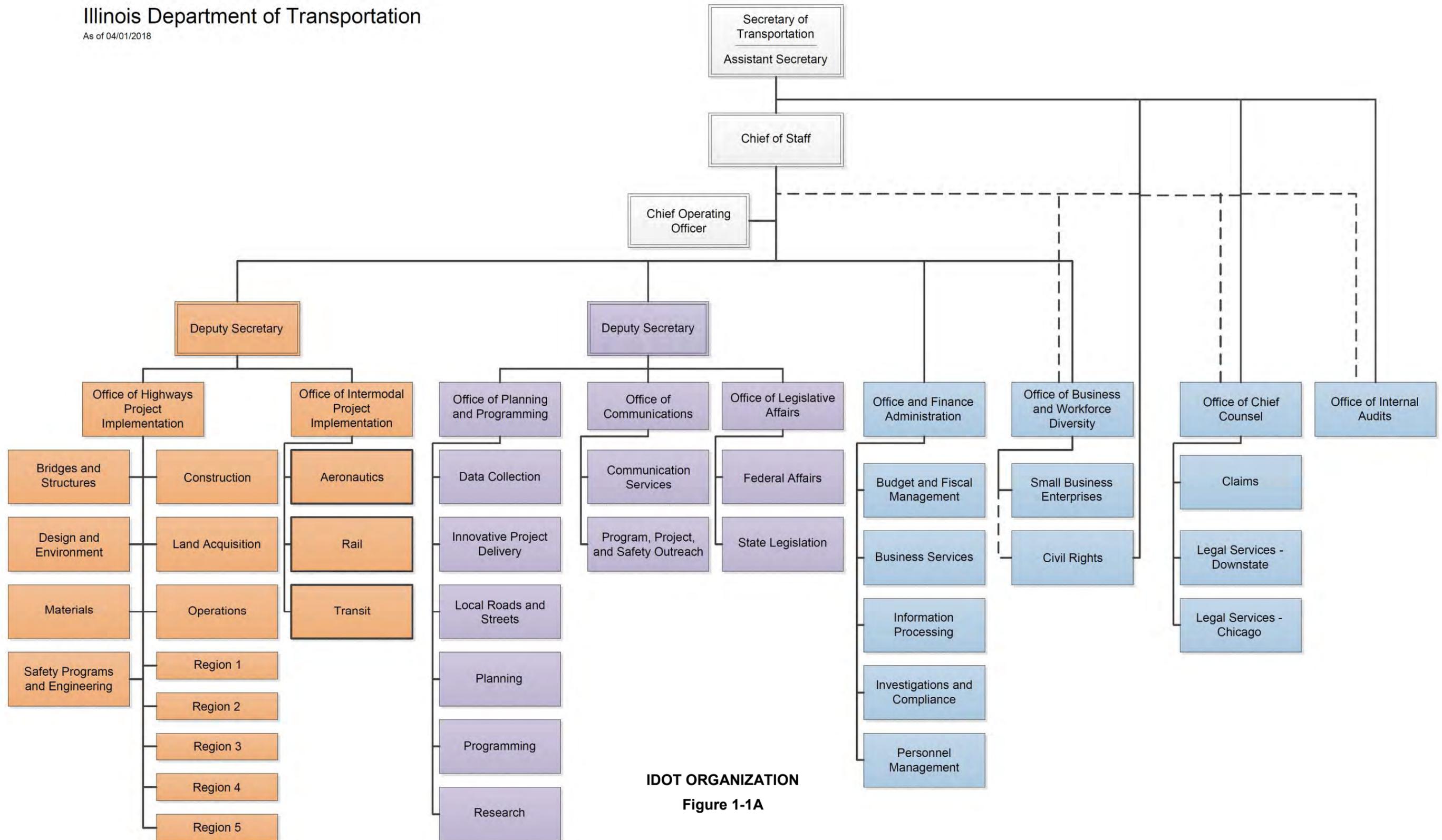
It is IDOT mission to provide safe, cost-effective transportation for Illinois in ways that enhance quality of life, promote economic prosperity, and demonstrate respect for our environment.

1-1.02(b) **Description**

IDOT's Office of the Secretary works closely with the Office of the Governor and the Illinois General Assembly to effectively and efficiently establish and implement Illinois' transportation policies. As such, the Office of the Secretary is often the first point of contact for outside requests about transportation from state and federal legislators, local elected officials, and the general public. Among the responsibilities overseen by the Office of the Secretary are:

- requests for information and research from Office of the Governor, General Assembly, and other state constitutional offices and state agencies;
- administrative, informational, and logistical support for the Secretary, Chief of Staff and Chief Operating Officer;
- Diversity Outreach and Workforce Recruitment;
- Equal Employment Opportunity (EEO) Compliance;
- Sustainability Efforts; and
- Special Transportation-Related Events.

Illinois Department of Transportation
 As of 04/01/2018



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 Figure 1-1A

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1-1.03 Office of Highways Project Implementation

See Section 1-2 for detailed information.

1-1.04 Office of Intermodal Project Implementation

1-1.04(a) Description

The Office of Intermodal Project Implementation coordinates activities for transit, rail, and aeronautics. The Office's mission is to provide safe, efficient, affordable, reliable, and coordinated transportation of people and goods through rail, mass transit, and related modes of transportation. The Office of Intermodal Project Implementation is responsible for promoting mass transportation systems and services in the state of Illinois by developing and recommending policies and programs; developing, implementing, and administering operating, capital, and technical program projects; and, participating in local and statewide planning and programming activities. The Office conducts technical studies and engineering reviews of projects.

- Transit is responsible for promoting transit services and ensuring safe and efficient mass transportation systems throughout the State of Illinois by developing and recommending policies and programs; developing, implementing and administering operating, capital and technical program projects; and participating in local and statewide planning and programming activities. The bureau also conducts technical studies and engineering reviews of projects.
- Railroads is responsible for promoting and ensuring safe and efficient rail transportation throughout the State of Illinois by developing and recommending policies and programs and implementing programs and projects for both passenger and freight rail.
- Aeronautics is responsible for coordinating and implementing programs concerning airport construction, aviation safety, and other aeronautical activities throughout Illinois. The Illinois State Aviation System is one of the largest and most diverse airport systems in the country. Comprised of nearly 830 facilities, the Illinois Aviation System ranges in size and scope from some of the busiest airports in the world – to regional commercial passenger service and commercial air cargo airports – to dozens of local municipal airfields which serve thousands of corporate and general aviation users – to hundreds of private airstrips scattered throughout Illinois. Aeronautics partners with the owners and operators at each airport to maximize safety and assist each airport in reaching its individual potential. Illinois airports generate over \$50.9 Billion to the Illinois economy and provide the flying public with access to the entire country, connecting Illinoisans to the rest of the world. The Division also operates a fleet of aircraft to provide a safe, efficient, and reliable air transportation option for state personnel, elected officials, and others travelling in support of official state business.

1-1.04(b) Services to LPAs

The Office of Intermodal Project Implementation performs the following activities for the LPAs:

- managing of the operating and capital assistance grants to transit operators,

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- reviewing and evaluating grant applications,
- coordinating project implementation activities for the Chicago Region Environmental and Transportation Efficiency Program (CREATE), and
- rendering financial and technical assistance and acts as agent to eligible sponsors for planning land acquisition, design, and construction of airport/heliport facilities in Illinois, including preparation of Environmental Impact Statements (EIS), inspect materials, review engineering plans and bidding documents, and approve land acquisition.

1-1.05 Office of Planning and Programming (OPP)

1-1.05(a) Description

OPP develops plans and programs aimed at improving the state's transportation system. Core functions include: oversight and coordination of the state's planning efforts, developing the annual multi-year and multimodal programs, monitoring and surveillance of the physical condition of the transportation system, evaluation of costs and benefits of new infrastructure investments, and to provide data, mapping and research to support these and other projects across the Department.

OPP consists of six central bureaus: Planning, Programming, Innovative Project Delivery, Data Collection and Mapping, and Research.

- The Bureau of Planning is responsible for proactively planning for the future of the state's transportation system. This includes long-range planning and overseeing capital grants budgets related to aviation and public transportation. This bureau also administers the Metropolitan Planning Program in cooperation with various state and local planning agencies and is responsible for transportation data and support activities.
- The Bureau of Programming develops the annual and multi-year Transportation Improvement Programs, and the construction and grants budget for multimodal elements of the transportation system.
- The Bureau of Innovative Project Delivery oversees the Department's initiatives to explore the leveraging of private resources in project implementation and agency operations. The bureau coordinates with private sector and public entities to expedite project delivery and maximize innovation in the financial, design, construction, operation and maintenance of major transportation infrastructure projects.
- The Bureau of Data Collection and Mapping maintains transportation data systems such as roadway and bridge data, roadway condition information, traffic data, and crash reports filed by motorists and law enforcement officers. The bureau is responsible for preparing the annual crash facts report, state highway map and other transportation maps for rail, ports, transit, counties and scenic byways.
- The Bureau of Research coordinates the Department's federally and state funded research activities, including all Strategic Highway Research, National Cooperative Research and Transportation Research Board programs. Research activities are primarily conducted through an intergovernmental agreement with the University of Illinois at Urbana-Champaign, which funds the Illinois Center for Transportation.

- The Bureau of Local Roads and Streets (BLRS) coordinates with local governments in all matters pertaining to highway transportation. The bureau assists LPAs with planning, finance, design, construction and maintenance of local transportation systems and promotes the coordination and cooperation of counties, townships, municipalities in the development of transportation systems. See Section 1-3 for detailed information.

1-1.05(b) Services to LPAs

OPP oversees applications for funding Economic Development (EDP), Transportation Enhancement (ITEP), and Scenic By-Ways Programs. They also provide grants for construction safety programs and maintain the Illinois Structures Information System (ISIS) and Illinois Roadway Information System (IRIS). See Section 1-3 for details of services provided by Central BLRS (CBLRS).

1-1.06 Office of Communications**1-1.06(a) Description**

The Office of Communications is responsible for managing both communications and outreach efforts between IDOT and its stakeholders (including the public, elected officials, industry partners, fellow government agencies, and civic/ non-profit partners). The primary objectives are to assist in the coverage of agency activities; increase the agency's sensitivity to its publics; interpret public opinion so that agency programs and regulations will be realistic and acceptable; and mobilize support for the agency and its programs.

- The Bureau of Communication Services supervises and participates in the preparation and dissemination of information to the general public, media and other stakeholders. This relates to printed and digital platforms, including the website, videos, and other platforms.
- The Bureau of Program, Project, and Safety Outreach provides outreach support for the agency's various activities, with particular focus on projects and programs from the program development and project implementation areas, as well as legislative affairs.

1-1.06(b) Services to LPAs

The Bureau of Communication Services develops, supervises, and participates in the preparation and dissemination of liaison services providing assistance to the general public. This bureau oversees the development and monitoring of local highway safety projects statewide and management of contract agreements.

1-1.07 Office of Legislative Affairs (OLA)**1-1.07(a) Description**

OLA is responsible for leading coordination with subject-matter experts from across the agency on legislative issues at both state and federal levels. This includes maintaining relationships both with elected officials and their staff, as well as sister agencies.

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- The Bureau of State Affairs is responsible for coordinating analysis and development of state legislative programs and strategies, as well as resolving issues of special interest to the Secretary. The objective is to ensure that departmental policy and actions, as well as state legislation, consistently support and enhance Illinois' transportation interests.
- The Bureau of Federal Affairs is responsible for coordinating analysis and development of federal legislative programs and strategies, as well as resolving issues of special interest to the Secretary. The objective is to ensure that departmental policy and actions, as well as federal legislation, consistently support and enhance Illinois' transportation interests.

1-1.07(b) Services to LPAs

This office does not provide any direct services to LPAs.

1-1.08 Office of Finance and Administration (F&A)

1-1.08(a) Description

F&A is responsible for developing and administering the Department's budget; managing the departmental personnel systems; providing accounting and auditing functions to ensure sound fiscal management; providing centralized business services functions and IDOT facilities management; and providing management information capabilities required to meet management and engineering needs.

- The Bureau of Business Services (BoBS) provides administrative services including duplication, records management, central stockroom service, mail and messenger service and motor pool service. It provides general accounting services including general cost accounting and management of federal billing.
- The Bureau of Budget and Fiscal Management (BFM) forecasts all departmental revenues and expenditures; manages all IDOT funds; develops, defends and executes IDOT's total budget; analyzes departmental programs; performs management reviews; improves the Department's operating efficiency; and serves as financial liaison with the Bureau of the Budget, the legislature and commissions. It provides auditing services and recommendations on internal financial policies, procedures and control.
- The Bureau of Information Processing (BIP) provides departmental computer services to assist in maximizing effectiveness of resources through better information and increased productivity. This is accomplished by analyzing management information needs and data relationships; conducting feasibility studies for computer applications, designing, programming and implementing computer systems; providing daily processing of systems and maintaining effectiveness; and planning for current and future network management and support.
- The Bureau of Personnel Management (PM) provides staff services in the administration of personnel programs for all departmental employee groups. These programs include employment and placement, policy administration, organizational analysis and salary administration. The bureau administers the Personnel Code and rules of the Department of Central Management Services (CMS). The bureau provides staff services in the

administration of programs for all Department employee groups. These programs include employee safety, workers' compensation, employee assistance and training development. Additionally, the bureau provides transactional support for the central office staff.

- The Bureau of Investigations and Compliance (BIC) is designated as the Secretary's advocate for compliance review activities. As such, it monitors the Department's projects and programs on a sample basis for compliance with quality and quantity product commitment, along with safety and legal requirements. The bureau also performs financial audit services for the Department to provide assurances of LPA and contractor compliance with state and federal regulations, laws and contract specifications. The Section Chief serves as the Department's Chief Financial Review Officer. The bureau also conducts and assists law enforcement with internal and external investigations as they relate to the Department. In addition, the bureau ensures the completion of all pre-employment criminal background checks. Lastly, the Bureau Chief serves as the Department's Law Enforcement Liaison.

1-1.08(b) Services to LPAs

BoBS prepares the monthly Motor Fuel Tax (MFT) apportionments. The bureau is responsible for offering used IDOT vehicles and equipment for sale to LPAs. The bureau also provides maps and manuals to LPAs, free of charge, and to private individuals for a fee.

BFM is responsible for processing invoices, vouchers, obligations, remittance statements, and checks, including requests for reimbursements to the City of Chicago and Cook County. The bureau evaluates fiscal provisions of federally funded engineering agreements for LPA projects. The bureau performs external audits, both fiscal and compliance, on departmental grantees and contracted entities including LPAs.

PM administers and coordinates technical development programs, including Specific Task Training and National Highway Institute courses, which are made available to LPAs. It also administers the Executive Leadership Development Program for the Illinois Association of County Engineers (IACE).

BIC performs audits of MFT funds received and expended by LPAs for compliance with State statutes and the Bureau of Local Roads & Streets' policies and procedures.

1-1.09 Office of Business and Workforce Diversity (OBWD)

1-1.09(a) Description

OBWD is responsible for overseeing the implementation of directives, policies and strategies for departmental business and diversity efforts designed to support efficient operations and ultimately aimed toward achieving departmental goals and objectives. OBWD promotes a climate of compliance with prevailing civil rights laws and minimizes departmental exposure to forfeiture of federal funds, litigation or administrative intervention.

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- The Bureau of Small Business Enterprises (SBE) administers the Disadvantaged Business Enterprise (DBE) program in accordance with regulations from the U.S. Department of Transportation (DOT), 49 CFR part 26. It is the policy of OBWD/SBE to ensure that DBEs, as defined in part 26, have an equal opportunity to receive and participate in DOT-assisted contracts. In addition to ensure nondiscrimination in the award and administration of DOT-assisted contracts; to create a level playing field on which DBEs can compete fairly for DOT-assisted contracts; to ensure that the DBE program is narrowly tailored in accordance with applicable law; to ensure that only firms that fully meet 49 CFR part 26 eligibility standards are permitted to participate as DBEs; to help remove barriers to the participation of DBEs in DOT-assisted contracts; and to assist the development of firms that can compete successfully in the market place outside the DBE program.
- The Bureau of Civil Rights provides for the development, implementation and monitoring the departmental programs for Equal Employment Opportunity (EEO), Affirmative Action (AA), federal contract compliance (*Title VI*) and the handicapped (Section 504). It also provides counseling and informational services to employees, investigates allegations of discrimination in employment, and assists the Office of Chief Counsel (OCC) in preparing departmental responses to the allegations.

1-1.09(b) Services to LPAs

Services provided to the LPAs by this office include:

- reviewing and approving the DBE Utilization Plans, and
- overseeing the City of Chicago Federal-aid DBE program.

1-1.10 Office of Chief Counsel (OCC)

1-1.10(a) Description

OCC is responsible for providing legal counsel to the Department on both policy issues and proposed actions affecting any of its operating division or staff offices. The Office is also responsible for the prosecution of all departmental litigation in cooperation with the Attorney General. OCC administers tort liability claims, property damage claims and uncollectible receivables. It also processes lien and bond claims against contractors. In addition, the Office coordinates the purchase and service of all insurance policies and administers the Department's self-insurance program.

- The Bureau of Legal Services advises other divisions and offices within the agency concerning all legal matters and represents the Department in legally related matters with the Governor's Office, other state agencies, federal and local governmental offices and the general public. Legal Services reviews the legal aspects of the Department's legislative program; reviews new federal and state legislation, court decisions and Attorney General's opinions for the legal aspects of their effect on departmental operations; and drafts and negotiates contracts with outside entities. In conjunction with

the Attorney General, Legal Services directs the Department's position and strategy in all major judicial and administrative proceedings.

- The Bureau of Claims represents the Department in the areas of property claims, third party torts, uncollected accounts receivable, claims against contractor performance and payment bonds and liens against public funds, including the processing and pretrial preparation of actions filed against the Department in the Court of Claims. The bureau is responsible for the administration of risk management for the Department including coordinating insurance purchases, managing self-insurance programs and approving indemnity or hold harmless agreements in various contracts.

1-1.10(b) Services to LPAs

The Bureau of Claims frequently serves as an information resource to LPAs and their attorneys regarding the defense of liability claims brought against the LPA, as well as LPA efforts to recover funds expended in the repair of highway appurtenances that have been damaged by motorists.

1-1.11 Office of Internal Audits (OIA)

1-1.11(a) Description

OIA directs and implements a comprehensive agency-wide internal audit program; conducts audits and reviews of agency programs, policies and procedures to evaluate their effectiveness; develops the agency's *Annual Audit Plan*; and monitors implementation of audit recommendations and findings.

1-1.11(b) Services to LPAs

This office does not provide any direct services to LPAs.

1-2 OFFICE OF HIGHWAYS PROJECT IMPLEMENTATION

The Office of Highways Project Implementation monitors district programs to ensure statewide uniformity of policy interpretation and compliance and to certify program coordination with federal, state and LPAs. These bureaus make certain that programs and activities support efficient program implementation across the districts. The overall objective is to ensure that highway improvement projects are constructed and operated in a cost effective and timely manner and that funds to LPAs are properly administered.

The office uses established engineering practices to develop and implement policies, procedures, standards and guidelines to accomplish highway system improvement objectives. This office monitors district programs to ensure statewide uniformity in the interpretation and application of policy and to confirm program coordination with federal, state and LPAs.

The Office of Highways Project Implementation consists of seven central bureaus and the highway regional offices, comprised of five regions or a total of nine district offices. Central bureaus include: Bridges and Structures, Construction, Design and Environment, Land Acquisition, Materials, Operations, and Safety Programs and Engineering.

1-2.01 Bureau of Bridges and Structures (BBS)

1-2.01(a) Description

BBS develops the structural design policies and practices of the Department. The bureau accomplishes this by providing detailed planning and design of highway structures and bridge standards, including preliminary engineering (PE) and other plans and studies. This bureau also inspects major structures and structural steel for safety purposes.

1-2.01(b) Service to LPAs

The Local Bridge Unit (LBU) provides administrative and technical support to LPAs to assist them in the development of bridge construction, rehabilitation, and replacement projects, and by ensuring that measures are taken to evaluate the safety of LPA bridges, including:

- reviewing Bridge Condition Reports (BCR), Preliminary Bridge Design and Hydraulic Reports (PBDHR), and bridge plans;
- inspecting and rating bridges to determine load-carrying capacity;
- reviewing load-carrying capacity analyses and bridge posting recommendations prepared by consulting engineers;
- reviewing LPA construction and permit loadings;
- reviewing and developing bridge repair details;

The Bridge Management Unit (BMU) provides administrative and technical support to assist LPAs towards compliance with the National Bridge Inspection Standards (NBIS), including:

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- providing specific information for NBIS inspection scheduling to minimize NBIS inspection delinquencies;
- developing policies and procedures to provide LPAs with efficient and effective methods of complying with NBIS inspection and evaluation requirements; and
- preparing and presenting training classes to provide information on basic NBIS inspection procedures, use of the Structures Information Management System (SIMS), scour evaluation, and bridge repair methods.

1-2.02 Bureau of Construction

1-2.02(a) Description

BC develops policies to maintain quality construction; approves changes in contracts; provides uniform contract interpretation; and prequalifies contractors. The bureau performs field-work and coordinates with regional offices to ensure construction projects and contracts are administered consistently across the state. The bureau also reviews value engineering proposals, coordinates industry policy and joint coop committees, evaluates and approves contractor authorizations to bid, approves subcontractors, and manages payments to contractors for construction projects. Additionally, the bureau ensures final documentation for construction projects is complete and manages accounts receivable for LPA agreements.

1-2.02(b) Service to LPAs

The services provided to LPAs include the following:

- providing uniform contract interpretation,
- approving changes in contracts for State let and federal day labor projects,
- approving all time extensions,
- approving all contractor payments for State let and federal day labor projects,
- collecting payments for State let contracts with joint agreements,
- providing construction oversight, through the districts, on State let contracts and federal day labor projects,
- handling/processing contractor claims, through the districts, for State let contracts,
- prequalifying contractors and providing this information to the LPA,
- issuing plans and proposals for projects on State letting,
- providing instructors for Technology Transfer training program classes for LPA inspectors, and
- issuing the [Schedule of Average Annual Equipment Ownership Expense](#).

1-2.03 Bureau of Design and Environment (BDE)**1-2.03(a) Description**

BDE develops standards, specifications and policies for the design of the state's highway network. BDE supports district offices in implementing departmental standards and provides guidance and support for location and environmental studies, including environmental impact statements. BDE also provides technical expertise to assist district offices in solving unique engineering, social, economic and environmental problems. This bureau coordinates and prepares federal-aid program documents; processes plans and contract documents for project lettings; works closely with the Federal Highway Administration (FHWA); and provides aerial photography, mapping and photo lab services.

1-2.03(b) Service to LPAs

BDE provides the following services to LPAs:

- conducting environmental resource surveys for LPA transportation projects,
- serving as a liaison with a variety of State and federal agencies regarding environmental related issues,
- processing plans and proposals for LPA projects being let by the State through the letting process, and determines the official State estimate for these projects,
- reviewing LPA lighting plans which affect the State highway system,
- processing agreements with LPAs for projects on the State highway system; and
- preparing the [IDOT Highway Standards](#) and [Standard Specifications for Road and Bridge Construction](#).

1-2.04 Bureau of Land Acquisition (BLA)**1-2.04(a) Description**

BLA develops policies and provides oversight of the statewide land acquisition program. This program includes such functions as relocation assistance, property management and signboard and junkyard control. The bureau is responsible for reviewing and processing all right-of-way expenditures.

1-2.04(b) Service to LPAs

BLA reviews land acquisition documents for local transportation projects when federal funds are being used to acquire the Right-of-Way (ROW) and certifies that ROW has been acquired in accordance with federal procedures for local projects constructed with federal funds.

1-2.05 Bureau of Materials**1-2.05(a) Description**

The Bureau of Materials establishes policies and procedures that provide a statewide materials inspection, acceptance, and quality assurance program. These tasks are accomplished through collaboration with stakeholders, including the nine highway districts, other central bureaus, industry, and federal, state, and local agencies. The centralized testing facility includes ten laboratories that conduct tests on hundreds of different materials used for road and bridge construction in Illinois.

- Administrative Services manages the Materials Integrated System for Test Information and Communication (MISTIC) and the Test Information Unit. This section supports MISTIC, IDOT's materials testing and inspection database, and provides support for the statewide materials certification review process. MISTIC and Test Information Unit also maintains the Trained Technician database and the webMISTIC data warehouse that provides many users throughout IDOT with interactive access to key materials testing and inspection data and laboratory inspection information.
- Concrete, Soils, and Metals Section includes five laboratories that perform tests on Portland cement concrete (PCC), cement and finely divided minerals, soils, reinforcing steel, and other miscellaneous materials. The laboratories are staffed with skilled engineering technicians who are responsible for statewide materials testing. The Technical and Product Studies Unit within this section coordinates experimental features and new product evaluations. The Bridge Investigations Unit plans and conducts research and development studies related to structural materials and components of bridges and other highway structures.
- Hot-Mix Asphalt (HMA), Aggregate, and Chemical Tests Section includes five laboratories that perform tests on HMA, aggregate, liquid asphalt, emulsions, reflective sheeting, pavement marking materials, bridge coatings, and a variety of other materials. The laboratories are staffed with skilled engineering technicians, geologists, and chemists that are responsible for statewide materials testing.

1-2.05(b) Service to LPAs

The Bureau of Materials provides support for the use of experimental products and inspection of materials. Limited field testing support services are available to LPAs upon request through the district offices.

1-2.06 Bureau of Operations (OPs)**1-2.06(a) Description**

OPs creates policies and procedures to protect public investment in new and existing transportation facilities and develops programs and policies that provide for safe, smooth and efficient traffic flow. Additional responsibilities include: monitoring maintenance operations and roadside development to implement programs that reduce maintenance costs; emergency

planning; managing statewide communication systems; ensure uniform application of traffic control devices on all streets and highways; processing applications for special vehicle movements; recommends revisions in the vehicle code; and informs the public of traffic conditions, laws and operational safety.

- Maintenance Operation develops and publishes policy regarding oversized and overweight permit movements on State highways, reviews and issues permits, collects fees, maintains accounting records, and deposits funds for State highways.
 - ensures equitable and efficient handling of all applications for oversized and overweight vehicle movements,
- Traffic Operations performs the following activities:
 - develops standards and specifications to ensure uniform application of traffic control devices on all streets and highways,
 - recommends revisions in the [Illinois Vehicle Code](#) as changes in the system and traffic patterns occur, and
 - promotes a wide range of activities to inform the public of traffic conditions, laws, and operational safety.

1-2.06(b) Service to LPAs

Traffic Operations develops the [Illinois Supplement to the Manual of Uniform Traffic Control Devices \(ILMUTCD\)](#) which all Illinois agencies are required to follow and provides information to LPAs on the proper application of traffic control devices.

Traffic Operations helps develop joint purchasing contracts that LPAs can use to purchase traffic control device materials.

1-2.07 Bureau of Safety Programs and Engineering (BSPE)

1-2.07(a) Description

BSPE is responsible for developing, maintaining and implementing engineering and behavior related safety programs, training, policies and procedures to enhance safety on Illinois roadways. The bureau administers the highways safety improvement program (HSIP) and the Safe Routes to School Program (SRTS). Other responsibilities include vehicle accident reporting; evaluation and analysis of accident data; dissemination of accident statistics to traffic safety officials; and administering the Department's portion of the state's Safety Responsibility Law.

BSPE is comprised of two sections: Safety Services and Safety Implementation. These sections work to meet federal requirements, implement federal infrastructure safety programs, coordinate State Highway Safety Program implementation efforts, crash analysis, identification and reporting.

1-2.07(b) Service to LPAs

BSE provides the following services to LPAs:

- oversight of the HSIP and SRTS funding project selection,
- coordination of Road Safety Assessments (RSA) for LPAs, and
- support of reduction of fatal and serious injury crashes on the local system.

1-2.08 Highway Regional Offices**1-2.08(a) Description**

The Highway Regional Offices are accountable to the Director of Highways Project Implementation and are responsible for highway operations and functions within their respective geographic boundaries. The regions ensure that the highway programs are compatible with the protection of both the natural and the socio-economic environments. The regions strive to reduce the number of traffic accidents, property damage and fatalities through safe design, construction and maintenance of highway facilities and an active traffic management program. The regions coordinate with local officials and the public in the project development process and during construction. Regions coordinate with the central office for design approvals and construction authorizations. See Section 1-2.09 for Region One (District One) and Section 1-2.10 for Regions Two through Five (Districts Two through Nine).

1-2.09 District One

Sections 1-2.09(a) through 1-2.09(k) provides brief descriptions of each of the sections and units that comprise District One. Figure 1-2A presents the organization of District One.

1-2.09(a) EEO and Labor Compliance Section

This section ensures that all contracts are completed within the EEO and Labor Compliance Section and monitors contractor implementation of EEO/labor compliance requirements and workforce utilization. It provides advisory assistance regarding EEO and labor compliance provisions and policies.

Additionally, the section coordinates and monitors IDOT's DBE Program. This program involves ensuring that district DBE goals are met. It determines set-aside projects for DBE contractors for each letting and assists contractors in setting DBE goals and objectives.

1-2.09(b) Public Information Section

The Public Information Section provides audio-visual, graphic, photographic, and writing assistance to the district for public information regarding district programs. It also coordinates the location, scheduling, publicity, and presentations for district project public meetings and public hearings.

1-2.09(c) Bureau of Administrative Services

This Bureau of Administrative Services is responsible for efficiently planning, directing, coordinating, implementing, and monitoring IDOT's administrative and management policies and programs required for the annual improvement program, operating budget, personnel services, safety and claims activities, business services, and information services activities in District One.

1-2.09(d) Bureau of Maintenance

This Bureau of Maintenance is responsible for coordinating and implementing all activities for the preservation, maintenance, and roadside development of the State highway system in District One.

1-2.09(e) Bureau of Traffic

The Bureau of Traffic is responsible for implementing policies, procedures, and programs for the design, installation, operation, and maintenance of traffic control devices to ensure the safe and efficient operation of the State highway system in District One. The bureau issues access and roadway permits, and initiates projects and programs for the elimination of collisions and congestion. Additionally, the Traffic System Center (TSC) and the Emergency Traffic Patrol (ETP) are responsible for providing safe and efficient flow of traffic on expressways in District One. This is accomplished through specialized automated traffic surveillance, control, and information systems.

- Electrical Operations is responsible for the development and application of products and systems to meet the lighting, storm water removal, communications, mechanical, and electrical needs of District One. The bureau is additionally responsible for maintaining existing systems at an acceptable level of service while minimizing costs.

1-2.09(f) Bureau of Design

The Bureau of Design develops contract documents for the construction of new and the improvement of existing State system facilities. The bureau also administers the grade crossing improvement programs and utility permit policy for State maintained highways.

1-2.09(g) Bureau of Land Acquisition

The Bureau of Land Acquisition is responsible for the following:

- directing negotiation activities for the acquisition of private lands needed for highway improvement projects,
- providing relocation assistance to those displaced by acquisitions,
- conducting and reviewing appraisals, and determining the compensation to be offered for lands, rights, and easements needed for State transportation projects,
- providing expert valuation testimony in eminent domain proceedings;

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- administering the [Highway Advertising and Junkyard Control Acts](#), which entails maintaining inventories of existing signs and junkyards,
- preparing and/or reviewing plans, plats, legal descriptions, appraisal maps, and pertinent documents for ROW appraisal and acquisition,
- preparing condemnation information and exhibits, and
- conducting or coordinating supplemental surveys to obtain property and land line information.

1-2.09(h) Bureau of Programming

The Bureau of Programming is responsible for integrating engineering, sociological, environmental, and economic factors in the coordination of transportation systems planning in District One. This bureau also coordinates economic and needs studies, annual and long-range programs, and transportation facility location and environmental studies. The bureau includes the following sections:

- [Data Bank](#) obtains, updates, analyzes, and disseminates physical roadway, structural, collision, and traffic characteristic data required to develop, evaluate, and prioritize the annual and multiyear Highway Improvement Program.
- [Program Development](#) develops and recommends projects for inclusion in the annual and multiyear Highway Improvement Program based on the current and future needs of the State highway system.
- [Project and Environmental Studies](#) prepares corridor and design study reports to define alternative solutions to implement programmed projects as a prerequisite to the preparation of contract plans for constructing improvements.

1-2.09(i) Bureau of Construction

The Bureau of Construction is responsible for the supervision and administration of all contracts for State and local federally funded highway improvements in District One from the time of award until construction is completed.

The Construction Supervision – STP Section ensures that federally funded local improvement projects are constructed in accordance with plans, specifications, and special provisions.

1-2.09(j) Bureau of Local Roads and Streets (BLRS)

BLRS is responsible for administering the expenditure of a wide variety of funds for transportation purposes available to LPAs in District One. The bureau also renders guidance and assistance to LPAs in planning, financing, designing, constructing, and maintaining local highway and street systems. The bureau includes the following Sections:

[Field Engineering](#) approves LPA proposals for the expenditure of MFT and Township Bridge Program (TBP) funds and ensures proper control of these funds. It also approves plans,

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specifications, and estimates for LPA construction projects financed by a wide variety of local and State funds.

Program and Office is responsible for the following:

- reviewing of the approval plans, specifications, and estimates for State and/or federally funded LPA construction projects to ensure compliance with established policies, standards, and procedures,
- reviewing and recommending action on all documents (e.g., location and design reports, project agreements) required for LPAs to expend allocations of State and federal funds,
- administering the bi-annual Bridge Inspection Program for bridges on the local system, and
- compliance review and accounting for LPAs' expenditure of MFT funds.

1-2.09(k) Bureau of Materials

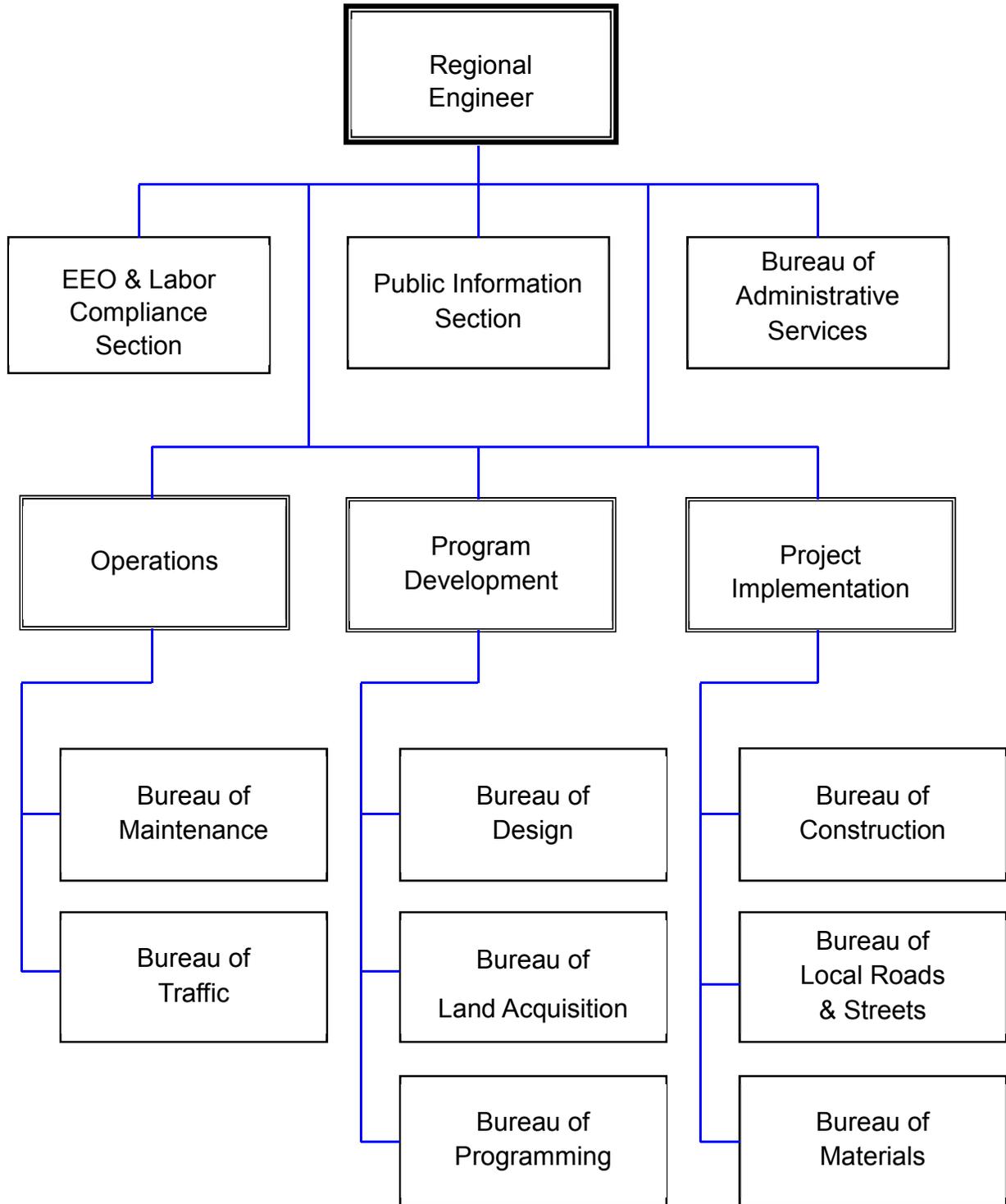
The Bureau of Materials is responsible for the inspection and testing of materials used in the construction and maintenance of highways and other agency projects in District One. Among others, key accountabilities include:

- preparing geotechnical reports, providing technical expertise, and reviewing consultant geotechnical reports, as required for highway improvements,
- providing approved laboratory and trained technician information from IDOT databases,
- assisting the LPA with mixture designs and verification,
- by agreement, providing materials sampling and testing services at plants and locations where an IDOT inspector is present, and
- providing LPA materials inspection and test information from the MISTIC system.

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DISTRICT ONE ORGANIZATION

Figure 1-2A

1-2.10 Districts Two through Nine

Sections 1-2.10(a) through 1-2.10(c) provides brief descriptions of each of the sections and units that comprise Districts Two through Nine. Figure 1-2B presents the organization of Districts Two through Nine.

1-2.10(a) Bureau of Operations (OPs)

District OPs is responsible for coordinating and implementing all activities for the preservation, maintenance, and roadside development of the State highway system. Additionally, it is responsible for implementing policies, procedures, and programs for the installation, operation, and maintenance of traffic control devices to ensure the safe and efficient operation of the State highway system. The bureau issues roadway access and special vehicle permits, and initiates projects and programs for the elimination of crashes and congestion. A brief description for each of the Sections that comprise the bureau is included in the following:

Bridge Maintenance is responsible for the following activities:

- performing routine maintenance of all State maintained bridges, and
- performing all NBIS inspections for all State maintained bridges.

Design and Planning is responsible for the following activities:

- reviewing requests and issues permits relative to highway access to ensure traffic safety and the protection of the system without deferring private or commercial development,
- coordinating the execution of special vehicle movements over State highways,
- issuing special event and parade permits for State highways,
- maintaining and setting the timing and coordination of traffic control devices,
- reviewing and assisting in the development of traffic control device and highway lighting plans,
- maintaining highway lighting,
- overseeing the design, installation and maintenance of storm water pump stations and deep well groundwater dewatering pumps, and
- generating the district Highway Safety Improvement Program (HSIP) to address roadway safety issues. This may reside elsewhere depending on the district.

Maintenance Operations is responsible for the following activities:

- performing all normal and emergency maintenance activities to provide a safe and usable highway system,
- maintaining and inspecting interstate rest areas, and
- performing right of way vegetation management and overseeing right of way landscaping activities.

Traffic Operations is responsible for the following activities:

- reviewing and assisting in the development of traffic control plans for highway, projects and investigates and resolves traffic control problems encountered on district construction and maintenance projects, and detours,
- developing traffic control plans for planned and emergency road closures,
- providing for the maintenance of pavement markings including edge lines, centerlines, lane lines, no-passing zones, curbs and special markings,
- installing and maintaining all traffic signs on the State system,
- fabricating special signs,
- designing, operating and maintaining the district Intelligent Transportation System (ITS) network (District 8), and
- operating the district Emergency Patrol Vehicle (EPV) response fleet (District 8).

1-2.10(b) Bureau of Program Development (PD)

PD is responsible for integrating engineering, sociological, environmental, and economic factors in the coordination of transportation systems planning through coordination of economic and needs studies, annual and long-range programs, and transportation facility location and environmental studies. The following provides brief descriptions of the sections that comprise this bureau:

Land Acquisition is responsible for the following:

- directing negotiation activities for the acquisition of private lands needed for highway improvement projects,
- providing relocation assistance to those displaced by acquisitions,
- conducting and reviewing appraisals, and determining the compensation to be offered for lands, rights, and easements needed for State transportation projects,
- providing expert valuation testimony in eminent domain proceedings,
- preparing and/or reviewing plats, plans, legal descriptions, appraisal maps, and pertinent documents for ROW appraisal and acquisition,
- preparing condemnation information and exhibits,
- conducting or coordinating supplemental surveys to obtain property and land line information, and
- managing Department owned property.

Programming is responsible for developing and recommending projects for inclusion in the annual and multiyear Highway Improvement Programs based on the current and forecasted needs of the State highway system. The section also conducts the following activities:

- prepares traffic counts and intersection turning movements for needs studies,
- updates traffic maps,

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- performs pavement condition rating surveys,
- maintains database of physical characteristics of transportation systems,
- produces and coordinates various visual aid programs to provide information to district personnel and the general public, and
- preparing preliminary and final cost estimates for state highway projects.

Project Support reviews and/or prepares utility adjustment agreements; approves utility permit applications; conducts inspections of utility adjustments and ensures that all district State construction projects are clear of utility conflicts, as well as inspects and monitors highway-railroad grade crossings; oversees grade crossing construction work performed by railroad forces; and prepares annual inspections of grade crossing protection equipment.

Studies and Plans performs the following activities:

- preparing plans and specifications and associated documents for all State highway improvements,
- preparing and reviewing corridor and design study reports,
- determining the environmental impact of projects and developing methods to minimize those impacts through the preparation and review of Environmental Impact Statements (EIS), Environmental Assessments (EA), and related special environmental studies for State projects,
- coordinating and conducting public hearings and public involvement programs,
- performing surveys for State projects,
 - preparing or reviewing hydraulic studies, and
- preparing or reviewing Interchange and Intersection Design Studies (IDS), capacity analysis and geometric reviews.

1-2.10(c) Bureau of Project Implementation (PI)

PI is responsible for the supervision and administration of all contracts for highway improvements from the time of award until construction is completed, and for the inspection and testing of materials used in the construction and maintenance of highways and other agency projects throughout the districts. The following describes the functions of the sections that comprise this bureau:

Construction ensures that construction projects for highway improvements are in compliance with plans, specifications, and IDOT policies for State highways and local federally funded projects. In District 5, this function is provided by the Bureau of Local Roads and Streets for local federally funded projects.

Implementation Support prepares and processes project documentation and reports, resolves discrepancies and deviations from policy, and performs materials certification reviews.

Local Roads and Streets is responsible for administering the expenditure of various funds for transportation purposes available to LPAs. Also renders guidance and assistance to LPAs in

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planning, financing, designing, constructing, administering NBIS, and maintaining local highway and street systems. Other responsibilities include:

- approving LPAs' proposals for expenditure of MFT, State, and federal funds and ensures proper control of these funds,
- approving plans, specifications, and estimates for LPA construction projects involving MFT, State, and federal funds,
- monitoring LPA transportation projects to ensure compliance with State and federal guidelines,
- providing engineering expertise and guidance in the resolution of LPA construction and maintenance problems,
- coordinating and performing administrative activities required to assist LPAs in developing, constructing, and maintaining local street and highway projects using MFT, State, and federal funding,
- reviewing and approving plans, specifications, and estimates for MFT, State, and/or federally funded LPA construction projects to ensure compliance with established policies, standards, and procedures,
- reviewing and recommending action on all documents (e.g., environmental assessments, location and design reports, project agreements) required for LPAs to expend allocations of State and federal funds;
- administering the NBIS Bridge Inspection Program for bridges on the local system, and
- providing documentation review and accounting for the LPAs expenditures of MFT funds.

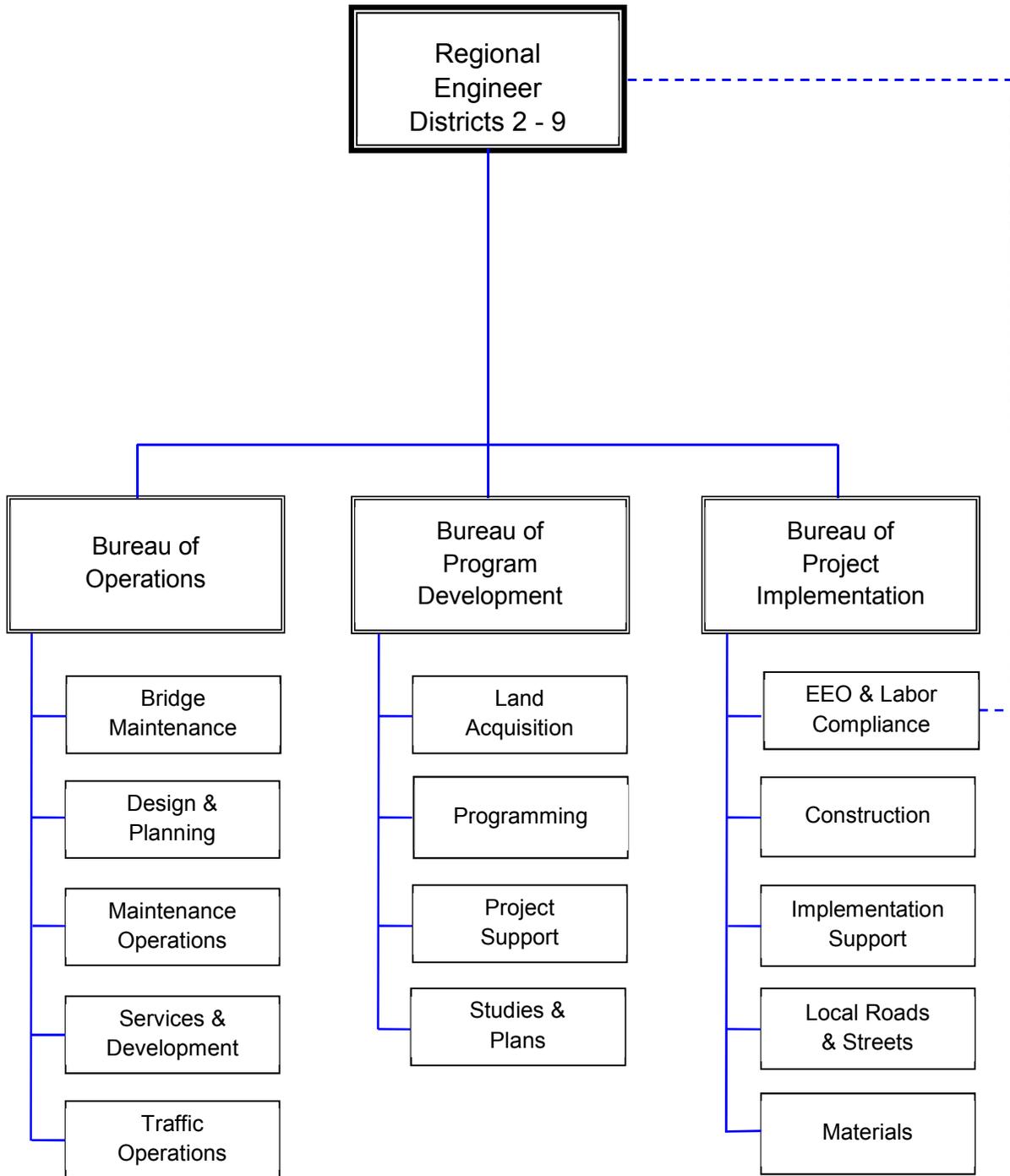
Materials is responsible for the following:

- preparing geotechnical reports for State projects, provides technical expertise, and reviews consultant geotechnical reports, as required for highway improvements,
- providing approved laboratory and trained technician information from IDOT databases,
- may assist the LPA with mixture designs and verification,
- with proper coordination and on a case by case basis, may provide materials sampling and testing services at plants and locations where an IDOT inspector is present, and
- providing LPAs materials inspection and test information from the MISTIC system.

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DISTRICT ORGANIZATION
(Two through Nine)

Figure 1-2B

1-3 CENTRAL BUREAU OF LOCAL ROADS AND STREETS (CBLRS)

1-3.01 General

Figure 1-3A presents the organization of the CBLRS.

1-3.02 Local System and Services Unit

The Local Systems and Services Unit performs the following activities:

- develops and manages the bureau's operating budget,
- manages the bureau's procurement processes, and
- manages the bureau's personnel resources.

1-3.03 Local Program Development Section

The Local Program Development Section is responsible for local roads and streets not assigned to a particular unit and the examination and approval of county engineer candidates.

1-3.03(a) Local Planning and Programming Unit

The Local Planning and Programming Unit performs the following activities:

- distributes and tracks federal and state funds to LPAs,
- develops and monitors the annual and multiyear LPA programs,
- disburses and monitors MFT allocations and special incentive program funds,
- acts as a clearinghouse for highway jurisdictional issues, including transfers, and
- provides technical assistance and liaison to IDOT districts and LPAs within the above processes.

1-3.03(b) Local Policy and Technology Unit

The Local Policy and Technology Unit has two sub-units which are responsible for the following activities:

Policy and Procedures Sub-Unit:

- formulating and disseminating policies, procedures, specifications, special provisions, and design criteria that are responsive to the needs of local governments and IDOT.
- serving as liaison with LPAs, FHWA, other bureaus in IDOT, district offices, and consultants to obtain their input in the development of policies and procedures,
- evaluating and initiating actions based on technical research conclusions and changes in State and federal laws and regulations to ensure compliance,

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- providing technical and administrative advice to assist local governments in the planning, inventory, inspection, repair, design, rehabilitation, construction, and maintenance of highway projects,
- analyzing State and federal legislation to determine the need for new construction specifications,
- monitoring, analyzing the impacts, and developing IDOT's positions on proposed legislation that affect IDOT and LPAs,
- incorporating legislative changes to IDOT's *Road, Bridge and Other Related Laws of Illinois*, and
- maintaining the *Local Roads and Streets Manual*.

Technology Transfer Sub-Unit

The Technology Transfer Unit administers the Local Technical Assistance Program (LTAP) and the Technology Transfer Center (T²). LTAP is a federally funded program.

To qualify for the funding, the T² Center must, at least, comply with the following requirements:

- Mailing List. The center must maintain a mailing list of LPAs, consulting engineers, and miscellaneous customers.
- Publishing Newsletters. The center publishes the *Illinois Interchange Newsletter*. The newsletter contains articles that address the LPA needs and provides more efficient and economical means of highway/street construction and maintenance.
- Technology Transfer. Maintains a video/publication/CD-ROM/online library and a reference library. Videos provided by the library may be reproduced or loaned. The publications are free of charge. Materials from either the reference library or IDOT's library may be loaned for a two-week period.
- Training for Agencies and Others. The classes, seminars, and workshops are tuition free and on a first-come, first-serve basis with the exception of LPAs. LPAs receive first priority.
- Special Programs. The center sponsors and co-sponsors special programs and services, provides exhibits, and makes presentations for LPA conferences.

1-3.04 Local Project Implementation Section

The following describes the activities of the Project Development and Project Support Units within the Local Project Implementation Section of Central BLRS.

1-3.04(a) Local Project Support Unit

The Local Project Support Unit has three sub-units which are responsible for the following activities:

Fiscal Control Sub-Unit:

- pays invoices for Grade Crossing Protection projects, local let projects, PE projects, utility projects, and ROW projects,
- evaluates joint agreements and engineering agreements and establishes Contract Obligation Documents (CODs) for all the above, and
- sets up accounts receivable for overpayments.

Agreements Sub-Unit:

- processes joint agreements for state let projects,
- processes joint agreements for PE, local let construction, ROW, utilities, and grants, and
- processes engineering agreements and authorize federal funds.

MFT Program and Documentation Sub-Unit:

- provides technical support, advice, and education to IDOT staff and LPAs on the use of the MFT Access Database,
- provides quality control / quality assurance, oversight, and training for district MFT documentation reviews, and
- disseminates, manages, and monitors corrective actions required by documentation reviews and audit reports completed by BIC.

1-3.04(b) Local Studies and Plans Unit

The Local Studies and Plans Unit has two sub-units which are responsible for the following activities:

Plan Preparation Sub-Unit:

- prepares plans and proposals for state and local lettings, and day labor projects,
- publishes the Weekly Notice to Contractors Bulletin, and
- authorizes federal funds for construction and ROW and assigns federal project numbers.

Project Development Sub-Unit:

- reviews (for policy conformance) and approves Phase I reports and grants design variances,
- forwards LPA Environmental Survey Requests (ESR) to BD&E and acts as liaison between BD&E on any environmental issues,

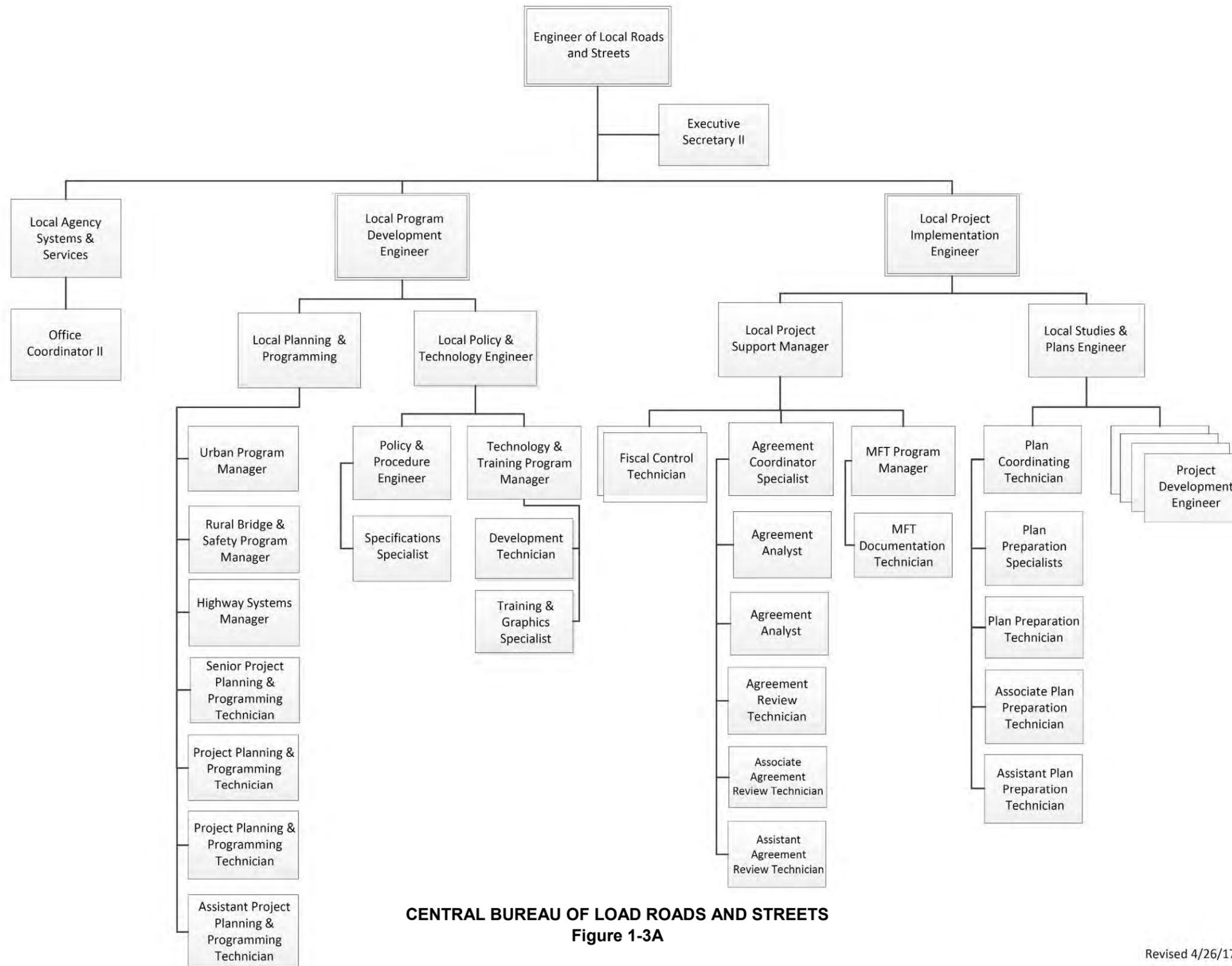
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- reviews for National Environmental Policy Act (NEPA) conformance and recommends approval to FHWA of EAs and EISs,
- is responsible for timely and accurate responses to inquiries by the public, the districts, and LPAs,
- provides concurrence in categorical exclusion and design approval of federally funded projects,
- attends district early coordination meetings,
- attends district county engineer meetings,
- provides guidance to the districts and LPAs in the development and construction of projects,
- coordinates the Emergency Relief Program (ER), and
- serves as the State Project Officer for Federal Emergency Management Agency (FEMA) declared disasters.



CENTRAL BUREAU OF LOAD ROADS AND STREETS
Figure 1-3A

Revised 4/26/17

1-4 ACRONYMS

This is a summary of the acronyms used within this chapter.

AA	Affirmative Action
BBS	Bureau of Bridges and Structures
BCR	Bridge Condition Report
BDE	Bureau of Design and Environment
BLA	Bureau of Land Acquisition
BLRS	Bureau of Local Roads and Streets
BMU	Bridge Management Unit
BSPE	Bureau of Safety Program Engineering
CMS	Central Management Services
COD	Contract Obligation Document
DBE	Disadvantaged Business Enterprises
EA	Environmental Assessments
EDP	Economic Development Program
EEO	Equal Employment Opportunity
EIS	Environmental Impact Statements
ER	Emergency Relief Program
ESR	Environmental Survey Requests
ETP	Emergency Traffic Patrol
F&A	Office of Finance and Administration
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
HMA	Hot-Mix Asphalt
HSIP	Highway Safety Improvement Program
IACE	Illinois Association of County Engineers
IDOT	Illinois Department of Transportation
<i>ILMUTCD</i>	<u>Illinois Supplement to the Manual of Uniform Traffic Control Devices</u>
IRIS	Illinois Roadway Information System
ISIS	Illinois Structures Information System
ITEP	Illinois Transportation Enhancement Program
LBU	Local Bridge Unit
LPA	Local Public Agency
LTAP	Local Technical Assistance Program
MFT	Motor Fuel Tax
MISTIC	Materials Integrated System for Test Information and Communication
NBIS	National Bridge Inspection Standards
NEPA	National Environmental Policy Act
OBWD	Office of Business and Workforce Diversity

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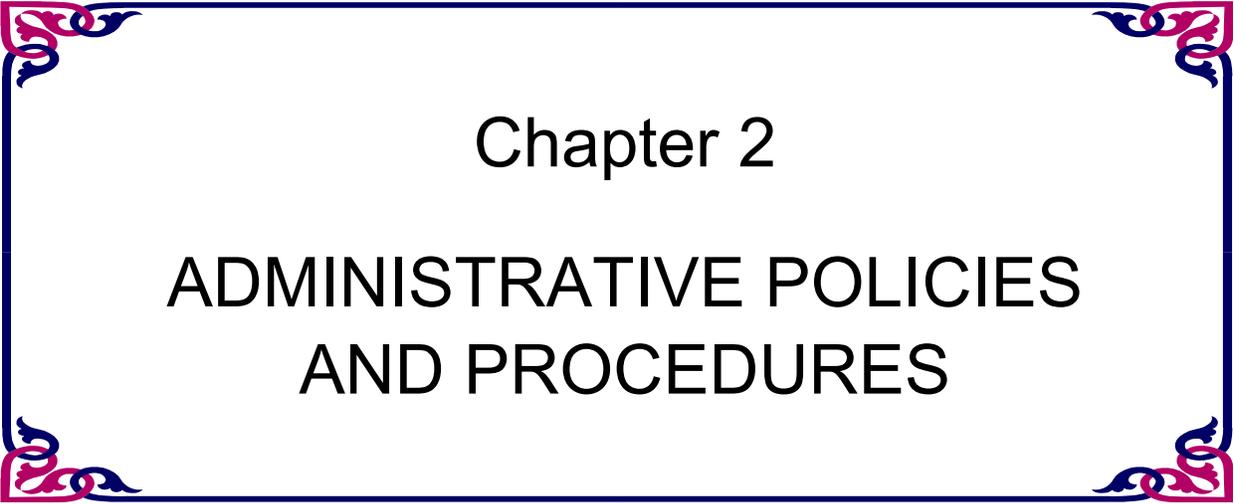
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OCC	Office of Chief Counsel
OIA	Office of Internal Audits
OLA	Office of Legislative Affairs
OPP	Office of Planning and Programming
OPs	Operations
PBDHR	Preliminary Bridge Design and Hydraulic Report
PCC	Portland Cement Concrete
PD	Program Development
PE	Preliminary Engineering
PI	Project Implementation
ROW	Right-of-Way
RSA	Road Safety Assessments
SIMS	Structures Information Management System
SRTS	Safe Routes to Schools
TBP	Township Bridge Program
TSC	Traffic System Center
T ²	Technology Transfer Center

1-5 REFERENCES

1. [Illinois Compiled Statutes](#), Illinois General Assembly by the Legislative Information System.
2. [Illinois Supplement to the Manual of Uniform Traffic Control Devices \(ILMUTCD\)](#), IDOT.



Chapter 2

ADMINISTRATIVE POLICIES
AND PROCEDURES

BUREAU OF LOCAL ROADS AND STREETS MANUAL

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Chapter 2
ADMINISTRATIVE POLICIES AND PROCEDURES

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Chapter 2

ADMINISTRATIVE POLICIES AND PROCEDURES

2-1 APPLICABLE ILLINOIS STATUTES

The following sections briefly discuss the Illinois laws that govern the policies and procedures set forth by the Illinois Department of Transportation (IDOT). The Road, Bridge and Other Related Laws of Illinois published by IDOT is a reprint of chapters and paragraphs of the Illinois Compiled Statutes (ILCS) that deal specifically with road, street and bridge matters. This document is arranged in ascending numerical order of these chapters and is intended for use as a ready reference for road and street officials.

2-1.01 Illinois Highway Code

The Illinois Highway Code, [605 ILCS 5/1-101 et seq.](#) contains a description of the systems of highways in Illinois. It provides the legal authority for the administration of highways by the State and counties. It also provides for the administration of township and road district roads, and municipal streets. Other provisions covering highways and bridges are also included.

2-1.02 Bikeway Act

The Bikeway Act, [605 ILCS 30/0.01 et seq.](#) provides the legal authority for the construction and maintenance of bikeways.

2-1.03 Illinois Vehicle Code

The Illinois Vehicle Code contains the Rules of the Road ([625 ILCS 5/11](#)). The Rules of the Road includes the statutes on traffic signs, signals, pavement markings, speed restrictions, and parking regulations. It also contains the size, weight, and load restrictions for vehicles, and provisions for permits, and vehicle restrictions ([625 ILCS 5/15](#)).

2-1.04 Other Applicable Statutes

The following presents a brief description of the chapters in ILCS most frequently referred to by the Bureau of Local Roads and Streets (BLRS) and the local public agencies (LPAs):

1. [Chapter 5 – General Provisions](#). This chapter includes the Open Meetings Act, [5 ILCS 120/1 et seq.](#) and the Intergovernmental Cooperation Act, [5 ILCS 220/1 et seq.](#)
2. [Chapter 20 – Executive Branch](#). This chapter discusses various State agencies and certain Acts that are under the control of these agencies. This includes many of the responsibilities of IDOT.
3. [Chapter 30 – Finance](#). This chapter discusses investments of public funds, bonds, and debts.

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4. [Chapter 35 – Revenue](#). This chapter includes the Property Tax Extension Limitation Law, [35 ILCS 200/18-187 - 200/18-245](#) and the Motor Fuel Tax Law, [35 ILCS 505/1 et seq.](#)
5. [Chapter 50 – Local Government Officers and Employees](#). This chapter discusses purchase contracts and professional services selection.
6. [Chapter 55 – Counties](#). This chapter discusses powers and duties of a county board. Some of the topics discussed are as follows:
 - trust agreements for funds retained pending construction completion;
 - competitive bids;
 - names of streets and highways, including numbers of buildings and lots;
 - removal of obstructions from streams, lakes, ponds, and other water courses;
 - county motor fuel tax; and
 - establishment of building or set-back lines.
7. [Chapter 60 – Townships](#). This chapter includes discussion on the corporate power of townships and the procedure for vacancies in offices.
8. [Chapter 65 – Municipalities](#). This chapter includes the Illinois Municipal Code, [65 ILCS 5/1-1-1 et seq.](#). The Illinois Municipal Code establishes the organization, territory, finance structure, local improvements, and the corporate powers and functions of the municipality. Some of the pertinent topics include the following:
 - local improvement procedures restricted to certain municipalities,
 - improvements affecting property not within municipality,
 - general powers over streets and public ways,
 - certain joint municipal and township construction projects,
 - persons displaced by Federal-aid system of streets and highways, and
 - jurisdiction over roads by agreement.
9. [Chapter 220 – Utilities](#). The Public Utilities Act, [220 ILCS 5/1-101 et seq.](#), Illinois Underground Utility Facilities Damage Prevention Act, [220 ILCS 50/1 et seq.](#), Telegraph Act, [220 ILCS 55/0.01 et seq.](#), and the Telephone Company Act, [220 ILCS 65/0.01 et seq.](#) are included in this chapter.
10. [Chapter 415 – Environmental Safety](#). The Environmental Protection Act, [415 ILCS 5/1 et seq.](#) covering air, water, land pollution, special waste, and the Illinois Groundwater Protection Act, [415 ILCS 55/1 et seq.](#) are included in this chapter.
11. [Chapter 505 – Agriculture](#). This chapter includes the Farmland Preservation Act, [505 ILCS 75/1 et seq.](#)
12. [Chapter 520 – Wildlife](#). This chapter includes the Illinois Endangered Species Protection Act, [520 ILCS 10/1 et seq.](#)

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ADMINISTRATIVE POLICIES AND PROCEDURES

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-
13. [Chapter 820 - Employment Wages and Hours](#). This chapter includes the Prevailing Wage Act, [820 ILCS 130/0.01 et seq.](#)

2-2 UNITED STATES CODE AND CODE OF FEDERAL REGULATIONS

The following sections briefly discuss federal laws and regulations that govern policy and procedures set forth by IDOT for Federal-aid projects.

2-2.01 United States Code (U.S.C.)

The U.S.C. is the codification by subject matter of the general and permanent laws of the United States. It is divided by broad subjects into 50 titles. The following titles most frequently affect federally funded highway projects.

1. Title 23 – Highways. This title covers Federal-aid highways, highway safety, and research and technology.
2. Title 42 – The Public Health and Welfare. This title includes the National Environmental Policy (Chapter 55), the Uniform Relocation Assistance and Real Property Acquisition Policies for Federal and Federally Assisted Programs (Chapter 61), and other environmental laws.
3. Title 49 – Transportation. This title discusses the operation of the United States Department of Transportation.

2-2.02 Code of Federal Regulations (C.F.R)

The C.F.R. is a codification of the general and permanent rules published by the executive departments and agencies of the federal government. It is divided into 50 titles that correspond with the U.S.C. titles and represent broad areas subject to federal regulation. Each title is divided into chapters that usually bear the name of the issuing agency. Each chapter is further subdivided into parts covering specific regulatory areas. Federally funded highway projects are mainly affected by the following titles:

1. Title 23 – Highways. Chapter 1 of this title contains the regulations of the Federal Highway Administration.
2. Title 40 – Protection of Environment. This title contains regulations of the Environmental Protection Agency and the Council on Environmental Quality.
3. Title 49 – Transportation. This title contains regulations issued by the Office of the Secretary of Transportation.

2-3 BLRS POLICIES AND PROCEDURES**2-3.01 Legal Authority and Responsibility****2-3.01(a) State Statutes**

When federal, State, or Motor Fuel Tax (MFT) funds are used in whole or in part for the construction of a local road or street, IDOT approval is mandatory. The responsibility for general oversight has been delegated to BLRS, with direct oversight given to the district.

2-3.01(b) Federal Laws and Regulations

Authority for the construction of Federal-aid highways in Illinois is given to IDOT. IDOT is not relieved of its responsibility by authorizing performance of the work by a LPA. IDOT must ensure the LPAs comply with all federal laws and regulations.

2-3.02 BLRS Manual

The BLRS Manual (the Manual) contains the policies and procedures for the construction and maintenance of local roads and streets with federal, State, and MFT funds under the supervision of IDOT.

The Manual is divided into four parts. Part I presents general information about the operation of IDOT, the road system, funding, and other issues not affected by funding type. Part II discusses the policies and procedures for MFT and State funded projects. Part III discusses the policies and procedures for federally funded projects. Part IV contains project design criteria that are required to be used regardless of fund type.

This Manual provides information on:

- the BLRS's responsibilities for vouchering MFT funds and Township Bridge Program (TBP) funds to the LPAs;
- the LPA (i.e., municipalities, counties, road districts) responsibilities for maintaining complete records of disbursements, refunds, transfers, and balances involving all MFT and State funds transferred to the LPAs;
- design guidelines for local roads and streets including functional classification, engineering analyses, roadway design, sidewalk and shared-use paths, Americans with Disabilities Act (ADA), traffic control devices, pavement design, bridges and culverts, and hydraulics;
- guidelines for selecting engineering services, addressing environmental impacts, right-of-way acquisitions, railroads, and utilities;
- policies and procedures for preparing plans, specifications, estimates, proposals, contracts, highway system revisions, resolutions, agreements, and other miscellaneous documents;

- letting, award, and construction procedures;
- maintenance administration and operations for local facilities; and
- guidelines and procedures for projects involving federal funding, including:
 - + environmental analyses and reports,
 - + public involvement guidelines, and
 - + FHWA coordination, review, and approval.

The Manual will be updated on a regular basis to reflect changes in policies and procedures.

2-3.03 BLRS Procedure Memoranda (PM)

It is often necessary to revise existing policies and procedures and provide new information to the districts and to the LPAs in a timely manner prior to revising the Manual. The Central BLRS (CBLRS) will issue Procedure Memoranda (PM) to disseminate such information.

2-3.04 BLRS Circular Letters (CL) and Regional Engineer Memoranda

It is often necessary to issue notices or information that does not create new policy or change existing policy. The CBLRS will issue Circular Letters (CL) and Regional Engineer Memoranda to disseminate such information.

The CLs are used to update or issue BLRS pamphlets and booklets, special provisions, and forms, to announce special funding opportunities, and to provide advisory or general information issued by other IDOT bureaus and other agencies. The CLs are sent to the county engineers, public works directors, municipal engineers, other officials, and consulting engineers, if appropriate. These letters can also be received electronically through the [CBLRS subscription service](#) under the “Stay Connected” tab. Copies and an up-to-date list of current CLs may be obtained from [IDOT’s website](#) under the “LPA Resource” tab.

Regional Engineer memoranda are circulated only within IDOT. They provide the district with information and procedure changes that do not directly affect LPAs.

2-3.05 Forms

2-3.05(a) General

To maintain uniformity and simplicity in the administration of federal, State, and MFT funds for LPAs, BLRS has provided forms for the LPA’s use. These forms include general requirements for LPA projects processed through BLRS; however, they are not intended to address specific situation for every LPA. All forms are periodically revised to meet the latest statutory and/or regulatory requirements. The current versions of all forms are available on [IDOT’s website](#). In order to ensure that the most recent forms are used, LPAs should consult and/or obtain forms from [IDOT’s website](#).

2-3.05(b) Signature Requirements

All forms submitted to IDOT must contain the original signature of the appropriate local official. Signatures applied by rubber stamp are not acceptable. An official other than the official designated on the form may sign a form if authorized by resolution or ordinance of the governing body. This resolution/ordinance giving signature authority must contain the name of the individual, title, the forms in which the authority is given, and any ending date for this authority. The resolution must be submitted to the district annually and the district notified if the signature authority is rescinded.

In the case of a road commissioner, a letter or other document giving this same authority to the county engineer or a member of the county engineer's staff must be notarized and on file. Multiple road commissioners may be listed with their signatures on one document. This document does not need to be submitted to the district but must be made available upon request. A change/departure of any individual listed, a new/revised document will be required.

In the district, the forms must be signed by the Regional Engineer or someone authorized to sign for the Regional Engineer. The Regional Engineer may delegate approval authority to another individual on the Regional Engineer's staff when appropriate.

2-3.05(c) Modifications

If a standard IDOT form is modified by any LPA, all department references shall be removed from the form. This includes the IDOT logo, form number, revision/effective date, and any other distinguishing mark. Unless otherwise noted in the Manual, each District or CBLRS may elect not to accept a non-standard form.

2-3.06 Policy and Procedures Exceptions

Policies and procedures set forth in this Manual have been developed in accordance with the federal and State laws and regulations in cooperation with the Illinois Association of County Engineers (IACE), the Illinois Municipal League (IML), the Township Officials of Illinois (TOI), and other agencies and organizations. When it is impractical to meet the requirements or procedures set forth in Parts I, II, or III of this Manual, a LPA may submit an exception request to the district substantiating the reason for such request. The district, in consultation with the CBLRS, will approve the request if it is acceptable. The procedure for obtaining exceptions of design criteria is discussed in [Section 27-7](#).

2-4 PROJECT IDENTIFICATION

2-4.01 LPA Section Designation

All LPA projects processed through IDOT must have a section designation. The section designation is assigned by the LPA in coordination with the district using the following guidelines.

The section designation has four parts separated by hyphens (e.g., 03-00132-01-RS). The four parts of the section designation from left to right include:

1. Year. The first two digits are the last two digits of the calendar year in which the section is established.
2. Agency Sequence. The second sequence consists of five characters, usually all numeric. Each LPA usually assigns these sequence numbers in numerical order. For township or road district projects, the first two characters represent a code number assigned to each township or road district by alphabetical order for each county. When an improvement is made to a location that had previously been constructed, the original sequence number may be retained. When a road, street, or bridge is to be improved in two or more stages or possibly other future improvements planned, the same sequence number should be used for all stages or other planned future improvements.

Each park district, forest preserve district, and conservation district will be assigned a five-character sequence to be used for all projects, with the first character being alphabetic.

3. Subsection. The subsection for the first use of any sequence number is 00. The subsection number is increased numerically for each use of the same sequence number by the LPA.
4. Section Suffix. The last of the section designation consists of two letters describing the type of work. See Figure 2-4A for a list of section suffixes based on the type of work.

Section numbers for general maintenance are discussed in [Section 14-2](#).

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Suffix	Type of Work	Suffix	Type of Work
AA	Agency Authorization	MB	MFT Bond
AC	Agency Credit	MG	Building and Maintain County Garage
AM	Asset Management	MS	Miscellaneous
AS	Aggregate Surface	PA	Painting
BD	Building Demolition	PL	Planning
BI	Bridge Investigation	PK	Parking Lots
BR	Bridge	PP	Pavement Preservation
BT	Bike Trails	PV	Pavement
CG	Curb and/or Gutter	PW	Pavement Widening
CH	Channelization	RD	Roundabout
CS	County Engineer's Salary	RF	IMRF or Social Security
DR	Drainage	RP	Rigid Pavement
EG	Engineering	RR	Railroad Crossing
ES	Engineering Study	RS	Resurfacing
EQ	Equipment (<i>District 1 and 8 only</i>)	SC	Surface Treatment
FL	Railroad Crossing Protection	SD	Shoulders
FP	Flexible Pavement	SG	Signing
GB	General Obligation Bond	SM	Special Maintenance
GM	General Maintenance	SP	Safety Project
GR	Guardrail	SS	Storm Sewer
GS	Grade Separation	ST	Striping
HA	Holding Account	SW	Sidewalk
HP	Historic Preservation	TD	Mass Transit Allocation
IC	ICC Order (CBLRS Only)	TL	Traffic Signals
JT	Jurisdictional Transfer	TR	Training
LA	Land Acquisition	WR	Widening and Resurfacing
LS	Landscaping		
LT	Lighting		

SECTION SUFFIX DESIGNATIONS

Figure 2-4A

2-4.02 State Job Numbers

A State job number is needed for any project involving State or federal funds. Each phase of a project must have a unique state job number. State job numbers are generated by the State Job Number Generator System (SJNG). State job numbers starting with a "P" indicates the planning phase / Phase I engineering, occasionally it may represent both Phase I and II engineering for simpler projects or projects with a single stage. A "D" indicates the design

phase / Phase II engineering, a “R” represents there is a land acquisition, a “C” represents construction and construction engineering / Phase III engineering, and there are a few others not typically used for LPA projects.

The SJNG system requires the user to provide:

- Route – The federal route identification,
- Section Number,
- Location – Either the County or Municipality should be provided,
- County, and
- Project relationships (documents associated phases).

2-4.03 Federal Project Numbers

Each phase of a project using federal funds requires a unique federal project number. The federal project number consists of seven alphanumeric digits randomly generated by the SJNG System. When the user establishes a State Job Number in SJNG, the user indicates the project is federal and the unique federal project number is assigned. The relationship between the state job number and the federal project number is one to one.

The alpha prefixes that precede the federal project number in many systems designate the federal fund type. They are not generated by the SJNG system, as they are not part of the unique federal project number. However, users should continue to input those prefixes into PPS or other systems as required.

2-4.04 MFT System

The MFT is a computer system used by the CBLRS and the districts for cost accounting of the LPA's MFT, State, and federal funds designated for use by the LPA. The system also provides a means of tracking projects that use these funds.

The MFT System provides a record of all MFT allotments and transactions, and a current balance of MFT funds for each LPA. It also contains a project record of each LPA project. The records are available by the LPA MFT section number. Contact the district to obtain specific information.

2-5 IDOT PUBLICATIONS

There are various publications issued by IDOT, federal and State agencies, and engineering groups relative to transportation facilities matters. A list of some of these publications may be found in the following locations.

2-5.01 IDOT Website

2-5.01(a) General

IDOT operates an official [website](#) that contains general information about the Department and its programs. Several manuals, policy memoranda, forms, and other information needed in the development of a project are available.

2-5.01(b) Subscription Service

BLRS offers a [subscription service](#) under the “Stay Connected” tab on IDOT website for LPAs and others. Electronic versions of circular letters, notices of web updates, and other information not circulated during normal course of business are sent automatically to subscribers. Use the subscriber web page to enroll.

2-5.02 BLRS Publications

In addition to the Manual, other publications issued and maintained by BLRS and listed on the [Technology Transfer Center \(T2\)](#) can be viewed or downloaded. Printed versions of these publications can be obtained by contacting CBLRS. Listed below are a few of the more popular BLRS documents available on the IDOT website:

1. [Highway Jurisdiction Guidelines for Highway and Street Systems](#). This booklet provides LPA officials with a quick reference to assist in formulating, analyzing, and resolving jurisdiction/maintenance disputes. The importance of evaluating each situation in light of its own peculiarities cannot be overemphasized. It is intended that the provisions of this pamphlet be a reference and not the final authority.
2. [Signing of Road District and Township Highways](#). This booklet provides highway commissioners with a quick reference to signs and their uses, and traffic control devices. Any reference to the “manual” is to the *Manual on Uniform Traffic Control Devices (MUTCD)* or the [Illinois Supplement to the Manual on Uniform Traffic Control Devices \(ILMUTCD\)](#). This publication should not be used as a substitute for engineering judgment. It is intended that the provisions of these guidelines be a reference and not the final authority on the signing of township highways. Conformance with the latest editions of the [ILMUTCD](#) is required by the Illinois Vehicle Code, [625 ILCS 5/11-304](#).
3. *Motor Fuel Tax Funds – Source, Distribution, and Use – [Counties](#), [Municipalities](#), and [Road Districts](#)*. These booklets provide the LPA officials with a quick reference to the source, distribution, and uses of MFT funds. It is the intent that provisions of these

documents are a reference and not the final authority on the receipt or expenditure of MFT funds.

4. [Specifications and Special Provisions – Development and Usage for Local Agencies](#). This booklet provides LPAs and consultants with a quick reference to the development and use of specifications and special provisions. It is intended that the provisions of this booklet be a reference and not the final authority.
5. [Road, Bridge and Other Related Laws of Illinois](#). This book is issued for the convenience of road and street officials and others. It contains various chapters of the [Illinois Compiled Statutes](#), which are related to road and bridge matters. Users should always verify if statutes have been amended by current legislation.
6. [Illinois Grade Crossing Protection Fund: Resource Guide](#). This booklet provides LPA officials with a quick reference to the Grade Crossing Protection Fund (GCPF) as established by the Motor Fuel Tax Law, [35 ILCS 505/8](#). It is the intent that provisions of this booklet be a reference and not the final authority.

2-5.03 Other Department Documents

IDOT publishes a variety of manuals and documents. These publications disseminate IDOT's policies, standards, specifications, and procedures to be followed in the design, construction and maintenance of streets and highways on the State highway system. Some also have application to the local highway system. Reference to these IDOT publications are at the end of each of the appropriate chapters in this manual and typically will be hyper-linked within the chapters.

Many of these publications are available for review and/or downloading on [IDOT's website](#). IDOT is moving away from printing hard copies. The printed manuals are available free in limited quantities to LPA, from the Division of Highways Manual Sales Office. Consultants and other individuals can purchase these manuals from the Manual Sales Office. An order form with a list of available documents can be obtained from [IDOT's website](#) or by contacting the Manual Sales Office.

2-5.04 Federal Publications

There are several publications by both federal agencies and/or national associations (AASHTO, ATSSA, ITE, TRB, etc.), which disseminate various policies, standards, specifications, and procedures which may have been adopted or used in developing IDOT's policies, standards, specifications, and procedures in the design, construction, and maintenance of streets and highways on the State highway system. Many have application to the local highway system. Reference to these federal publications is at the end of each of the appropriate BLRS Manual chapters.

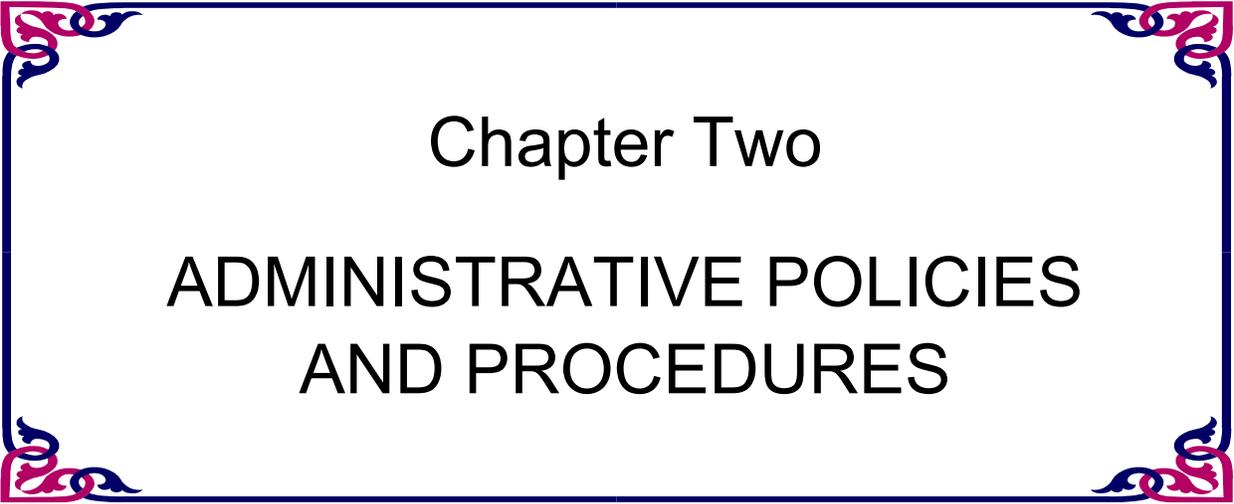
2-6 ACRONYMS

This is a summary of the acronyms used within this chapter.

AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
ATSSA	American Traffic Safety Services Association
BLRS	Bureau of Local Roads and Streets
CFR	Code of Federal Regulations
CL	Circular Letter
FHWA	Federal Highway Administration
GCPF	Grade Crossing Protection Fund
IACE	Illinois Association of County Engineers
IDOT	Illinois Department of Transportation
ILCS	<u>Illinois Compiled Statutes</u>
ILMUTCD	<u>Illinois Supplement to the Manual of Uniform Traffic Control Devices</u>
IML	Illinois Municipal League
ITE	Institute of Transportation Engineers
LPA	Local Public Agency
MFT	Motor Fuel Tax
PM	Procedure Memoranda
SJNG	State Job Number Generator System
T2	Technology Transfer Center
TBP	Township Bridge Program
TOI	Township Officials of Illinois
TRB	Transportation Research Board
USC	United States Code

2-7 REFERENCES

1. [Highway Jurisdiction Guidelines for Highway and Street Systems](#), IDOT, March 2006.
2. [Signing of Road District and Township Highways](#), IDOT, August 2013.
3. [Illinois Supplement to the Manual on Uniform Traffic Control Devices \(ILMUTCD\)](#), IDOT, June 2014.
4. *Motor Fuel Tax Funds – Source, Distribution, and Use – [Counties](#), [Municipalities](#), and [Road Districts](#)*, IDOT, July 2017.
5. [Specifications and Special Provisions – Development and Usage for Local Agencies](#), IDOT, June 2001.
6. [Road, Bridge and Other Related Laws of Illinois](#), IDOT, 2014.
7. [Illinois Compiled Statutes](#)
8. [Illinois Grade Crossing Protection Fund: Resource Guide](#), IDOT, September 2015.



Chapter Two

ADMINISTRATIVE POLICIES AND PROCEDURES

BUREAU OF LOCAL ROADS AND STREETS MANUAL

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Chapter Two
ADMINISTRATIVE POLICIES AND PROCEDURES

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Chapter Two

ADMINISTRATIVE POLICIES AND PROCEDURES

2-1 APPLICABLE ILLINOIS STATUTES

The following sections briefly discuss the Illinois laws that govern the policies and procedures set forth by IDOT. The Road, Bridge and Other Related Laws of Illinois published by IDOT is a reprint of particular chapters and paragraphs of the Illinois Compiled Statutes (ILCS) that deal specifically with road, street and bridge matters. This document is arranged in ascending numerical order of these chapters and is intended for use as a ready reference for road and street officials.

2-1.01 Illinois Highway Code

The Illinois Highway Code, 605 ILCS 5/1-101 *et seq.* contains a description of the systems of highways in Illinois. It provides the legal authority for the administration of highways by the State and counties. It also provides for the administration of township and road district roads and municipal streets. Other provisions covering highways and bridges are also included.

2-1.02 Bikeway Act

The Bikeway Act, 605 ILCS 30/0.01 *et seq.* provides the legal authority for the construction and maintenance of bikeways.

2-1.03 Illinois Vehicle Code

The Illinois Vehicle Code contains the Rules of the Road (625 ILCS 5/11). The Rules of the Road includes the statutes on traffic signs, signals, pavement markings, speed restrictions, and parking regulations. It also contains the size, weight, and load restrictions for vehicles and provisions for permits, and vehicle restrictions (625 ILCS 5/15).

2-1.04 Other Applicable Statutes

The following presents a brief description of the chapters in ILCS most frequently referred to by the Bureau of Local Roads and Streets and the local agencies:

1. Chapter 5 – General Provisions. This chapter includes the Open Meetings Act, 5 ILCS 120/1 *et seq.* and the Intergovernmental Cooperation Act, 5 ILCS 220/1 *et seq.*

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2. Chapter 20 – Executive Branch. This chapter discusses various State agencies and certain Acts that are under the control of these agencies. This includes many of the responsibilities of IDOT.
3. Chapter 30 – Finance. This chapter discusses investments of public funds, bonds, and debts.
4. Chapter 35 – Revenue. This chapter includes the Property Tax Extension Limitation Law, 35 ILCS 200/18-187 - 200/18-245 and the Motor Fuel Tax Law, 35 ILCS 505/1 *et seq.*
5. Chapter 50 – Local Government Officers and Employees. This chapter discusses purchase contracts and professional services selection.
6. Chapter 55 – Counties. This chapter discusses powers and duties of a county board. Some of the topics discussed are as follows:
 - trust agreements for funds retained pending construction completion;
 - competitive bids;
 - names of streets and highways, including numbers of buildings and lots;
 - removal of obstructions from streams, lakes, ponds, and other water courses;
 - county motor fuel tax; and
 - establishment of building or set-back lines.
7. Chapter 60 – Townships. This chapter includes discussion on the corporate power of townships and the procedure for vacancies in offices.
8. Chapter 65 – Municipalities. This chapter includes the Illinois Municipal Code, 65 ILCS 5/1-1-1 *et seq.*. The Illinois Municipal Code establishes the organization, territory, finance structure, local improvements, and the corporate powers and functions of the municipality. Some of the pertinent topics include the following:
 - local improvement procedures restricted to certain municipalities,
 - improvements affecting property not within municipality,
 - general powers over streets and public ways,
 - certain joint municipal and township construction projects,
 - persons displaced by Federal-aid system of streets and highways, and
 - jurisdiction over roads by agreement.
9. Chapter 220 – Utilities. The Public Utilities Act, 220 ILCS 5/1-101 *et seq.*, Illinois Underground Utility Facilities Damage Prevention Act, 220 ILCS 50/1 *et seq.*, Telegraph

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- Act, 220 ILCS 55/0.01 *et seq.*, and the Telephone Company Act, 220 ILCS 65/0.01 *et seq.* are included in this chapter.
10. Chapter 415 – Environmental Safety. The Environmental Protection Act, 415 ILCS 5/1 *et seq.* covering air, water, land pollution, special waste, and the Illinois Groundwater Protection Act, 415 ILCS 55/1 *et seq.* are included in this chapter.
 11. Chapter 505 – Agriculture. This chapter includes the Farmland Preservation Act, 505 ILCS 75/1 *et seq.*
 12. Chapter 520 – Wildlife. This chapter includes the Illinois Endangered Species Protection Act, 520 ILCS 10/1 *et seq.*
 13. Chapter 820 - Employment Wages and Hours. This chapter includes the Prevailing Wage Act, 820 ILCS 130/0.01 *et seq.*

2-2 UNITED STATES CODE AND CODE OF FEDERAL REGULATIONS

The following sections briefly discuss federal laws and regulations that govern policy and procedures set forth by IDOT for Federal-aid projects.

2-2.01 United States Code

The United States Code (U.S.C.) is the codification by subject matter of the general and permanent laws of the United States. It is divided by broad subjects into 50 titles. The following titles most frequently affect federally funded highway projects.

1. Title 23 – Highways. This title covers Federal-aid highways, highway safety, and research and technology.
2. Title 42 – The Public Health and Welfare. This title includes the National Environmental Policy (Chapter 55), the Uniform Relocation Assistance and Real Property Acquisition Policies for Federal and Federally Assisted Programs (Chapter 61), and other environmental laws.
3. Title 49 – Transportation. This title discusses the operation of the United States Department of Transportation.

2-2.02 Code of Federal Regulations

The Code of Federal Regulations (C.F.R.) is a codification of the general and permanent rules published by the executive departments and agencies of the federal government. It is divided into 50 titles that correspond with the United State Code titles, and represent broad areas subject to federal regulation. Each title is divided into chapters that usually bear the name of the issuing agency. Each chapter is further subdivided into parts covering specific regulatory areas. Federally funded highways projects are mainly affected by the following titles:

1. Title 23 – Highways. Chapter 1 of this title contains the regulations of the Federal Highway Administration.
2. Title 40 – Protection of Environment. This title contains regulations of the Environmental Protection Agency and the Council on Environmental Quality.
3. Title 49 – Transportation. This title contains regulations issued by the Office of the Secretary of Transportation.

2-3 BUREAU OF LOCAL ROADS AND STREETS POLICIES AND PROCEDURES**2-3.01 Legal Authority and Responsibility****2-3.01(a) State Statutes**

When federal, State, or Motor Fuel Tax (MFT) funds are used in whole or in part for the construction of a local road or street, IDOT approval is mandatory. The responsibility for general oversight has been delegated to the Bureau of Local Roads and Streets, with direct oversight given to the district.

2-3.01(b) Federal Laws and Regulations

Authority for the construction of Federal-aid highways in Illinois is given to the Illinois Department of Transportation. IDOT is not relieved of its responsibility by authorizing performance of the work by a local agency. IDOT must ensure that the local agencies comply with all federal laws and regulations.

2-3.02 Bureau of Local Roads and Streets Manual

The Bureau of Local Roads and Streets Manual (the Manual) contains the policy and procedures for the construction and maintenance of local roads and streets with federal, State, and MFT funds under the supervision of IDOT.

The Manual is divided into four parts. Part I presents general information about the operation of IDOT, the road system, funding, and other issues not affected by funding type. Part II discusses the policies and procedures for MFT and State funded projects. Part III discusses the policies and procedures for federally funded projects. Part IV contains project design criteria that are required to be used regardless of fund type.

This Manual provides information on:

- the Bureau of Local Roads and Streets' responsibilities for vouchering MFT funds and Township Bridge Funds (TBF) to the local agencies;
- local agency (i.e., municipalities, counties, road districts) responsibilities for maintaining complete records of disbursements, refunds, transfers, and balances involving all MFT and State funds transferred to the local agencies;
- design guidelines for local roads and streets including functional classification, engineering analyses, roadway design, traffic control devices, pavement design, bridges and culverts, and hydraulics;
- guidelines for addressing right-of-way acquisitions, railroads, and utilities;

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- policies and procedures for preparing plans, specifications, estimates, proposals, contracts, highway system revisions, resolutions, agreements, and other miscellaneous documents;
- letting, award, and construction procedures;
- maintenance administration and operations for local facilities; and
- guidelines and procedures for projects involving federal funding, including:
 - + environmental analyses and reports,
 - + public involvement guidelines, and
 - + FHWA coordination, review, and approval.

The Manual will be updated on a regular basis to reflect changes in policies and procedures.

2-3.03 BLRS Procedure Memoranda

It is often necessary to revise existing policies and procedures and provide new information to the districts and to the local agencies in a timely manner prior to revising the Manual. The Central BLRS will issue Procedure Memoranda to disseminate such information.

2-3.04 BLRS Circular Letters and Regional Engineer Memoranda

It is often necessary to issue notices or information that does not create new policy or change existing policy. The Central BLRS will issue Circular Letters and Regional Engineer Memoranda to disseminate such information.

Circular Letters are used to update or issue BLRS pamphlets and booklets, special provisions, and forms, to announce special funding opportunities, and to provide advisory or general information issued by other IDOT bureaus and other agencies. Circular letters are sent to the county engineers, public works directors, municipal engineers, other officials, and consulting engineers, if appropriate. These letters can also be received electronically through the Central BLRS subscription service. Copies and an up-to-date list of current Circular Letters may be obtained from IDOT's website.

Regional Engineer memoranda are circulated only within IDOT. They provide the district with information and procedure changes that do not directly affect local agencies.

2-3.05 Forms

2-3.05(a) General

In order to maintain uniformity and simplicity in the administration of federal, State and MFT funds for local agencies, BLRS has provided forms for the local agency use. These forms include general requirements for local agency projects processed through BLRS; however they are not intended to address specific situation for every local agency. All forms are periodically

revised to meet the latest statutory and/or regulatory requirements. The current versions of all forms are available on IDOT's website. In order to ensure that the most recent forms are used, local agencies should consult and/or obtain forms from the IDOT's website.

2-3.05(b) Signature Requirements

All forms submitted to IDOT must contain the original signature of the appropriate local official. Signatures applied by rubber stamp are not acceptable. An official other than the official designated on the form may sign a form if authorized by resolution or ordinance of the governing body.

In the district, the forms must be signed by the Regional Engineer or someone authorized to sign for the Regional Engineer. The Regional Engineer may delegate approval authority to another individual on the Regional Engineer's staff when appropriate.

2-3.05(c) Modifications

If a standard IDOT form is modified by any local agency, all department references shall be removed from the form. This includes the IDOT logo, form number, revision/effective date, and any other distinguishing mark. Unless otherwise noted in the Manual, each District or Central BLRS may elect not to accept a non-standard form.

2-3.06 Policy and Procedures Variances

Policies and procedures set forth in this Manual have been developed in accordance with the federal and State laws and regulations in cooperation with the Illinois Association of County Engineers, the Illinois Municipal League, the Township Officials of Illinois, and other agencies and organizations. When it is impractical to meet the requirements or procedures set forth in Parts I, II, or III of this Manual, a local agency may submit a variance request to the district substantiating the reason for such request. The district, in consultation with the Central BLRS, will approve the request if it is acceptable. The procedure for obtaining variances of design criteria is discussed in Section 27-7.

2-4 PROJECT IDENTIFICATION

2-4.01 Local Agency Section Designation

All local agency projects processed through IDOT must have a section designation. The section designation is assigned by the local agency in coordination with the district using the following guidelines.

The section designation has four parts separated by hyphens (e.g., 03-00132-01-RS). The four parts of the section designation from left to right include:

1. Year. The first two digits are the last two digits of the calendar year in which the section is established.
2. Agency Sequence. The second sequence consists of five characters, usually all numeric. Each local agency usually assigns these sequence numbers in numerical order. For township or road district projects, the first two characters represent a code number assigned to each township or road district by alphabetical order for each county. When an improvement is made to a location that had previously been constructed, the original sequence number may be retained. When a road, street, or bridge is to be improved in two or more stages, the same sequence number should be used for all stages.

Each park district, forest preserve district, and conservation district will be assigned a particular five-character sequence to be used for all projects with the first character being alphabetic.

3. Subsection. The subsection for the first use of any sequence number is 00. The subsection number is increased numerically for each use of the same sequence number by an agency.
4. Section Type. The last of the section designation consists of two letters describing the type of work. See Figure 2-4A for a list of section types.

Section numbers for general maintenance are discussed in Section 14-2.

Contact the district for assistance in assigning section designations.

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Suffix	Type of Work	Suffix	Type of Work
AA	Agency Authorization	LS	Landscaping
AC	Agency Credit	LT	Lighting
AM	Asset Management	MB	MFT Bond
AS	Aggregate Surface	MG	Building and Maintain County Garage
BD	Building Demolition	MS	Miscellaneous
BI	Bridge Investigation	NW	Noise Walls
BR	Bridge	PA	Painting
BT	Bike Trails	PK	Parking Lots
CG	Curb and/or Gutter	PP	Pavement Preservation
CH	Channelization	PV	Pavement
CS	County Engineer's Salary	PW	Pavement Widening
DR	Drainage	RF	IMRF or Social Security
EG	Engineering	RP	Rigid Pavement
ES	Engineering Study	RR	Railroad Crossing
EQ	Equipment	RS	Resurfacing
FL	Railroad Crossing Protection	SC	Surface Treatment
FP	Flexible Pavement	SD	Shoulders
GB	General Obligation Bond	SG	Signing
GE	General Earth	SM	Special Maintenance
GM	General Maintenance	SP	Safety Project
GR	Guardrail	SS	Storm Sewer
GS	Grade Separation	ST	Striping
HA	Holding Account	SW	Sidewalk
HP	Historic Preservation	TD	Mass Transit Allocation
IC	ICC Order (Central BLRS Only)	TL	Traffic Signals
IR	Intermittent Resurfacing	TR	Training
JT	Jurisdictional Transfer	WR	Widening and Resurfacing
LA	Land Acquisition		

SECTION TYPE DESIGNATIONS

Figure 2-4A

2-4.02 Federal Project Numbers

Each authorization of federal funds requires a distinct federal project number. The project number consists of a series of letters based on the federal fund type, a number based on the project location, and a number in parentheses, which is a sequential number for the project location. Contact the district to obtain project numbers assigned by the Central BLRS for local agency federal projects.

In order for Central BLRS to assign a correct federal project number, the following information is needed:

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- Federal Fund Type – Include all sources of federal funding.
- Location - Either the County or Municipality should be provided.
- Route – The federal route identification.
- Section Number
- Job Number

2-4.03 State Job Numbers

A State job number is needed for any project involving State or federal funds. Each phase having federal or State funds must have a separate job number. Job numbers are assigned by the district.

2-4.04 Motor Fuel Tax System

The Motor Fuel Tax System (MFT) is a computer system used by the Central BLRS and the districts for cost accounting of local agency MFT, State, and federal funds designated for use by local agencies. The system also provides a means of tracking projects that use these funds.

The MFT System provides a record of all MFT allotments and transactions, and a current balance of MFT funds for each local agency. It also contains a project record of each local agency project. The records are available by the local agency MFT section number. Contact the district to obtain specific information.

2-5 IDOT PUBLICATIONS

There are various publications issued by IDOT, federal and State agencies, and engineering groups relative to highway and streets matters. A list of some of these publications may be found in following locations.

2-5.01 IDOT Website**2-5.01(a) General**

IDOT operates an official website that contains general information about the Department and its programs. Several manuals, policy memoranda, forms, and other information needed in the development of a project are available.

2-5.01(b) Subscription Service

BLRS offers a subscription service on IDOT website for local agencies and others. Electronic versions of circular letters, notices of web updates, and other information not circulated during normal course of business are sent automatically to subscribers. Use the subscriber web page to enroll.

2-5.02 BLRS Publications

In addition to the Manual, the following presents a list of publications that are issued and maintained by the Bureau of Local Roads and Streets. These documents are available on IDOT website:

1. *Jurisdictional Transfer Guidelines for Highway and Street Systems*. This booklet provides local agency officials with a quick reference to assist in formulating, analyzing, and resolving jurisdiction/maintenance disputes. The importance of evaluating each situation in light of its own peculiarities cannot be overemphasized. It is intended that the provisions of this pamphlet be a reference and not the final authority.
2. *Signing of Road District and Township Roads*. This booklet provides highway commissioners with a quick reference to signs and their uses and traffic control devices. Any reference to the "manual" is to the Manual on Uniform Traffic Control Devices (MUTCD) or the Illinois Supplement to the Manual on Uniform Traffic Control Devices (ILMUTCD). This publication should not be used as a substitute for engineering judgment. It is intended that the provisions of these guidelines be a reference and not the final authority on the signing of township highways. Conformance with the latest editions of the ILMUTCD is required by the Illinois Vehicle Code, 625 ILCS 5/11-304.

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3. *Motor Fuel Tax Funds – Source, Distribution, and Use – Counties, Municipalities, and Road Districts.* This booklet provides local agency officials with a quick reference to the source, distribution, and uses of MFT funds. It is the intent that provisions of this document be a reference and not the final authority on the receipt or expenditure of MFT funds.
4. *Specifications and Special Provisions – Development and Usage for Local Agencies.* This booklet provides local agencies and consultants with a quick reference to the development and use of specifications and special provisions. It is intended that the provisions of this booklet be a reference and not the final authority.
5. *Road, Bridge and Other Related Laws of Illinois.* This book is issued for the convenience of road and street officials and others. It contains various chapters of the Illinois Compiled Statutes, which are related to road and bridge matters. Users should always verify if statutes have been amended by current legislation.
6. *The Illinois Grade Crossing Protection Fund: Use, Operation, & Administration.* This booklet provides local agency officials with a quick reference to the Grade Crossing Protection Fund as established by the Motor Fuel Tax Law, 35 ILCS 505/8. It is the intent that provisions of this booklet be a reference and not the final authority.

2-5.03 Other Department Documents

IDOT publishes a variety of manuals and documents. These publications disseminate IDOT's policies, standards, specifications, and procedures to be followed in the construction and maintenance of streets and highways on the State highway system. Some also have application to the local highway system.

Many of these publications are available for review and/or downloading on IDOT's website. Most of the manuals are available free in limited quantities to local agencies from the Division of Highways Manual Sales Office. Consultants and other individuals can purchase these manuals from the Manual Sales Office. An order form with a list of available documents can be obtained from IDOT's website or by contacting the Manual Sales Office.

The following Sections provide brief descriptions of documents published by other offices within IDOT.

2-5.03(a) Bureau of Operations

The Bureau of Operations is responsible for the following documents:

1. *Traffic Policies and Procedures Manual.* The Traffic Policies and Procedures Manual presents guidelines for the uniform placement of traffic control devices and the

application of traffic control policies and procedures. It contains guidance and information on:

- statutory and administrative requirements for traffic control devices;
 - information-gathering procedures and data sources;
 - traffic engineering studies and investigations including crash studies, speed studies, warrant studies, observance studies, time and delay studies, and school-zone safety;
 - plan preparation including agreements, contracts, specifications, etc., for traffic plans;
 - the selection, design, and placement of signing, pavement markings, traffic signals, object markers, delineation, rumble strips, traffic control in work zones, bikeways, and highway and sign lighting;
 - permits including access control, special vehicular movements, road closures for local celebrations, utilities, snowmobiles on State routes, and other miscellaneous permits; and
 - the State's highway safety program.
2. *Maintenance Policy Manual*. The purpose of this Manual is to provide written references that will enable IDOT personnel to more uniformly maintain the State Highway System. It also serves as a tool in orientation and training of new employees and provides a format for recording, review, and revision of policies when necessary.
 3. *Illinois Standard Highway Signs*. The Illinois Standard Highway Signs illustrates the layout and design details for the highway signs used by IDOT. It includes the MUTCD number, allowable sign sizes, and design details for all signs to be erected along highways and streets.
 4. *Illinois Manual for Uniform Traffic Control Devices*. The Illinois Manual for Uniform Traffic Control Devices (ILMUTCD) consists of the federal MUTCD issued by FHWA and the Illinois Supplement to MUTCD.

ILMUTCD is issued by the Bureau of Operations. It presents criteria and guidance specific to the State of Illinois that may vary or are in addition to FHWA MUTCD. ILMUTCD includes revisions and additions to the federal MUTCD traffic control devices for signing, pavement markings, traffic signals, construction signing, schools and railroads; and a table of Illinois standard signs.

2-5.03(b) Bureau of Materials and Physical Research

The Bureau of Materials and Physical Research maintains the following publications:

1. Manual of Test Procedures for Materials. This Manual presents the IDOT's criteria for sampling and testing procedures for evaluating the following materials used in road and bridge construction:
 - aggregates,
 - hot-mix asphalt, and
 - Portland cement concrete.
2. Geotechnical Manual. The Geotechnical Manual addresses the application and treatment of soils and foundations on highway projects.
3. Project Procedures Guide. The Project Procedures Guide (PPG) is used as a resource for determining reasonable inspection procedures and sampling frequencies for materials used in highway construction. This Manual seeks to establish materials sampling and testing uniformity throughout the State by providing sampling schedules that lists the minimum frequencies at which samples and measurements must be taken by project, plant, and district personnel.

2-5.03(c) Bureau of Land Acquisition

The Bureau of Land Acquisition maintains the Land Acquisition Policies and Procedures Manual. The Land Acquisition Policies and Procedures Manual presents information on obtaining and maintaining right-of-way for State highways and other facilities.

2-5.03(d) Bureau of Construction

The Bureau of Construction maintains the following publications:

1. Construction Manual. This Manual expands on the Standard Specifications for Road and Bridge Construction and provides guidelines for uniform field inspection and documentation procedures on highway construction.
2. Schedule of Average Annual Equipment Ownership Expense. The Schedule of Average Annual Equipment Ownership Expense is designed for use on Force Account bills of contractors performing work for IDOT and local government agencies who choose to adopt these rates. This schedule should be used in determining appropriate rates used by IDOT and other State agencies with various local government agencies.

2-5.03(e) Bureau of Bridges and Structures

The Bureau of Bridges and Structures maintains the following publications:

1. Bridge Manual. The Bridge Manual is a compilation of design procedures, plan presentation guidelines, specification interpretations, standard practices, design details, and base sheets for bridges and other structures.

The following are supplements to the Bridge Manual:

- a. Culvert Manual. The Culvert Manual is a compilation of design procedures, design charts and tables, standard details, and base plan sheets that are used to aid in the design and detailing of concrete box culverts and wingwalls.
 - b. Prestressed Concrete Manual. The Prestressed Concrete Manual is a compilation of design procedures, design charts and tables, examples, standard details, and base plan sheets that are used to aid in the design and detailing of concrete, pretensioned I-beam, and pretensioned deck beams.
 - c. Sign Structures Manual. The Sign Structures Manual presents guidelines for the selection of sign supports, sign supports design details, and CADD criteria for incorporating traffic signs into the plans.
 - d. Standard Plans. The Standard Plans present the typical plan sheets and designs that are commonly used by local agencies during the preparation of bridge projects. It contains information base sheets and plan sheets for precast prestressed deck beam superstructure concrete structures.
 - e. Structural Services Manual. The Structural Services Manual provides guidance and information on the maintenance and repair of existing structures.
2. Computer-Aided Design and Drafting Manual. The Computer-Aided Design and Drafting Manual is a compilation of various design elements on CADD that are commonly found on bridge and other structures projects.
 3. Drainage Manual. The Drainage Manual is a compilation of IDOT's policies and criteria on drainage and hydraulics for road and bridge projects.

2-5.03(f) Bureau of Design and Environment

The Bureau of Design and Environment is responsible for publishing and maintaining the following documents:

1. Bureau of Design and Environment Manual. The BDE Manual provides uniform practices for personnel preparing contract plans for State highway projects. The BDE

Manual presents information typically required in the development of a roadway project. Specifically, the BDE Manual provides information on:

- IDOT administration and procedures,
- project development,
- environmental procedures,
- roadway design elements,
- design of highway types,
- other highway design elements, and
- plans and contracts.

This Manual is available only on CD from the Manual Sales Office.

2. *IDOT Coded Pay Items*. The IDOT Coded Pay Items provides a list of all pay items with pay code numbers, used by IDOT for a project.
3. *Standard Specifications for Road and Bridge Construction, Supplemental Specifications, and Recurring Special Provisions*. The Standard Specifications for Road and Bridge Construction (Standard Specifications) contains the specifications adopted by IDOT for work methods, materials, and basis of payment used in construction. The Standard Specifications are intended for general repetitive use. They provide IDOT criteria for:
 - bidding,
 - awarding the contract,
 - the contractor's duties,
 - controlling the material quality,
 - the contractor's and IDOT's legal requirements,
 - executing the contract, and
 - measuring and paying for construction.

Supplemental Specifications and Recurring Special Provisions contain additions and revisions to the Standard Specifications. The Supplemental Specifications and Recurring Special Provisions are considered part of and should always be used in conjunction with the Standard Specifications.

4. *CADD Roadway Drafting Reference Guide*. The CADD Roadway Drafting Reference Guide (Reference Guide) presents IDOT's requirements and procedures for computer-aided drafting and design.

5. Highway Standards. The Highway Standards provide details for laying out or constructing various design elements that are consistent from project-to-project (e.g., guardrail, curb and gutter, signs, fencing, landscaping). The Highway Standards are developed by BDE in collaboration with other Bureaus.

2-5.03(g) Office of Planning and Programming

The Office of Planning and Programming is responsible for publishing and maintaining the following publications:

1. Illinois Highway Information System and Procedures Roadway Information Manual. In order to develop the most effective highway maintenance program possible, IDOT anticipates and prioritizes rehabilitation needs. Needed improvements are projected using information from this Manual. For example, surface type, AADT and CRS rating, in combination with other information are prioritized and included with funding (e.g., motor fuel tax) and manpower restrictions to determine which roadway rehabilitation projects are undertaken. This Manual defines the type of information collected, how it is collected and how it is placed into the Illinois Roadway Information System. Included in the appendices of this publication are lists of Illinois municipalities, townships, and road districts.
2. Structure Information and Procedure Manual. This Manual is used for entering and interpreting codes used to represent Illinois' structural data for input into the Illinois Structure Information System. This document is used to satisfy the information needs for the National Bridge Inspection Standards.

2-5.03(h) Division of Aeronautics Aviation Safety Rules and Airport Hazard Zoning Rules

The Illinois Division of Aeronautics Aviation Safety Rules and Regulations includes information required to determine if airport clearances are maintained. Topics include controlling elevations and locations of earthwork, pavement, and structures. Appurtenances (e.g., signs, lighting, utility adjustments) that could affect airport clearances must be noted.

2-5.04 Federal Publications

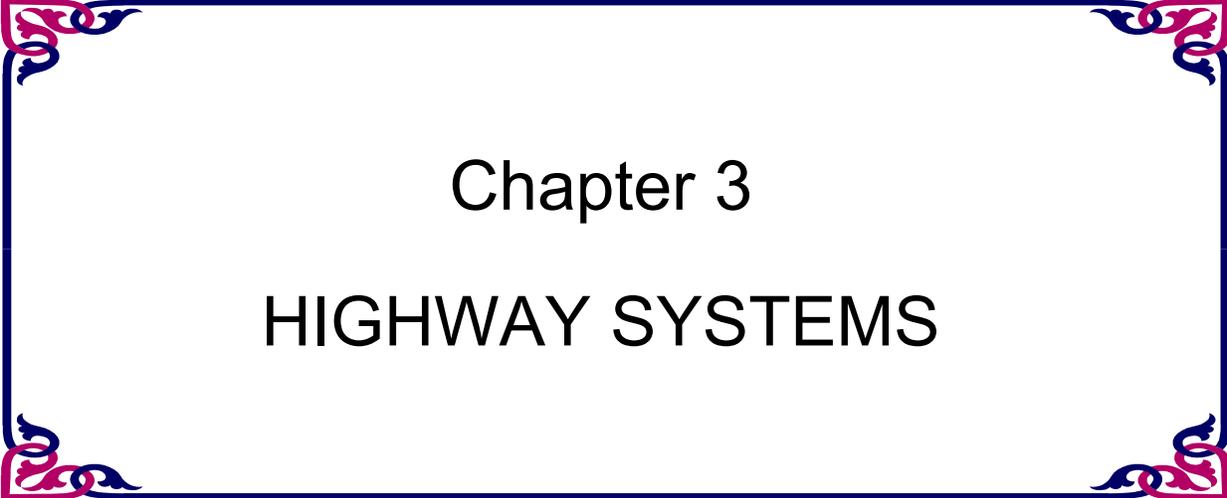
The following is a list of relevant federal publications:

1. A Policy on Geometric Design of Highways and Streets. The AASHTO publication, A Policy on Geometric Design of Highways and Streets, more commonly known as the Green Book, discusses the nationwide policies, practices, and criteria for the geometric design of highways and streets. It is intended to present a consensus view on the most widely accepted approach to the design of a variety of geometric elements including

design speed, horizontal and vertical alignment, cross section widths, intersections, and interchanges. This publication provides additional guidance regarding the design of roads and streets.

2. *Roadside Design Guide*. The AASHTO Roadside Design Guide presents the nationwide policies, practices, and criteria for roadside safety along highways and streets. It is intended to present a consensus view on the most widely accepted approach to providing a reasonably safe roadside for run-off-the-road vehicles. The Roadside Design Guide discusses clear zones, drainage appurtenances, sign and luminaire supports, roadside barriers, median barriers, bridge rails, crash cushions, and roadside safety within construction work zones. The overall objective of the Roadside Design Guide is to recommend an appropriate roadside safety treatment for specific sites considering the consequences of a vehicle running off the road, specific roadway features (e.g., traffic volumes, design speed, roadside topography), and construction/maintenance costs.
3. *Model Drainage Manual*. The AASHTO Model Drainage Manual (MDM) presents the nationwide criteria for the hydrologic and hydraulic design of drainage appurtenances for highway projects. MDM discusses the most commonly used hydrologic methods in the United States (e.g., the Rational Method), and it discusses hydraulic design of various drainage appurtenances (e.g., open channels, culverts, bridges, closed drainage systems, energy dissipators). MDM supersedes, incorporates, or references the FHWA Hydraulic Engineering Circulars and Hydraulic Design Series publications. The overall objective of MDM is to present hydraulic design criteria for highway drainage features that properly consider the probability of an extreme hydraulic event, the consequences of that event, and the costs of providing a drainage system that will accommodate that event.
4. *Highway Capacity Manual*. The Highway Capacity Manual (HCM) and its associated software, published by the Transportation Research Board, present the nationwide criteria for performing capacity analyses for highway projects. HCM includes methodologies for freeways, weaving areas, freeway and ramp junctions, two-way two-lane facilities, intersections, etc. The basic objective of the capacity methodologies in HCM is to determine the necessary configuration and dimensions of a specific highway element to accommodate the projected traffic volumes at a given level of service.
5. *Manual on Uniform Traffic Control Devices*. The Manual on Uniform Traffic Control Devices (MUTCD), published with the combined efforts of FHWA, AASHTO, ATSSA, and ITE, presents nationwide criteria for the selection, design, and placement of all traffic control devices. This includes highway signs, pavement markings, and traffic signals. The basic objective of MUTCD is to establish an effective means to convey traffic control information to the driver for uniform application nationwide. MUTCD information is divided into four categories — standard, guidance, option, and support. These categories are used to establish the proper application of MUTCD criteria for all public roads and streets within the United States. A link to MUTCD is on the IDOT website.

6. ADA Accessibility for Buildings and Facilities. The ADA Accessibility Guidelines for Buildings and Facilities, published by the U.S. Architectural and Transportation Barrier Compliance Board, presents the nationwide accessibility criteria to buildings and facilities for individuals with disabilities. The basic objective of this document is to establish the criteria mandated by the Americans with Disabilities Act (ADA) of 1990. It provides accessibility criteria for both interior and exterior facilities including parking spaces, sidewalks, hallways, doorways, curb ramps, ramps, stairs, telephones, drinking fountains, rest rooms, elevators, etc.
7. Guide for the Development of Bicycle Facilities. The AASHTO Guide for the Development of Bicycle Facilities provides information on the development of new facilities to enhance and encourage safe bicycle travel. Planning considerations, design and construction guidelines, and operation and maintenance recommendations are provided. Chapter 42 provides further guidance on bicycle facilities in Illinois.
8. AASHTO Guidelines for Geometric Design of Very-Low Volumes Local Roads (ADT \leq 400). The AASHTO Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT \leq 400) addresses the unique design issues highway designers and engineers face when determining appropriate cost-effective geometric design policies for very low-volume local roads. This approach covers both new and existing construction projects. Because geometric design guidance for very low-volume local roads differs from the policies applied to high-volume roads, these guidelines may be used in lieu of A Policy on Geometric Design of Highways and Streets, also known as "The Green Book."
9. AASHTO Standard Specifications for Highway Bridges. The AASHTO Standard Specifications for Highway Bridges are intended to serve as the national standard or guide for use by bridge engineers or for the development of an agency's own structural specifications for Load Factor Designs (LFD). Note that IDOT only uses LFD procedures for its structural designs. They establish minimum requirements, consistent with current nationwide practices that apply to common highway bridges and other structures (e.g., retaining walls, culverts). The AASHTO Standard Specifications do not apply to unusual types of bridges (e.g., cable-stayed bridges) or to bridges with spans longer than 500 ft (150 m). Because AASHTO and FHWA are converting to Load Resistance Factor Design (LRFD), the 17th Edition of Standard Specifications for Highway Bridges will be the last edition published by AASHTO.



Chapter 3
HIGHWAY SYSTEMS

BUREAU OF LOCAL ROADS AND STREETS MANUAL

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Chapter 3
HIGHWAY SYSTEMS

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Chapter 3

HIGHWAY SYSTEMS

3-1 HIGHWAY SYSTEMS

This Section discusses two highway system designations — the Federal-aid Highway System and the Illinois System of Highways. Under the Federal-aid Highway System, highways are segregated according to federal funding purposes. The Illinois system is segregated according to jurisdiction and/or maintenance responsibilities. Note that some highways may be under both systems (e.g., Interstates, marked routes).

3-1.01 Federal-Aid Highways

3-1.01(a) National Highway System

The National Highway System (NHS) is a network of highway routes and connections to transportation facilities. NHS represents approximately 4% to 5% of the total public road mileage in the United States. A specific highway route may be on more than one subsystem. Specifically, NHS includes the following subsystems:

1. Interstate. The current Interstate system of highways retains its separate identity within NHS. There are also provisions to add mileage to the existing Interstate subsystem.
2. (Selected) Other Principal Arterials (OPA). These are selected highways in rural and urban areas that provide access between an arterial and a major port, airport, public transportation facility, or other intermodal transportation facility.
3. Strategic Highway Network (STRAHNET). This is a network of highways that are important to the United States' strategic defense policy and which provide defense access, continuity, and emergency capabilities for defense purposes. In Illinois, the STRAHNET is the entire marked Interstate system (including toll facilities marked as Interstate routes).
4. Major Strategic Highway Network (STRAHNET) Connectors. These are roads and highways that provide access between major military installations and highways that are part of the Strategic Highway Network (Interstate system).
5. Major Intermodal Connectors. These are selected streets and highways (primarily in urban areas) that provide access between another NHS designated route (Interstate or OPA) and a designated major port, airport, public transportation facility, freight facility, or other intermodal transportation facility.

3-1.01(b) Non-NHS Federal-Aid Highways

These highways consist of non-NHS roads and streets that are functionally classified as arterials, rural major collectors, and urban collectors. See [Section 27-3](#) for a description of functional classifications.

3-1.02 Illinois System of Highways

3-1.02(a) Definition

According to the State law, any public way for vehicular travel that has been laid out in pursuance of any law of Illinois, or which has been established by dedication, or used by the public as a highway for 15 years is considered a highway. The term “highway” includes rights of way, bridges, drainage structures, signs, guardrails, protective structures, and all other structures and appurtenances necessary or convenient for vehicular traffic. A highway in a rural area may be called a “road,” while a highway in a municipal area may be called a “street” ([605 ILCS 5/2-202](#)).

3-1.02(b) Administrative Classification

The Illinois General Assembly has segregated the Illinois system of highways into four distinct highway systems and associated highway authorities. Each authority has jurisdiction that confers the obligation and the authority to administer, control, construct, maintain, and operate the highway system subject to the provisions of the Illinois Highway Code. Figure 3-1A identifies each system and the corresponding authority.

For a listing of mileage for each classification, see the [Illinois Highway and Street Mileage Statistics](#) from the Illinois Department of Transportation’s (IDOT) Office of Planning and Programming (OPP) under the Report tab of IDOT’s website.

System	ILCS Reference	Highway Authority (605 ILCS 5/2-213)
State Highway System	605 ILCS 5/2-101	Illinois Department of Transportation
County Highway System	605 ILCS 5/2-102	County Board
Township and District Road System	605 ILCS 5/2-103	Highway Commissioner*
Municipal Street System	605 ILCS 5/2-104 65 ILCS 5/1-1-2(2)	Corporate Authority of Municipality (See Section 3-1.03(d))

* *The highway authority is the county board for discretionary functions and the county engineer for administrative functions for County Unit Road Districts.*

ADMINISTRATIVE HIGHWAY CLASSIFICATION

FIGURE 3-1A

3-1.02(c) State Highway System

The State highway system consists of all highways under the jurisdiction of the Illinois Department of Transportation. This system contains all Interstate highways, all other marked State and U.S. routes, and some unmarked routes.

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The Illinois Highway Code, [605 ILCS 5/2-101](#) defines rural highways and their municipal extensions that are part of the State highway system.

The following items apply to the State highway system, but are not all inclusive:

1. State Takeover of Highways. At its discretion, IDOT may add additional highways to the State highway system by laying out new highways or taking over highways from the county highway system, township and district systems, or the municipal street system. These additions must form a logical part of the State highway system for traffic purposes. Before any highway is taken over, IDOT is required to notify the proper local officials in writing of its intention and the date when it will assume the maintenance and care of these highways ([605 ILCS 5/4-203](#)).
2. State Highway Extensions through Municipalities. In all cases where traffic on a State highway runs through a municipality, or where the municipality is the terminus of the State highway, IDOT is required to locate the route on existing or new streets so as to form a continuous route and serve the needs of traffic ([605 ILCS 5/4-205](#)). Any State highway route in a municipality may be relocated upon other streets to better serve traffic demands provided the municipality assumes jurisdiction of the abandoned route. IDOT is responsible for leaving the abandoned route in reasonable condition for traffic ([605 ILCS 5/4-206](#)).
3. Change in State Highway Status. IDOT may enter into a written contract with any highway authority for the jurisdiction, maintenance, administration, engineering, or improvement of any highway or portion thereof ([605 ILCS 5/4-409](#)).

3-1.02(d) County Highway System

The county highway system is under the authority of the county board and consists of the following highways ([605 ILCS 5/2-102](#)):

- State-aid roads and their municipal extensions constructed prior to July 1, 1959, and for which the county was responsible for maintenance, in whole or in part.
- Certain highways improved as Federal-aid highways (formally known as Federal-aid secondary highways), which the county has agreed to maintain pursuant to an agreement between the county and IDOT.
- Highways on which construction was completed after July 1, 1959, and which became part of the system under the provisions of the Illinois Highway Code.
- Highways added to the system under the provisions of the Illinois Highway Code.
- Any access road constructed under [105 ILCS 5/10-22.36A](#) and connecting school grounds with any highway described in the preceding paragraphs.

The following applies to the county highway system:

1. Description of County Highway System. As nearly as possible, the county highway system shall be the highways that connect principal municipalities and trading points

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(traffic generators) within the county with each other, and also with principal municipalities and trading points (traffic generators) in other counties ([605 ILCS 5/5-102](#)).

2. **Total Mileage.** [605 ILCS 5/5-104](#) limits the mileage that can be included in the county highway system. The total mileage of highways in the county highway system shall not exceed 35% of the total rural public highway mileage in a county having less than 500,000 inhabitants or 75% of the total rural public highway mileage in a county having 500,000 or more inhabitants. County highways within a municipality are not included in the overall total mileage. When 80% of the maximum permissible county highway system has the proper geometrics, surfacing, and drainage, as determined by IDOT, the county highway system may be increased by 10%. IDOT will be responsible for determining the total rural public highway mileage for each county ([605 ILCS 5/5-104](#)).
3. **System Changes.** Temporary closing or changes to the system, including additions and deletions from, may be made by a resolution of the county board, subject to the approval of IDOT. Highways removed from the county system that do not become part of the State highway system become part of the township and district road system, if in a rural area, or the municipal street system, if in a municipality ([605 ILCS 5/5-105](#)). It will be necessary for the county to enter into a jurisdictional transfer agreement with the appropriate entity, either the State, township, or municipality for the responsibility of the portion of roadway being removed from the county highway system ([605 ILCS 5/4-409](#)). Permanent changes are required to be indicated on IDOT's county map system in accordance with [605 ILCS 5/5-103](#). See [Section 5-2](#) for details on jurisdictional transfers. These provisions do not apply to the vacation or relocation of a county highway pursuant to [605 ILCS 5/5-107](#), [605 ILCS 5/5-109](#), or [605 ILCS 5/5-110](#).

When considering changes that would result in a disconnected highway system, particularly between counties, sufficient justification will be required. Without this justification, IDOT approval of the addition or deletion will be subject to the adoption by the adjoining county of a resolution designating the necessary addition or deletion to its county highway system to form a connected system or maintain continuity ([605 ILCS 5/5-102](#)). There are a few exceptions to this, and those exceptions must be due to unusual circumstances. A stub connection to a public park, recreational area, or a school ground is also considered an acceptable addition.

[605 ILCS 5/4-409](#) authorizes any local highway authority to enter into a written contract (agreement) with any other highway authority for the jurisdiction, maintenance, administration, engineering, or improvement of any highway or portion thereof. All changes in the status of county highways brought about by these actions must be accomplished by a written contract (agreement) entered into by the county board and any other highway authority involved. Any proposed jurisdictional change will require the approval of IDOT.

4. **Municipal Extensions of County Highways.** The county board, by resolution approved by IDOT, may designate an existing street as a municipal extension of a county highway. The street will remain part of the municipal street system until construction by the county commences, then only the portion being constructed or improved will become part of the

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county highway system ([605 ILCS 5/5-106](#)). The county should obtain concurrence from the municipality prior to designating a municipal extension. Approval by the corporate authorities of municipalities with populations over 500 is required before counties may construct or maintain a street within the corporate limits of a municipality. Approval is not required if the municipality has a population of 500 or less ([605 ILCS 5/5-408](#)); however, counties are encouraged to obtain concurrence from municipalities with a population of 500 or less ([605 ILCS 5/1-102](#)).

5. Relocation. Relocations of county highways may be made during the improvement of the county highway according to plans approved by the county board and IDOT. Upon completion of the relocated highway and its opening to public travel, the new location will become the location of the county highway and the original location will be considered abandoned as a county highway ([605 ILCS 5/5-107](#)). If the highway is not vacated, it will become part of the township or district road system or municipal street system. If the highway is vacated, it will revert to the adjacent property owners.
6. Change in Municipal Corporate Limits. Annexation or disconnection of territory by municipalities does not change the termini of county highways or their extensions.
7. Numbering of County Highways. All county highways are required to be designated by a number. IDOT is responsible for assigning a number to each county highway. IDOT may from time to time renumber county highways ([605 ILCS 5/5-108](#)).

3-1.02(e) Township and District Road Systems

The township and district road system consists of the following ([605 ILCS 5/2-103](#)):

- all rural public roads not part of the State highway system, the county highway system, or the municipal street system and not under the jurisdiction of any department, board, commission, agency, or municipal corporation of the State of Illinois;
- any access road constructed under the School Code, [105 ILCS 5/10-22.36A](#) connecting school grounds with the roads described above; and
- any non-dedicated subdivision road that has been maintained or improved with MFT funds under [605 ILCS 5/5-701.15](#) and [605 ILCS 5/6-701.8](#).

The following regulations apply to the township and district road systems:

1. Road Districts. District road systems are maintained by road districts. Road districts may be one of the following types:
 - a. Township Road District. Each township of the counties under township organization is defined as a road district for road purposes ([605 ILCS 5/6-102](#)). No township road district may continue in existence if the total mileage of roads forming the district becomes 4 miles or less. In these cases, the road district is abolished, and the township board of trustees then administers the road system. They shall contract with the county, a municipality, or a private contractor to maintain the few remaining roads ([605 ILCS 5/6-130](#)).

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the county engineer agrees with the request, the county engineer will prepare an order to incorporate the roads or streets into the system. Roads and streets that do not conform, and other roads and streets dedicated to public use, but which are not in platted subdivisions, may be included in the system. However, any hearings, petitions, and procedures as described in [605 ILCS 5/6-303](#) and [605 ILCS 5/6-305](#) must be followed ([605 ILCS 5/6-325](#)).

5. Status of Road Coincident with a Federal-Aid Highway. A designated Federal-aid highway coincident with a township or road district road is considered a township or road district road under the jurisdiction of the highway commissioner until it has been improved as a Federal-aid project or involved in a jurisdictional transfer agreement.

When the county or municipality proposes to improve a Federal-aid highway that is coincident with a township or district road, it will be necessary to transfer jurisdiction of that road to the county or municipality upon completion of the improvement ([605 ILCS 5/3-104, 104.1, and 108](#)). However, pursuant to [605 ILCS 5/3-104.3](#), a township or road district may improve, as a Federal-aid project, any highway under its jurisdiction that is part of the Great River Road under United States Code 23 U.S.C. 148.

6. Change in Township and Road District Road Status Due to Municipal Annexation. See the discussion in Section 3-1.02(f).
7. Vacating Township and Road District Roads. The process of vacating an existing right-of-way or road is found in [605 ILCS 5/6-301 - 5/6-316](#).

3-1.02(f) Municipal Street System

Municipal streets consist of existing or new streets within municipal limits that are not part of the State or county system. Streets beyond municipal limits can be included in the jurisdiction of the municipal system. In addition, roads constructed under the School Code, [105 ILCS 5/10-22.36A](#) connecting school grounds to municipal streets or roads may also be included in the municipal street system ([605 ILCS 5/2-104](#)).

The corporate authority of each municipality regulates the use of the streets. The term municipality includes a city, village, or incorporated town. The corporate authority is:

- for cities, the city council or similar body;
- for municipalities under the commission form of government, the council; and
- for villages or incorporated towns, the board of trustees.

The following applies to the municipal street system:

1. Municipal Street Extensions Outside Corporate Limits. The corporate authorities of the municipality must designate these municipal street extensions by resolution. Two copies of the resolution must be sent to the IDOT Regional Engineer.
2. Change in Status of Municipal Streets.
 - a. Annexation. Township and road district roads, brought into a municipality by the annexation of territory, automatically lose their status as township or road district

roads. These roads become municipal streets under the jurisdictional responsibility of the municipality ([605 ILCS 5/6-203](#)). The new boundary will extend to the far side of any adjacent highway and includes all of every highway within the area annexed ([65 ILCS 5/7-1-1](#)).

- b. Municipal Extensions of County Highways. Municipal extensions of county highways that are included within the corporate limits of a municipality because of incorporation or annexation remain under the jurisdiction of the county unless it is deleted from the county highway system and a formal agreement is executed transferring jurisdiction to the municipality.
- c. County Highway Extensions. County highway extensions that are excluded from a municipality by disconnection of territory remain under municipal jurisdiction until a formal agreement is executed transferring jurisdiction to the county.
- d. Disconnection of Territory. Municipal streets that are excluded from municipal corporate limits by disconnection of territory will remain under municipal jurisdiction until a formal agreement is executed transferring jurisdiction to another highway authority ([605 ILCS 5/4-409](#)).
- e. Jurisdiction Transfers. [Section 5-2](#) presents the procedures for all necessary jurisdictional transfers.

3-1.03 New Construction/Reconstruction

3-1.03(a) Local Highway Authority

When a local highway authority improves its streets or roads at an intersection with a State highway, the following will apply:

- The improvement must be made to the edge of the State highway pavement. However, the improvement may terminate at the end of the existing State side road approach if the side road approach is of a higher type than the local improvement.
- Drainage facilities on State right-of-way within the improvement should be replaced or extended, if needed, by the local highway authority unless there is an agreement with the State defining the different responsibilities.
- Parking lanes are the responsibility of the local highway authority.
- All improvements by the local highway authorities within the limits of the State right-of-way must meet IDOT criteria and policies; see the Bureau of Design and Environment (BDE) Manual. If any part of the LPA project uses funds (see [Chapter 4](#)) through IDOT, the LPA project will be processed through the District Local Roads and Streets. If none of the funds are through IDOT, the LPA project will be processed through the District Permit process.

3-1.03(b) IDOT

When IDOT initiates an improvement to a State highway, the street and side road approaches will be improved by IDOT in accordance with current policies for that particular type of

improvement. Drainage facilities on the State right-of-way within the improvement will be replaced or extended, if needed, by IDOT unless there is an agreement with the local authority defining different responsibilities.

3-1.03(c) Maintenance

Maintenance of street and side road approaches within the limits of the State right-of-way is the responsibility of the local highway authority, except where IDOT upgrades a street or side road approach to a higher type than the adjoining local approach or as established on an IDOT/local agency agreement. In this case, IDOT is responsible for maintaining the upgraded portion of the approach. When a local highway authority upgrades its street or side road approach to an equal or higher type than the State approach, the local highway authority is responsible for maintaining the approach. Questions concerning maintenance issues within the State ROW should be directed to the District office. In addition, the following will apply:

1. Snow and Ice Removal. Local highway authorities are responsible for snow and ice removal on the street or side road approach to the edge of the intersecting State highway pavement, in accordance with local policy, regardless of differing type approaches.
2. Parking Lanes. Local highway authorities are responsible for maintaining parking lanes adjacent to through lanes on the State right-of-way.
3. Drainage. Drainage facilities at intersecting street or side roads within the State right-of-way will be the joint responsibility of IDOT and local highway authority unless there is an agreement defining different responsibilities (i.e., the material and labor are split between IDOT and the local agency). The District Bureau of Operations Maintenance Field Engineer should be contacted to discuss any proposed improvement of drainage facilities.

3-1.03(d) Traffic Control Devices

Policies concerning traffic control devices (e.g., signs, signals, pavement markings) within the State ROW should be directed to the District office.

3-2 AUTHORITY OF LOCAL OFFICIALS

3-2.01 Posted Speed Limit

The following definitions apply to this Section:

1. Urban District. The territory contiguous to and including any street that is built up with structures devoted to business, industry, or dwelling houses situated at intervals of less than 100 ft for a distance of a quarter of a mile or more ([625 ILCS 5/1-214](#)).
2. Residence District. The territory contiguous to and including a highway not comprising a business district when the property on such highway for a distance of 300 ft or more is in the main improved with residences or residences and buildings in use for business.

For purposes of establishing maximum speed limits, a residence district must be at least a quarter of a mile long with residences or residences and buildings in use for businesses spaced no more than 300 ft apart ([625 ILCS 5/1-172](#)).

3-2.01(a) **Statutory Speed Limits**

The Illinois Vehicle Code, [625 ILCS 5/11-601](#) establishes the maximum statutory speed limit for the following:

1. Urban District for Any Vehicle. The maximum speed limit in an urban district for all vehicles is 30 mph for a street and 15 mph for an alley.
2. Outside An Urban District. The maximum speed limit outside an urban district is 55 mph for local roads and streets.

3-2.01(b) **Establishing Altered Speed Limits**

In establishing speed limits on non-State facilities, the following will apply ([625 ILCS 5/11-604](#)):

1. Maximum Speed Limits. The county board can establish maximum speed limits for all county highways, township roads, and district roads. The maximum speed limit cannot exceed 55 mph. A municipality or park district may establish maximum speed limits on all streets that are within its corporate limits and are not under the jurisdiction of IDOT, and for which the county or highway commissioner does not have maintenance responsibility.
2. Alteration of Speed Limits. IDOT has established a "*Policy on Establishing and Posting Speed Limits on The State Highway System*". However, the Illinois Vehicle Code does not require LPAs to obtain department approval for speed zones on roads under their respective jurisdictions. While the procedures contained in this policy may be used for altering speed limits on any public highway, use of such procedures by an LPA is not required by statute. LPAs should refer to [625 ILCS 5/11-604](#) for additional information and specific regulations regarding the alteration of speed limits on local roads. Consideration may be given for performing an engineering or traffic study to validate speed alterations, which may be considered good practice even when not required by statute.

The local authority or park district may:

- decrease the speed limit within an urban district, but not to less than 20 mph;
- increase the speed limit within an urban district, but not to more than 55 mph;
- decrease the speed limit outside an urban district, but not to less than 35 mph; or
- decrease the speed limit within a residence district, but not to less than 25 mph, except as defined in the first bullet.

The local authority or park district may only alter a speed limit restriction six times per mile along a highway or street, and the difference in the speed limit between adjacent altered speed zones shall not be greater than 10 mph.

3. Schools. Speed limits adjacent to schools may be set at 20 mph for the times when children are present ([625 ILCS 5/11-605](#)).

3-2.02 Traffic Control Devices

3-2.02(a) General Authority

Local authorities may erect traffic control devices, provided that they meet the warrants and criteria stipulated in the [Illinois Supplement to the Manual on Uniform Traffic Control Devices \(ILMUTCD\)](#), on any locally designated facility. This includes signs, pavement markings, traffic signals, or any other device that may regulate traffic. Placement of any traffic control devices on township and road district roads requires written approval of the county engineer or superintendent of highways ([625 ILCS 5/11-304](#)).

3-2.02(b) State Highways

State or local authorities are not allowed to place or maintain traffic control devices on any highway under IDOT jurisdiction unless IDOT has granted prior permission ([625 ILCS 5/11-303\(b\)](#)).

3-2.02(c) Establishment of Through Highways

State or local authorities may designate any highway under their jurisdiction as a through highway and erect stop signs or yield signs at specified entrances provided that their necessity is established through an engineering and traffic investigation. Proper measures for establishing any street or highway as a through highway or designating an intersection as a stop or yield intersection are set forth under [625 ILCS 5/11-208 \(a\)6 and \(b\)](#) and [625 ILCS 5/11-302](#). The county engineer is responsible for providing written approval for all designations of a through highway and the installation of traffic control devices by the highway commissioner on township and road district roads. In addition, IDOT may, at its discretion and where traffic conditions warrant, give preference to traffic on the State highway over traffic crossing or entering the State highway by installing appropriate traffic control devices.

3-2.02(d) Designation of Truck Routes

Local authorities may by ordinance or resolution, Form [BLR 03210](#), designate any highway under their jurisdiction as a Class II or Class III truck route ([625 ILCS 5/1-126.1](#)) and in accordance to [625 ILCS 5/15-111\(f\)](#). Legally configured 80,000 pound (36,000 kg) trucks can traverse the designated highways where appropriate regulatory signs are erected as required by [625 ILCS 5/15-111\(f\)](#). Consideration should be given to the ability of the highway and structures to accommodate the anticipated loads before establishing this type of designation.

Pursuant to [625 ILCS 5/15-116](#), it is the responsibility of the local agency with jurisdiction over a Class II or Class III designated highway to report its location to the department by submitting a copy of the resolution(s) designating the highway, location maps, and reference contact names and telephone numbers.

3-2.03 Posted Weight Limit

Local authorities may restrict the usage of highways under their jurisdiction by passing an ordinance or resolution and posting and maintaining signs at each end of the affected highway in the following situations ([625 ILCS 5/15-316](#)):

1. Temporary Restrictions. Due to highway deterioration or climate conditions, temporary closures or weight restrictions may take place for no longer than 90 days in any one calendar year whenever a highway will be seriously damaged or destroyed.
2. Permanent Restrictions. Permanent restrictions may be imposed prohibiting the operation of trucks or other commercial vehicles or limiting their weight on designated highways.
3. Restrictions on Elevated Structures. Only IDOT, after conducting an investigation, may determine the maximum weight limits on bridges or other elevated structures constituting a part of a highway. ([625 ILCS 5/15-317](#)).

A local agency may also perform, or have performed, an investigation of the bridge to determine the structure's load carrying capacity. The results, sealed by an Illinois Licensed Structural Engineer, must be submitted to and approved by IDOT's Bureau of Bridges and Structures (BBS).

Upon notification from IDOT of a required weight limit, the local agency shall erect signs as soon as possible, but no later than 30 days after notification. Suitable signs stating the maximum weight limit must be posted and maintained before each end of the structure. When a structure is to be closed, the local agency should immediately erect barriers that will prohibit traffic access to such structure. If temporary, the barriers shall remain in place until permanent barriers can be installed. See [Section 6-4.03](#) for additional information.

3-2.04 Procedure for Removing Abandoned Railroad Structures and Grade Crossings

Many highway-railroad, grade-separation structures, at-grade crossings, and related track materials of rail lines that have been abandoned remain in place on intersecting public

highways. These structures constitute obstructions and encroachments on these highways and should be removed.

Unless otherwise agreed to by the local agency or IDOT, abandoned railroad structures and abandoned railroad crossings should be removed by the railroad company at their own expense. Should the railroad be unwilling to do the removal, the local agency should contact the Illinois Commerce Commission (ICC) to request that the issue be resolved through a stipulated agreement or ICC hearing.

3-2.05 **Permits**

3-2.05(a) **Size/Weight**

With respect to highways under their jurisdiction, local authorities may permit an applicant to operate or move a vehicle or a combination of vehicles of a size or weight of vehicle or load exceeding the maximum criteria only for nondivisible loads (e.g. composed of a single object, which cannot reasonably be dismantled or disassembled). All divisible loads including, but not limited to grain, sand or gravel must be hauled at or below the legal weight (e.g., 80,000 pounds (36,000 kg) for a 5-axle legally configured vehicle). The applicant of the permit must follow the procedures specified in [625 ILCS 5/15-301](#).

3-2.05(b) **Utilities**

Written consent of the controlling highway authority is required before any ditch, drain, track, rail, pole, wire, pipeline, or other equipment of a public utility company, municipal corporation, or other public or private entity may be located, placed, or constructed on, under, or along any highway ([605 ILCS 5/9-113](#)).

3-2.05(c) **Entrances**

In constructing a public highway, the highway authority is required to provide entrance culverts or crossings wherever ditches are created at junctions with other highways or at entrances and openings of adjoining premises. Replacement or modification of existing entrance culverts or crossings proposed by entities or property owners other than the highway authority may be made with the consent of the highway authority, provided the applicant constructs a replacement or modification of a type and size specified by the highway authority. The replaced or modified structure becomes the property of the public ([605 ILCS 5/9-105](#)).

3-2.06 **Establishment of Freeways**

The designation, establishment, and limiting of freeway access by the corporate authorities of a municipality or county board are authorized under [605 ILCS 5/8-101](#). Although the statutes do not require formal approval of the corporate action by IDOT, it is necessary for the municipality to advise IDOT of its action. The municipality should consider posting this designation along the highway designated to advise the property owners and general public of this fact.

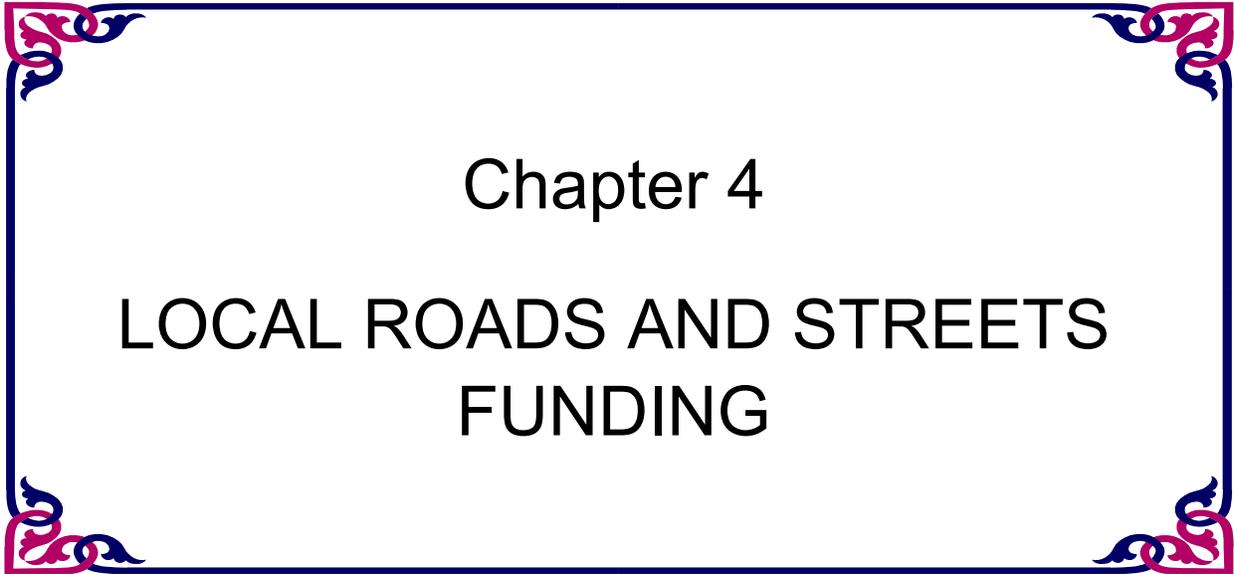
3-3 ACRONYMS

This is a summary of the acronyms used within this chapter.

BBS	Bureau of Bridges and Structures
BDE	Bureau of Design and Environment
ICC	Illinois Commerce Commission
IDOT	Illinois Department of Transportation
ILCS	<u>Illinois Compiled Statutes</u>
<i>ILMUTCD</i>	<i>Illinois Supplement to the Manual of Uniform Traffic Control Devices</i>
LPA	Local Public Agency
NHS	National Highways System
OPA	Other Principal Arterial
OPP	Office of Planning and Programming
STRAHNET	Strategic Highway Network
USC	United States Code

3-4 REFERENCES

1. [Illinois Compiled Statutes](#)
2. [Illinois Highway and Street Mileage Statistics](#), OPP, IDOT.
3. [Bureau of Design and Environment Manual](#), BDE, IDOT.
4. [Illinois Supplement to the Manual on Uniform Traffic Control Devices \(ILMUTCD\)](#), IDOT, June 2014.
5. *Policy on Establishing and Posting Speed Limits on The State Highway System, Operations*, IDOT, January 2014.



Chapter 4

**LOCAL ROADS AND STREETS
FUNDING**

BUREAU OF LOCAL ROADS AND STREETS MANUAL

Chapter 4
LOCAL ROADS AND STREETS FUNDING

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Chapter 4

LOCAL ROADS AND STREETS FUNDING

Local Public Agencies (LPAs) receive funding for their local roads and streets from a variety of sources including federal and State programs, the Motor Fuel Tax (MFT) fund, and local sources. This Chapter provides an overview of each source that provides funding for projects on local facilities for which Bureau of Local Roads and Streets (BLRS) is involved in some part of the administration. Guidance for obtaining these funds and the implementation of these programs can be found in [Chapter 9](#) for State and MFT funds and in [Chapter 17](#) for federal funds.

4-1 FEDERAL PROGRAMS

Federal programs provide funding for transportation projects through the Highway Trust Fund (HTF). Funds are collected through revenue from certain highway user taxes, primarily the federal gasoline tax and a variety of tire and truck sales taxes. These taxes are credited to the HTF to be used for transportation spending. All states receive federal funding. The amount is dependent, among other factors, on the revenue contribution of each individual state.

The functional classification of a road or street facility is one of the factors that affect federal funding eligibility. [Section 27-3](#) discusses the functional classification system. Facilities on the local system (e.g., those off the State highway system) may be functionally classified as local, collector (minor or major), or arterial (minor or principal). Other factors affecting federal funding eligibility is fund type, population (urban / rural), and scope of work. The LPA should contact the District office for clarification on eligibility requirements.

A federal highway bill is passed by Congress for a specific time period and determines the formula and discretionary programs to fund specific types of improvements, eligibility criteria, funding levels, level of funding participation, requirements to receive federal funds, etc. Each new federal highway bill may be similar or significantly different than the previous bill. If a new federal highway bill has not been passed prior to the ending of the current bill an extension is typically passed to provide additional funding of the current bill, typically called a continuing resolution. Figure 4-1A (new) shows a comparison of past federal highway bills in the formula and discretionary programs.

Section 4-1 provides a brief discussion on those categorical Federal-aid programs in the current federal highway bill or programs from previous bills with funds still available that provide funds available to local governments for transportation improvements. Unless otherwise noted, federal funds can generally be used to fund 80% of eligible costs.

The current federal highway bill is called *Fixing America's Surface Transportation Act (FAST Act)*. The Federal Highways Administration (FHWA) publishes [A Guide to Federal-Aid Programs and Projects](#) which provides additional information on current and inactive programs and projects.

4-1.01 National Highway Performance Program (NHPP)

NHPP funding can be used for state or local projects on the National Highway System (NHS) or NHS connector routes for roads, bridges, tunnels, ferry boat facilities, transit facilities, truck parking facilities, bicycle transportation facilities, pedestrian walkways, ITS, bus terminal facilities and commuter parking facilities.

The NHS is a network of selected principal arterial routes identified as essential for international, interstate, and regional commerce and travel, national defense, and the transfer of people and goods to and from major inter-modal facilities.

The previous federal transportation bill, *Moving Ahead for Progress in the 21st Century*, (MAP-21) expanded the size of the NHS by adding principal arterials and state border crossings not currently on the NHS and other connector highways that provide motor vehicle access between arterial routes on the NHS and a major inter-modal transportation facility. All state and local roads that are part of the NHS are designated in Illinois Roadway Information System (IRIS) and Illinois Roadway Analysis Database System (IROADS). Although NHS funding is important nationwide, very few miles of the local highway systems in Illinois are on the NHS. See [Section 3-1](#) for additional information on NHS. The new *FAST Act* directs DOTs, within 90 days of enactment, to issue guidance to states on the reclassification of roads recently added to the NHS per MAP-21 and to identify any needed functional classification changes to rural and urban principal arterials.

4-1.02 Surface Transportation Program

4-1.02(a) General

The *FAST Act* renames the Surface Transportation Program (STP) to the Surface Transportation Block Grant Program (STBGP) and increases the amount of funding that is sub-allocated to metropolitan areas based on population from 51% to 55% over five years. However, within the *Bureau of Local Roads and Streets Manual* the term STP will continue to be used instead of STBGP. STP provides federal funds for the following types of projects:

- highway projects on all functional classes, except facilities functionally classified as “local”;
- bridge projects on any public road, including “local” functional classes;
- transit capital projects; and
- public bus terminals and facilities.

The basic objective of STP is to provide Federal-aid for improvements to facilities not on the NHS. The Program is aimed at providing more flexibility in determining transportation solutions and enhanced planning and management systems to the states and local governments.

STP funds also may be used for activities such as environmental provisions, modifications to meet accessibility for persons with disabilities, infrastructure-based intelligent transportation system capital improvements, and privately owned inter-city bus terminals and facilities.

STP funds are distributed to each state based on its lane-miles of Federal-aid highways, total vehicle-miles traveled on those highways, and estimated contributions to the Highway Account of the HTF. Because of its emphasis on highway facilities that do not have national importance, STP provides the largest source of Federal-aid funds available for local facilities in Illinois.

The *FAST Act* continues *MAP-21's* new approach to core formula program funding, authorizing a lump sum total instead of individual authorizations for each program. Once each State's share of the total is calculated, it is divided up by program within the State. From the State's STP apportionment, the following sums are to be set aside:

- A proportionate share of funds for the State's Transportation Alternatives (TA) program.
- 2% for State Planning and Research (SPR).
- For off-system bridges, an amount not less than 15% of the State's FY 2009 Highway Bridge Program apportionment (may not be taken from amounts sub allocated based on population).
- The set-aside for Transportation Enhancements is eliminated.

A State's STP allocation is further subdivided according to Federal-aid provisions. These are discussed in the following Sections.

STP funds both urban and rural provides up to 80% funding for improvements.

4-1.02(b) Urban

Urban areas receive an STP sub-allocation based on the state's urban population. Illinois identifies these funds as "STU." Urban areas are those areas identified by the U.S. Census Bureau as having a contiguous population of 50,000 or more (urbanized areas) or 5,000 or more but less than 50,000 (small urban areas). The urban area boundaries are established by the State, in cooperation with the Metropolitan Planning Organizations (MPOs) and other appropriate local officials and approved by FHWA. For the STU sub-allocation, the distribution formula segregates urban population densities into the following two categories:

- Areas with population greater than 5,000 but no more than 200,000; and
- Urbanized areas with population greater than 200,000.

The STU sub-allocation provides specific funding amounts for each urban area nationwide with populations exceeding 200,000. There are six metropolitan areas in Illinois meeting the 200,000-population level — Chicago, Peoria, Rockford, Round Lake Beach, Quad Cities (Rock Island-Moline-Bettendorf-Davenport), and East St. Louis/St. Louis. There are eight areas in Illinois that have populations over 50,000 but less than 200,000. The Central BLRS (CBLRS) specifies the STU sub-allocation of funds based on percentages of population of the urban area.

By law, any urban area of over 50,000 must undertake a process to develop transportation plans and programs formulated based on transportation needs and with due consideration to comprehensive, long-range land use plans, development objectives, and social, economic, environmental, and energy conservation goals. The structure for this type of program must include a designated MPO agreed to by the local units of government and officially designated by the Governor as the recognized body. For those areas with population greater than 5,000 but no greater than 200,000, the CBLRS specifies the STU sub-allocation of funds based on percentages of population of the urban area. Further distribution of STU funds in these areas is coordinated by the designated MPO.

4-1.02(c) Rural

STP funds used in rural areas, all areas outside of urbanized, and small urban areas are identified by Illinois as "STR".

Prior to the recent federal highway authorization bills, four counties in District One (Will, Kane, Lake, McHenry) received funds that were provided for improvement to Federal-aid Secondary (FAS) designated routes. An agreement was reached by the Illinois Department of Transportation (IDOT) and the four District One counties to distribute a minimum of \$2 million of STR funds per year to the counties as replacement funds for FAS funds that are no longer available.

District One distribution of STR funds by IDOT is determined as follows:

- 50% of the annual allotment is allocated equally to the counties; and
- 50% of the annual allotment is allocated based on the proportion of total population per county.

The formula for distribution of the STR funds to Districts 2 through 9 is as follows:

- 10% divided equally among the downstate counties, Districts 2 through 9; and
- the balance being allocated to the downstate counties on the basis of the following three factors with equal weight being given to each factor:
 - + non-urban area,
 - + non-urban population, and
 - + non-urban mileage (total all systems).

Federal requirements stipulate that up to 15% of the STR sub-allocation can be spent on rural minor collectors.

4-1.02(d) Bridges

STP funds may be used to replace or rehabilitate bridges (e.g., structures longer than 20.0 ft (6.1 m) on any public road. Allowing STP funding for work on a bridge is intended to reduce the number of bridges on the STP-Bridge eligibility list. See [Section 6-1](#) for the definition of a bridge.

4-1.03 Safety

4-1.03(a) The Highway Safety Improvement Program (HSIP)

HSIP is a core Federal-aid funding program with the goal of achieving a significant reduction in traffic fatalities and serious injuries on all public roads. Highway safety improvement projects correct or improve a hazardous road location or feature or address a highway safety problem.

See IDOT's website for additional information on the [Illinois Highway Safety Improvement Program \(HSIP\)](#).

4-1.03(b) High Risk Rural Roads (HRRR) Special Rule

The *FAST Act* also continues the High Risk Rural Roads (HRRR) Special Rule, which requires states in which the fatality rate on rural roads increased over the most recent two-year period to obligate a specified amount of funds toward HRRR safety projects in the next fiscal year. This penalty is not additional money allocated to the state, but instead a portion of the HSIP amount the state already receives. During HRRR penalty years, Central Bureau of Local Roads and Streets must identify HSIP projects that qualify as HRRR projects that: 1) are located on a rural major/minor collector on a local road; and 2) fall outside of an urbanized area.

4-1.03(c) Local Rail/Highway Grade Crossing Safety Program

The federal rail safety program is a set-aside of the federal HSIP funds to reduce the number of fatalities and serious injuries at public highway-railway crossings through the elimination of hazards and/or the installation/upgrade of warning devices at crossings. These include flashing light signals and gates, circuitry upgrades, or approach work at railroad/highway grade crossings. IDOT selects eligible rail safety projects on the local highway system. See [Section 40-2](#) for more information on safety at railroad/highway crossings.

The program provides up to 90% federal funding for improvements.

4-1.04 Transportation Alternatives (TA)

The *FAST Act* eliminates the *MAP-21* Transportation Alternatives Program (TAP) and replaces it with a set-aside of STP funding for Transportation Alternatives (TA). These set-aside funds include all projects and activities that were previously eligible under TAP and covers the Illinois Transportation Enhancement Program (ITEP), the Illinois Safe Routes to School Program (SRTS), and the Recreational Trails Program (RTP). Fifty percent of the State's apportionment of TA is sub-allocated to areas based on their population, with the remaining 50% for anywhere in the State.

Metropolitan Planning Organizations (MPOs) of urbanized area with populations over 200,000 will administer the sub-allocation of TA funds through a competitive process and select the projects from eligible entities in consultation with IDOT.

The remaining TA funds will be administered through IDOT under ITEP, SRTS, RTP.

4-1.04(a) Illinois Transportation Enhancements Program (ITEP)

ITEP encompasses a broad range of activities that go beyond the traditional accommodations for cars, trucks, and transit. However, these projects must relate to surface transportation.

ITEP projects are eligible for up to 80% federal funding, except for the purchase of right-of-way, which is funded at up to 50% of federal funds. The Office of Planning and Programming (OPP) is responsible for determining which projects are eligible for ITEP funds.

See IDOT's website for additional information on the [Illinois Transportation Enhancement Program \(ITEP\)](#).

4-1.04(b) The Illinois Safe Routes to School Program (SRTS)

SRTS is a federally funded program which supports projects and programs that enable and encourage walking and bicycling to and from school. The program applies to schools serving grades Kindergarten through 8th grade. The program provides up to 80% federal funding for infrastructure and non-infrastructure projects.

See IDOT's website for additional information on the [Illinois Safe Routes to School Program \(SRTS\)](#).

4-1.04(c) Recreational Trails Program (RTP)

The *FAST Act* continues the Recreational Trails Program (RTP) as a set-aside of TA to provide funds to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. This program will continue to be administered by the Illinois Department of Natural Resources (IDNR). RTP projects are eligible for up to 80% federal funding.

4-1.05 Illinois STP - Bridge Program

MAP-21 eliminated the Highway Bridge Program (HBP) as a core funding program. IDOT, along with the Illinois Association of County Engineers (IACE), and the Public Works Committee of the Illinois Municipal League (IML), have found consensus that the HBP process for distribution of funds based on deficient square footage of bridge area is a sound and equitable premise for fund allocation. The Department has therefore decided to continue using this process for fund allocation through the Illinois STP-Bridge Program.

Illinois STP-Bridge funds provides up to 80% funding for improvements.

4-1.05(a) General

The Illinois STP-Bridge Program (STP-Bridge) provides funds for bridges that are structurally deficient and/or functionally obsolete and have a sufficiency rating of 80 or less and are located on a public road. A bridge is defined as any structure having a length greater than 20.0 ft (6.1 m). See [Section 6-1](#) for the definition of a bridge.

A bridge is structurally deficient if the deck, superstructure, substructure, or culvert has an evaluation rating of 4 or less, or if the structural evaluation or waterway adequacy has an appraisal rating of 2 or less. The bridge is functionally obsolete if the deck geometry, underclearances, or the approach roadway alignment has an appraisal rating of 3 or less, or if the appraisal rating for structural evaluation or waterway adequacy is 3. These evaluation and appraisal ratings and the sufficiency rating can be found in the Illinois Structure Information System (ISIS) as discussed in [Section 6-2](#). A STP-Bridge eligible bridge having a sufficiency rating of 80 or less is eligible for rehabilitation. A STP-Bridge eligible bridge that has a sufficiency rating of less than 50 is eligible for replacement.

In addition to the eligibility requirements above, there are also limitations to the type of work that may be completed based on the functional classification for the roadway which the bridge carries. The STP-Bridge Program funds may be used to rehabilitate or replace any eligible bridge located on a roadway with a functional classification of at least a major collector. The STP-Off System Bridge Program funds may be used to rehabilitate or replace any eligible bridge located on a minor collector or local road.

As with the discontinued Highway Bridge Program, the purpose of this program is to remove structurally deficient and functionally obsolete bridges from the inventory. As such, STP-Bridge funds may not be used to rehabilitate or replace small structures or replace a small structure with a bridge. The STP-Bridge funds also may not be used to construct a small structure or bridge where one does not already exist.

In addition to rehabilitating or replacing eligible bridges, the following work is eligible for the use of STP-Bridge funds:

- approach roadways pursuant to Section 4-1.03(d);
- bridge painting (spot painting is not eligible) – sufficiency rating (SR) of 80 or less can be funded as a sole item of work;
- seismic retrofit – no SR restriction; can be funded as a sole item of work;
- historic bridges – inventory for historic significance and preservation in accordance with 23 U.S.C. 144(o);
- bridge inspection – routine NBIS, fracture critical, special, damage and underwater bridge inspections are eligible, including underwater scour evaluation, training, and equipment purchase, and/or rental;
- initial cost for posting signs immediately adjacent to the bridge;
- anti-icing/de-icing applications – the bridge must be STP-Bridge eligible; and
- scour countermeasures – countermeasures must be designed but may be used at any structure with scour problems or potential scour problems.

Removal of an eligible bridge without replacement, or without replacement with an eligible bridge, may also qualify for funding as long as the through roadway is maintained. The eligible bridge may be replaced with a non-eligible bridge (AASHTO length less than or equal to 20.0 ft (6.1 m),

but in such a case only portions of the project germane to the removal of the bridge are eligible for STP-Bridge funding.

Bridges that have been closed for greater than five years will not be included in the calculations to determine an individual county's STP-Bridge allotment. These structures will have their Bridge Status, Illinois Structure Information System (ISIS) Item 41, coded as "E – Closed, Permanent Closure." The eligibility of the bridge will be restored when the bridge owner places the bridge replacement / repair project into their highway improvement program. The Bridge Status will then be changed to "B – Closed, replacement/repair anticipated within 5 years."

4-1.05(b) Approach Limits for STP-Bridges Projects

1. The following shall be considered in establishing reasonable touchdown points for approach work to be funded with STP-Bridge funds. These requirements include the following:
 - a. Replacement. Total replacement of a structurally deficient or functionally obsolete bridge with a new facility constructed in the same general traffic corridor. A nominal amount of approach work, sufficient to connect the new facility to the existing roadway or to return the gradeline to an attainable touchdown point in accordance with good design practice is also eligible. The replacement structure must meet the current geometric, construction and structural standards required for the types and volume of projected traffic on the facility over its design life.
 - b. Rehabilitation. The project requirements necessary to perform the major work required to restore the structural integrity of a bridge, as well as work necessary to correct major safety defects, are eligible except as noted under ineligible work. Bridges to be rehabilitated both on or off the Federal-Aid System shall, as minimum, conform with the provisions of 23 C.F.R. § 625, Design Standards for Federal-aid Highways, for the class of highway on which the bridge is a part.
 - c. Ineligible Work. Except as otherwise prescribed by the Department, the costs of long approach fills, causeways, connecting roadways, interchanges, ramps, and other extensive earth structures, when constructed beyond the attainable touchdown point, are not eligible under the STP-Bridge program.
2. The following guidelines shall be used in establishing reasonable touchdown points:
 - a. Existing Location (Bridge Project Only). When replacing or rehabilitating a bridge to current Department standards on existing grade and location, all approach work items required to transition back into the existing roadway and safety appurtenances pertaining to the bridge are eligible. The cost of any temporary detour required to maintain traffic while the structure is being built is eligible.

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- b. Existing Location (Roadway Project with Bridge Included). This applies to projects that upgrade a roadway that also results in rehabilitation or replacement of an eligible bridge. When replacing or rehabilitating a substandard bridge to minimum standards or greater, on existing grade and location, bridge work items will be limited to 50 ft of approach work at beginning and end of bridge. All approach work items in the 100 ft are eligible for consideration for STP-Bridge funding. (This allows the coverage of the cost of approach slabs, select material behind the abutments, guardrail attachments and other approach work items.) If a detour is required, associated roadway costs required to maintain traffic while the structure is being built are eligible. This section applies to a roadway segment project which has a bridge project included within it.
 - c. New Location. When replacing a bridge that must be raised or relocated due to substandard vertical and horizontal alignment, substandard clearances, hydraulic design issues, constructability issues, etc., the minimum amount of approach roadway work necessary to tie the relocated alignment back into the existing roadway is eligible. The alignment will conform to current Department standards based on the functional classification and projected traffic volumes for that particular roadway.
3. In accordance with previous paragraphs 1 and 2 of this Section, every deficient bridge scheduled for rehabilitation or replacement shall be evaluated individually by the LPA to establish reasonable touchdown points for approach work. IDOT may approve the reasonable touchdown points for eligible bridges if the total length of the approach work does not exceed 1,200 ft.

4-1.05(c) Waiver Process for STP-Bridge Program

1. Sufficiency Rating. Under the Illinois STP-Bridge Program, eligible bridges with a sufficiency rating between 50.0 and 80.0 are eligible for rehabilitation work only. However, if the LPA with jurisdiction over the bridge prefers to do a bridge replacement, the LPA is required to submit a waiver request to the Department for review and approval. Justification for replacement of the structure versus rehabilitation is required as part of the waiver request. Requests should be initiated through the appropriate District Local Roads and Streets office and directed to the Local Bridge Unit (LBU) within the IDOT Central Bureau of Bridges and Structures (BBS).
2. Touchdown Points. If the LPA determines that the reasonable touchdown points should exceed the criteria in Section 4-1.05(b) Item 3, the project shall be submitted to IDOT with supporting documentation for review and approval. The issue may also be addressed at a federal project coordination meeting. A statement from the county engineer that all elements are designed to the operating speed, which does not exceed the posted or statutory speed, shall be considered sufficient documentation by both IDOT that the touchdown points are reasonable.

4-1.06 Illinois Major Bridge Program

IDOT dedicates federal funds from the NHPP and/or STP programs for its Major Bridge Improvement Program. Bridges under the jurisdiction of a LPA and eligible for STP-Bridge funding that have a total project cost for all engineering, utilities, land acquisition, and construction for replacement or rehabilitation of more than \$1,000,000 are candidates for this Program. Funds for this Program can only be used to fund up to 80% of the construction and construction engineering. The LPA is responsible for the cost of preliminary engineering, land acquisition, utilities, and other pre-construction activities. All other requirements of STP-Bridge are applicable.

4-1.07 STP-Bridge Soft Match Credit Program

Illinois allows up to 80% of the State and local source amount expended on off-system bridge construction to be credited to the non-federal share of STP-Bridge eligible bridge replacement or rehabilitation projects. The bridge work must follow the structural design policies for the STP-Bridge funding program as defined in the Section 4-1.05 and [Chapter 36](#).

4-1.07(a) Purpose

One of the primary objectives of this Program is to provide an alternative process for counties to remove deficient bridges from the bridge inventory. Although the design requirements applicable to the STP-Bridge apply, the Program allows a number of requirements that would apply to projects receiving STP-Bridge funds to be waived. The federal contract requirements and clearances by federal agencies are waived, but all State and local contract requirements and clearances must be met.

The criteria and guidelines for approval of the STP-Bridge Soft Match Credit Program are provided in the following Sections.

4-1.07(b) Project Eligibility

To be eligible for the STP-Bridge Soft Match Credit, the bridge must meet the following criteria:

1. The bridge must be on the Illinois STP-Bridge Selection List. See Section 4-1.05 for STP-Bridge eligibility requirements.
2. The bridge must be on a road with a functional classification of a local road or rural minor collector.
3. The bridge must not have been replaced nor had major rehabilitation within 10 years of the planned new construction date, regardless of type of funds used.
4. The bridge must not be controversial. The following items may raise concerns and can be used for general guidance in determining whether a bridge is controversial:
 - unresolved right-of-way agreements/acquisition,
 - historic bridge implications,
 - environmental problems,

- permit problems/delays, and/or
 - pending/potential lawsuits.
5. Only construction from back-to-back of abutment is eligible for credit, using the same basis as items that are designed based on [Section 36-2](#) structural guidelines.
 6. Only actual construction (e.g., hard construction) costs are eligible for earning credit. Right-of-way acquisition, preliminary engineering, and construction engineering are not eligible.

4-1.07(c) Submittal and Crediting Process

In addition to normal bridge project submittal requirements, the county desiring the STP-Bridge Soft Match Credit must submit the following items to the district:

1. Planning. During the preliminary engineering phase, submit the following:
 - a. A request for consideration of the project for the Program from the county engineer. See Figure 4-1A for a sample request and certification letter.
 - b. A certification by the owner and county engineer stating the project is not controversial. See Figure 4-1A for a sample request and certification letter.
 - c. A Bridge Condition Report must be submitted and approved in accordance with Section 10-2. Department waivers must be requested for exceptions to the STP-Bridge policy for credit structures, when required (e.g., replacement of a structure with a sufficiency rating of 50 or greater).
2. Project Completion. After the project is completed, the district is responsible for forwarding the following items to the CBLRS.
 - a. a certification by the county engineer that the project being considered has been constructed in accordance with the design standards applicable to the STP-Bridge, that the structure has been added to the inventory and is not deficient (i.e., deck, super and substructure appraisal ratings are 6 or higher), and geometrics are sufficient;
 - b. Form [BLR 13510](#), Final Report, Notice of Completion and Acceptance of Improvement Constructed Under the Illinois Highway Code; and
 - c. notification of final eligible construction cost of the bridge within the guidelines of this policy. See Figure 4-1B for an example Notification of STP-Bridge Soft Match Credit Eligible Cost.

4-1.07(d) BLRS Responsibilities

Once the project has been completed, IDOT is responsible for completing the following tasks:

1. District. The district will:
 - make a final inspection of the project and document its completion; and

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- notify the CBLRS of the final eligible construction cost of the project upon completion.
2. Central BLRS. The CBLRS will conduct the following:
- maintain and credit a “special discount” in the name of the county for 80% of eligible costs of construction. Inform the districts annually of the county balances in the special accounts.

Approve and execute agreements with Federal authorization for STP-Bridge projects that utilize the STP-Bridge Soft Match Credit.

4-1.07(e) Use of the Soft Match Credit

The eligible costs may apply as credit toward the 20% local match required on Federal-aid bridge projects. This credit provision does not increase an agency’s allocation of HBP funds but will permit usage of funds already allocated to an agency at a rate up to 100%. The project should be included in the LPA and district highway programs at a HBP funding level of 100%.

If a county desires to use their Soft Match Credit on a project, they must submit a letter to the district indicating their desire to do so along with the cost estimate and project information. The federal share agreed to at the time of project authorization may not be increased by subsequent additions of off-system bridge credits. The Soft Match Credit can only be applied to the construction phase of a bridge project at the time of construction authorization.

Agreement language under “Division of Cost” for using the Soft Match Credit should be as follows:

**Illinois STP-Bridge = 100%*

**Soft Match Credit not to exceed \$_____ (This amount should be whatever the county wants, equal to or less than the current balance of credit for the county at the time of authorization.) with balance to _____ (This should be the name of the LPA or State.).*

[Name], Regional Engineer
Attn: Bureau of Local Roads and Streets
[District address]

[date]

Subject: STP-Bridge Soft Match Credit Request

[County name] County requests that Section **[number]** and Structure Number **[SN]** located **[bridge location]** be approved as an eligible STP-Bridge Soft Match Credit project. A Bridge Condition Report is attached.

I certify that the above project meets the criteria outlined in the Illinois Department of Transportation STP-Bridge Soft Match Credit program and that, to the best of my knowledge and belief, the bridge is non-controversial. I understand that if said project is deemed to be controversial, the project would not be considered eligible for the STP-Bridge Soft Match Credit program.

Sincerely,

[Name], County Engineer

Bridge Office Use Only:

Project is on the Illinois STP-Bridge Selection List

SAMPLE REQUEST AND CERTIFICATION LETTER

Figure 4-1A

[Name], Regional Engineer
Attn: Bureau of Local Roads and Streets
[District address]

[Date]

Subject: STP-Bridge Soft Match Credit Eligible Cost

[County name] County certifies that Section **[number]** and Structure Number **[SN]** located over **[location]** has been constructed in accordance with the design standards applicable to the STP-Bridge, that the structure has been added to the inventory and is not deficient.

I also certify that \$ **[cost]** is the final eligible construction cost of the completed project and understand that 80% of this amount will be credited to the county's STP-Bridge Soft Match Credit account upon approval by IDOT. A detailed breakdown of the eligible pay items and construction costs for back-to-back abutment is attached.

Sincerely,

[Name], County Engineer

NOTIFICATION OF STP-BRIDGE SOFT MATCH CREDIT ELIGIBLE COST

Figure 4-1B

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4-1.08 Congestion Mitigation and Air Quality Improvement (CMAQ)

The CMAQ Program provides a flexible funding source to State and local governments for transportation projects and programs designed to help meet the requirements of the Clean Air Act as amended in 1990. Funding is available to areas that do not meet the National Ambient Air Quality Standards (NAAQS). These are considered nonattainment areas. Funding is also available to areas that were previously in nonattainment but are now in compliance. These are referred to as maintenance areas. Funds are distributed to states based on a formula that considers an area's population by county and the severity of its air quality problems within the nonattainment and maintenance areas. Greater weight is given to carbon monoxide nonattainment and maintenance areas. Eligible activities for funding include:

- transit improvements,
- travel demand management strategies,
- traffic flow improvements, and
- public fleet conversions to cleaner fuels.

Illinois currently has two nonattainment areas, Chicago and Metro East, and one maintenance area, Jersey County eligible for funding under CMAQ.

4-1.09 Metropolitan Planning (PL)

The *FAST Act* continues *MAP-21's* approach to formula program funding, authorizing a lump sum total instead of individual authorizations for each program. Once each State's combined total apportionment is calculated, an amount is set aside for the State's Metropolitan Planning (PL) program via a calculation based on the relative size of the State's FY 2009 Metropolitan Planning apportionment.

PL funds are available for MPOs to carry out the metropolitan transportation planning process required by 23 U.S.C. 134, including development of metropolitan area transportation plans and transportation improvement programs. Eligible activities include conducting inventories of existing routes to determine their physical condition and capacity, determining the types and volumes of vehicles using these routes, predicting the level and location of future population, employment, and economic growth, and using such information to determine current and future transportation needs. Under 23 U.S.C. 134, MPOs are responsible for developing, in cooperation with the State and affected transit operators, a long-range transportation plan and a transportation improvement program (TIP) for the area. Both the plan and the TIP must be fiscally constrained. The TIP also must be prioritized, and consistent with the transportation plan, and must include all projects in the metropolitan area that are proposed for funding with either Title 23 or Federal Transit Act (Title 49, U.S.C., Chapter 53) money.

4-1.10 Federal Lands Access Program (FLAP)

In Illinois, FLAP provides funding for public land highways. The Shawnee National Forest in southern Illinois and the Midewin National Tallgrass Prairie in Will County contain the only Public Lands highways eligible for FLAP funds within the State. Illinois receives an allocation to be used on the Forest Highways. FHWA also makes discretionary funds available.

4-1.11 Construction of Ferry Boats and Ferry Terminal Program (FBP)

MAP-21 replaced the ferry boat discretionary program with a formula program. Discretionary program funds remain available to awarded projects and will be released as those projects are completed or a determination is made to cancel the award. Under *FAST Act*, the formula was changed and FBP funds are distributed to eligible entities based on the number of passengers carried (35 percent), vehicles carried (35 percent), and total route miles (30 percent). The federal share of FBP funds is 80%.

4-1.12 Emergency Relief (ER)

The ER Program provides funding to assist State and local governments with the expense of repairing serious damage to Federal-aid highways after FHWA has determined that natural disasters or catastrophic failures have occurred. Federal requirements specify that ER funds may only be used for emergency repairs to restore essential highway traffic, to minimize damage resulting from a natural disaster or catastrophic failure, or to protect the remaining facility and make permanent repairs. Emergency repairs are eligible for 100% federal reimbursement. The federal participation ratio for restoration work is 80%. Basic eligibility criteria are as follows:

1. The Governor must make a formal proclamation of the existence of a disaster.
2. There must be at least \$700,000 of eligible damage in the State.
3. Damage must be on a Federal-aid highway.
4. Damage must require work that is beyond "heavy maintenance" (e.g., work frequently performed by the applicant's maintenance crews).
5. Only sites with damage repair estimated to cost \$5,000 or more may be eligible.
6. Damage must have occurred as a direct result of the disaster.

For more information on the ER Program on Federal-aid highways, review the following documents or contact the district:

- *FHWA Emergency Relief Manual*, and
- *A Guide to the Federal-Aid Highway Emergency Relief Program*.

4-1.13 Federal Flexible Match (FFM)

Provisions introduced in TEA-21 and expanded/revised in subsequent federal highway bills allowed new flexibility to the Federal-Aid Highway Program's matching requirements by allowing certain public donations of cash, materials, and services to satisfy the local matching

requirements. Title 23 USC - “Highways,” Chapter 3 - “General Provisions,” Section 323 - “Donations and Credits,” outlines the legal basis for the FHWA Innovative Finance Management tool known as flexible match or soft match. Flexible match allows a wide variety of public and private contributions to be counted toward the non-Federal match (local match).

The following benefits may be realized through the Federal Flexible Match (FFM) Program:

- Acceleration of projects that receive donated resources,
- Allowing LPAs to reallocate funds that otherwise would have been used to meet Federal matching requirements, and
- Promoting public-private partnerships by providing incentives to seek private donations.

IDOT limits FFM credits to use during construction and construction engineering and recognizes up to 80% of the value of FFM as direct federal match. FFM does not increase the specific approved amount of federal funding awarded for projects selected through a solicitation process. In these cases, the additional federal funding will need to come from an approved LPA federal funding source, such as Surface Transportation Program funds. The FFM request should not be submitted unless federal funding is expected to be used for some portion of the project.

4-1.13(a) Eligible Items for Flexible Match

Flexible match may be used for federal highway programs except for the Emergency Relief Program. Flexible match can be applied toward all or any portion of the required matching share. This flexible match will only affect individual approved projects; carryover or credit of flexible match funds for other projects is not allowed. Figure 41-1C outlines the eligibility of flexible match donations or credits and their associated donors:

Type of Donation/Credit	Source of Donation/Credit	
	Private	Local Government
Funds ⁽¹⁾	Yes	Yes
Land or ROW ⁽²⁾	Yes	Yes
Materials ⁽³⁾	Yes	Yes
Services	Yes	Yes (In-House)

Notes:

- 1) Funds must be received prior to project authorization by FHWA.
- 2) Land may be donated by a non-governmental owner in accordance with 23 CFR 710.505 or contributed by a local government in accordance with 23 CFR 710.507. For any donated property that was originally acquired with federal funds, only the non-federal share of the property may be counted as the donation.
- 3) Federal “Buy America” requirements apply.

LPA FEDERAL FLEXIBLE MATCH (FFM)

FIGURE 41-1C

Donations or credits must be earned or given in a previous phase of the same project and clearly documented to be utilized as flexible match. Anticipation of flexible match will not be allowed. For example: preliminary engineering (PE) or land acquisition may be applied to construction, but construction items cannot be applied to PE or land acquisition. If material cannot be stockpiled near the jobsite, it may not be applied as credit during construction which utilizes that material. However, after the material is accepted, in-place, and its value clearly documented, application to use the material donation as a credit in a later stage of the project which has not yet received federal authorization might be permissible. Material contributed to a project needs approval for it to be required in a construction contract.

The donations or credits may consist of funds, land, materials, equipment rental, and/or services that are directly associated with the specific project. Only that portion germane to the project will be eligible for FFM credit. These flexible match donations must not have been used as match for any other federally-funded project. Also, the dollar amount of the in-kind donations must be included in the total project cost; these in-kind donations cannot both reduce the project cost and be used as flexible match.

4-1.13(b) Required Documentation

LPAs should notify IDOT, by letter through the District BLRS office, as early in the project as possible of their intent to utilize FFM. A proposed project description and funding schedule (see Figure 4-1D) should also accompany this letter. IDOT will in turn request FHWA concurrence with the LPA's intent. This letter of intent to utilize FFM on a project should be submitted prior to, and separate from, the request to approve the dollar amount of FFM earned for the project.

It is the responsibility of the LPA to maintain adequate records and documentation to verify the flexible match on any given project. The fair market value of the non-monetary donations to be used on a project must be determined and documented by the LPA to be considered for flexible match. Land must be appraised to determine fair market value by an IDOT-approved appraiser. If the value of a land parcel is less than \$10,000 it may be appraised by the County Engineer or Municipal Engineer for their projects. Contributions of land can be by fee title or any lesser property interest, i.e., dedicated right-of-way. Materials must be based on actual cost to obtain including delivery. The services must be based on the local prevailing wage rate or actual LPA expenditures with supporting invoices or time cards. All documentation supporting the claimed flexible match amount must be submitted and approved by FHWA prior to authorization for utilizing the flexible match.

Preliminary engineering performed by consultants can only be considered when the work performed is a donation from the private entity. Preliminary engineering provided by LPA employees may be used as FFM for all federal programs except Emergency Relief and will be approved based on actual expenditure documentation.

Upon completion, a local city official, county engineer, or consultant that has been contracted by the local authority to act as the same, will certify the flexible match items have been completed in accordance with all applicable guidelines. This certification should be submitted with all documentation required to justify the requested FFM amount.

	<i>Project Phase</i>	<i>Total</i>	<i>Federal Funds Used (80% Fed + FFM)</i>	<i>% Federal Funds</i>	<i>Local Funds or Contribution</i>	<i>% Local</i>
Step 1: FFM Earned	Land Acquisition	\$20,000	\$0	0%	\$20,000	100%
Step 2: FFM Applied	Construction	\$100,000	\$80,000 + \$16,000 or \$96,000	96%	\$4,000	4%
Summary		\$120,000	\$96,000	80%	\$24,000	20%

<i>FFM Earned (80% of Local Contribution)</i>	<i>FFM Applied (Additional to 80% Fed)</i>
\$16,000	
 	\$16,000

**LPA FEDERAL FLEXIBLE MATCH (FFM)
FIGURE 4-1D**

To allow sufficient time for review and approval, LPAs must submit all final FFM documentation preferably in a single submittal to the District prior to the date of federal authorization. This should be done far enough in advance to allow sufficient time for review by IDOT and approval by FHWA. No changes to the FFM amount will be allowed after final award of the contract.

4-1.13(c) Implementation Procedures

Prior to proceeding with a project that utilizes FFM, FHWA approval is required. The initial funding schedule submitted through the district with the LPA's intent to use FFM letter (as well as the cost estimate submitted at the same time as the joint agreement) should show the type, source, and amount of FFM, and the phases in which it is anticipated to be donated and applied. MPO guidelines should be followed for use of FFM on Surface Transportation Program and Congestion Mitigation and Air Quality Program funds within their respective areas. This FFM cost estimate is to be submitted by the LPA to the IDOT District BLRS.

4-1.14 Miscellaneous

4-1.14(a) High Priority Projects (prior to *MAP-21*)

High Priority Projects are those that are specified by the Congress. The total of High Priority funds available nationwide in a given year are a specified percentage of the total allocated under federal funding.

4-1.14(b) National Scenic Byways Programs (prior to *MAP-21*)

Federal funds are allocated for research and marketing projects to assist the byways of Illinois. SPR funding is allocated annually and must be completely utilized before a byway can reapply for the next year's funding allotment. Scenic Byways are designated on the criteria that they have scenic cultural, national, recreational, or archeological qualities. Illinois currently has designated seven National Scenic Byways — Meeting of the Great Rivers, the Great River Road, the Lincoln Highway, the Historic National Road, the Illinois River Road, Route 66, and the Ohio River Scenic Route.

4-1.14(c) Bridge and Tunnel Inspection

To provide for continued improvement to bridge and tunnel conditions essential to protect the safety of the traveling public and allow for the efficient movement of people and goods on which the U.S. economy relies, *MAP-21* required inspection and inventory of highway bridges and tunnels on public roads. No dedicated funds are provided for inspections, but it is an eligible use of NHPP, STP, HSIP, and Research funds.

4-1.14(d) Storm Sewers

Work on a highway project involving the construction, repair, rehabilitation, or replacement of storm sewers and combined sewers (when permitted by law) is eligible for Federal-aid funding for sewers that are structurally deficient. Generally, participation will be based on the sewer size needed solely for highway purposes.

4-1.14(e) Bicycle Facilities

The implementation of pedestrian and bicycle accommodations may be authorized for Federal-aid participation as either incidental features of highways, or as independent projects, where all the following conditions are satisfied:

1. The safety of the motorist, bicyclist, and/or pedestrian will be enhanced by the project.
2. The project is initiated or supported by the appropriate State and local highway agencies and/or the Federal Land Management Agency. Projects must be located and designed pursuant to a plan, which provides due consideration for safety and contiguous routes.
3. Independent bicycle projects, incidental bicycle projects, and non-construction bicycle projects must be principally for transportation rather than recreational use, and must meet the project conditions for authorization, where applicable.
4. A public agency has formally agreed to:
 - accept the responsibility for the operation and maintenance of the facility;
 - ban all motorized vehicles, other than maintenance vehicles or snowmobiles, where permitted by State or local regulations, from pedestrian walkways and bicycle paths; and
 - ban parking, except in the case of emergency, from bicycle lanes that are contiguous to traffic lanes.
5. The estimated cost of the project is consistent with the anticipated benefits to the community.
6. The project will be designed in substantial conformity with the latest official design criteria.

4-1.14(f) Value Engineering

Value Engineering (VE) is the systematic application of recognized techniques by a multi-disciplinary team to identify the function of a product or service, establish a worth for that function, generate alternatives through the use of creative thinking, and provide the needed functions to accomplish the original purpose of the project, reliably and at the lowest life-cycle cost without sacrificing safety, necessary quality, and environmental attributes of the project. The purpose of VE is to improve project quality, reduce project costs, foster innovations, eliminate unnecessary and costly design elements, and to ensure efficient investments. VE is applicable to all Federal-aid highway projects with an estimated cost of \$50 million or more and all federal-aid bridge projects with an estimated cost of \$40 million or more. Local projects utilizing VE should be coordinated with the District VE Coordinator at the initiation of the project. See [Section 17-2](#) for VE Procedures.

4-1.14(g) Asset Management

Asset management is a business process and a decision-making framework that covers an extended time horizon, draws from economics as well as engineering, and considers a broad range of assets. The asset management approach incorporates the economic assessment of trade-offs among alternative investment options and uses this information to help make cost-effective investment decisions.

In accordance with Section 303, Title 23, United States Code (U.S.C.) Federal funds may participate in the costs incurred by local highway agencies for management systems related to the development, establishment, and implementation of a system for managing each of the following:

- Highway pavement of Federal-aid highways
- Bridges on and off Federal-aid highways
- Highway safety
- Traffic congestion
- Public transportation facilities and equipment
- Intermodal transportation facilities and systems

The management systems listed above and the data collection and data management that support these systems are funded as a direct project cost. Costs associated with updating data components may be considered necessary expenses associated with running a functioning management system, but in implementing the management system, it may be necessary to augment the system data with updated annual or biennial data collection.

4-2 STATE PROGRAMS

4-2.01 General

The State of Illinois provides funding to local governments for transportation-related improvements under a variety of programs. Section 4-2 provides a brief discussion on these various sources of funding. In all cases, any interested parties should contact the district for more information on these Programs.

4-2.02 Township Bridge Program (TBP)

4-2.02(a) Source and Distribution

[605 ILCS 5/6-901](#) provides a State-funded program of \$15 million per year to construct bridges on the township or district road system. Funds appropriated to IDOT for this Program are apportioned to the counties in the same manner as MFT revenues for the use by road districts. Each county will subsequently allocate these funds to all eligible road districts in that county. The allocation to the road districts will be made in the same manner and be subject to the same conditions as are MFT revenues allocated for use of the district road system. However, no allocation will be made to any road district that has not levied taxes for road and bridge purposes at the maximum rates permitted without referendum as established by each individual section: [605 ILCS 5/6-501](#), [605 ILCS 5/6-508](#), and [605 ILCS 5/6-512](#). The rate will be determined by dividing the current year's tax levy amount by the previous year's assessed valuation, as adjusted. The district road system may permanently transfer, into the regular road fund ([605 ILCS 5/6-501](#)), joint bridge tax fund ([605 ILCS 5/6-508](#)), or county unit road tax ([605 ILCS 5/6-512](#)), a sufficient amount of money so that the levy and/or the transfer are at least equal to the maximum rates permitted without referendum. Road districts not currently levying the required rate because of the Property Tax Extension Limitation Law (PTELL) are eligible if they were levying at the required rate prior to PTELL and continue to levy the maximum amount after the imposition of PTELL.

For every \$4 of State TBP funds used, \$1 of local funds must be committed to the project. Local funds are defined as any other source of funds available to the district road system other than federal and State funds that have been appropriated through IDOT.

Funds apportioned but not obligated by the LPA within 48 months of the date when the apportionment is made, will lapse. Funds that have lapsed will not be available to the county treasurer for use by the road districts but, instead, will be deposited in the Township Bridge Lapse Pool; see Section 4-2.03.

4-2.02(b) Use of TBP Funds

The following will apply to the use of TBP Funds:

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1. Project Scope. TBP provides State funding for the construction or rehabilitation of bridges 20 ft (6 m) or more in length, measured back-to-back of the abutment along the roadway centerline on the district road system, including a reasonable vertical and horizontal approach. It also includes the necessary engineering and right-of-way costs to complete the project.
2. Project Selection. The highway commissioners, in cooperation with the county engineer, are responsible for selecting the bridges to be constructed based on the following (in order of priority) ([605 ILCS 5/6-902](#)):
 - safe and expeditious transportation of school pupils,
 - movement of agricultural equipment and products,
 - rural free delivery mail routes, and
 - meeting anticipated traffic needs of the general public.
3. Use in Combination with Other Funds. Funds allocated through the Program may be used in conjunction with any other source of funds to complete a project. This includes matching of federal funds for bridge projects. The only condition is that at least for every \$4 of the TBP fund, \$1 must come from local funds ([605 ILCS 5/6-905](#)). Local funds are defined as any other source of funds, including MFT, available to the road district other than federal and State funds that have been appropriated through IDOT.
4. Funding Limitations. Project costs are eligible for payment from those available funds apportioned prior to the award of the contract for the project. Exceptions that may be funded considering subsequent apportionment are indebtedness ([605 ILCS 5/6-903](#)) and contract additions.

4-2.03 TBP Lapse Pool

Pursuant to [605 ILCS 5/6-906](#), funds apportioned to the counties for the Township Bridge Program are considered lapsed if they are not obligated within 48 months to the date of the apportionment. IDOT has established an administrative program whereby allocated TBP funds that have lapsed are placed in a TBP Lapse Pool. This fund provides additional monetary assistance to townships that have insufficient financing for larger bridges that are beyond the normal scope of the Township Bridge Program. The State will provide a maximum of 80% of the construction and construction engineering cost. The LPA must provide the remaining 20%.

The following items are considered when evaluating candidates for this funding:

1. Posting. Structures with low load postings or closures receive a higher priority than non-posted structures.
2. Average Daily Traffic Volume (ADT). Structures with traffic volumes less than 25 ADT are generally eliminated from consideration.
3. Adverse Travel. Longer adverse travel required by a bridge closure receives a higher priority.

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4. Cost. Structure replacement costs greater than 2 years of TBP allotment to the county receives higher priority.
5. Safety. Information pertaining to crashes or hazardous conditions and how they will be rectified will be considered.
6. School and Mail Routes. Routes used for schools or mail delivery receive a higher priority.
7. Growth. New growth, either residential or industrial, relating to increased traffic is considered.
8. Letting Dates. Preference is given to those structures that can be replaced within 1 year.

4-2.04 Illinois Grade Crossing Protection Fund (GCPF)

Safety at railroad/highway grade crossings has long been a matter of public concern. The extreme severity of grade crossing crashes creates a safety issue of major significance.

Each month, \$3,500,000 from the MFT fund, see Section 4-3, is deposited into an account in the State Treasury, known as the Grade Crossing Protection Fund (GCPF), for the improvement of railroad/highway crossings on local highway systems. Each fiscal year not less than \$12,000,000 must be used for the construction or reconstruction of rail/highway grade-separation structures. Up to \$2,000,000 per year can be spent on pedestrian overpasses and underpasses. The normal maximum GCPF for a project is \$12,000,000.

Additionally, GCPF are available for incentive payments to local highway agencies in exchange for the closure of existing highway/rail grade crossings. Depending on the level of vehicular traffic, the incentive payments can range from \$50,000 to \$70,000.

The Illinois Commerce Commission (ICC) may also order up to \$2,000,000 per year in GCPF for the improvement of grade crossing surfaces and up to \$300,000 per year for the maintenance and renewal of 4 quadrant gate vehicle detection systems located at non high-speed rail grade crossings.

Funds can only be used upon approval from ICC and for projects that improve the safety of at-grade crossings and grade-separation structures. GCPF can be used for improvements at railroad crossings on the county, township, road district, and municipal road and street systems. However, the fund cannot be used for improvements at railroad crossings on the State highway system.

Through a cooperative effort of ICC, IDOT, railway companies, and LPAs, hazardous crossing locations are identified and, where practical, corrective measures are funded by the program. GCPF is primarily used for the following types of improvements:

- the construction or upgrade of crossing protection (e.g., new or additional signals, gates, circuitry upgrades);
- the construction or improvement of any highway necessary for access to property due to a crossing closure; and/or

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- the construction, reconstruction, relocation, or removal of grade-separated structures.

Figure 4-2A summarizes the typical cost divisions for grade crossing improvements. Additional information on the GCPF can be found at the [ICC website](#).

Improvement Type	GCPF (%) ⁽¹⁾	LPA (%) ⁽²⁾	Railroad Company (%)
Signal Installation	85	10	5
Bridge Replacement (no Federal funds)	60	30-40	0-10 ⁽⁴⁾
Bridge (with Federal funds)	Up to 60	Remainder ⁽³⁾	0 -10 (Lump Sum) ⁽⁵⁾
New At-Grade Crossings with Signals	50	50	0
New At-Grade Crossing with Surface	0	100	0

Notes:

- (1) Typically, all GCPF portions are not to exceed a lump-sum amount, with another party being apportioned any remaining costs over and above the estimated cost.
- (2) The LPA contribution may be waived in exchange for a crossing closure at a second location.
- (3) This portion may be funded under the Illinois STP-Bridge Program, the Surface Transportation Program (STP), Township Bridge Program (TBP), and/or other federal, State, or local funds.
- (4) The railroad company's contribution is dependent upon its existing bridge maintenance responsibilities.
- (5) The railroad company's contribution is voluntary unless the new bridge replaces a grade crossing protected by active warning devices. A minimum 5% contribution from the railroad is required for these projects.

These cost distributions are typical; ICC will determine the actual cost distributions.

GRADE CROSSING PROTECTION FUND ALLOCATIONS

Figure 4-2A

4-2.05 Economic Development Program (EDP)

EDP funds provide State assistance for highway improvements that provide access to new or expanding industrial, distribution, or tourism developments. The primary intent is to make available State matching funds that will be a positive contribution in the location and selection process and to target those projects that will aid in expanding the State's existing job base and create new employment opportunities. EDP is designed to assist where the development of these facilities is imminent. Ineligible projects include those that only provide access to retail establishments, that only improve opportunities for future development, or that are speculative in nature. This Program is administered jointly by OPP and the CBLRS.

EDP provides up to 50% in State funds for costs to improve access to eligible sites. The remaining funds must be provided by local or private sources. The basic funding arrangement may be altered on a case-by-case basis for projects that include improvements on roads under State jurisdiction. When work is on a State highway, the State funds will pay up to 100% of eligible costs. However, if there are no local routes included in the overall project, the funding split is 75% state and 25% local. For a project to be eligible for EDP funds there must be some local funding included in the project.

Local matching funds may consist of local road and bridge tax funds, the LPA's MFT allocation, or other local revenues. Funds obtained from the Truck Access Route Program (TARP), Section 4-2.06, can also be applied to the local matching funds. Local matching funds cannot include grant funds received from other State agencies.

See IDOT's website for additional information on the [Economic Development Program \(EDP\)](#).

4-2.06 Truck Access Route Program (TARP)

TARP funds assist LPAs in constructing or upgrading highway systems to accommodate 80,000-pound (36,000-kg) trucks. Projects must connect to a designated truck route, municipality, or truck generator with another designated truck route or municipality (unless phase construction is approved). The LPA must pass a resolution designating the road as a Class II or Class III truck route and post signs with that designation at the completion of the project; see [Section 3-2](#).

TARP is designed to help pay the cost difference of constructing or upgrading local highways to meet additional weight and geometric requirements. The State provides up to \$45,000 per lane-mile and \$22,000 per qualifying intersection or up to 50% of the entire project cost, whichever is less. The State's share of the cost is not to exceed \$900,000 per project. TARP funds may be used on a route that is already a Designated Truck Route, so long as the route has not been upgraded to 80,000-pound requirements previously, and the proposed improvements are TARP eligible.

The CBLRS administers TARP. TARP funds may also be used in conjunction with the Economic Development Program (EDP) on eligible projects.

See IDOT's website for additional information on the [Truck Access Route Program \(TARP\)](#).

4-2.07 State Matching Assistance (SMA) Program

The SMA Program is designed to assist counties in matching federal funds when the county cannot derive sufficient matching funds from local taxation. Counties receive a Surface Transportation Program Rural (STR) allotment that may be used to fund up to 80% of eligible project costs. Counties can levy a Federal-aid matching tax to use for the local share. Although an 80/20 federal/local matching ratio is allowable for STR projects, a lower matching ratio is more equitable when determining the need for matching funds because the counties receive other Federal-aid funds (e.g., STP-Bridge) that require a local match. Some counties do not have a sufficient tax base to generate the local funds needed for the match. The SMA Program provides \$4 million per year addressing this problem.

The county is required to levy a Federal-aid matching tax of at least 0.045% to be eligible for assistance. To receive the maximum amount, the county is required to have a tax rate of 0.05%. If the rate is 0.045%, the allocation is 90% of the maximum. If the rate is between 0.045% and 0.05%, the assistance is prorated. If the rate falls below 0.045%, the county may retain its eligibility for assistance if a permanent transfer of funds from a non-highway fund to the Federal-aid matching tax fund is made to meet the equivalent of the minimum eligibility threshold.

The maximum assistance amount for each county is established as the difference between the amount required to match the county's STR allotment using a computer-generated Federal/local matching ratio and the funds generated by the county's Federal-aid matching tax. This matching ratio is variable each year and is generated to result in the use of the entire SMA amount. All counties with a short fall under this formula receive full funding of the shortfall.

The amount of funds received by each county varies from year-to-year. The variable amount of STR funds available each year and the local Equalized Assessed Valuation (EAV), as provided by the Department of Revenue, have a direct correlation on the amount of funds to be disbursed based on shortfall. As an example, when the STR allotment increases, the poorer counties will have a greater need for an additional match. Conversely, when the allotment decreases, the poorer counties will not have a need to match as much Federal funding and will require less SMA funds.

SMA funds may be used for any Federal-aid project. Two factors impact the implementation of the SMA Program:

1. Lump-Sum Use. Counties may use its accumulated SMA funds to defray any part or the entire non-federal portion of any local Federal-aid project, regardless of the federal matching percentage. However, the SMA must be committed as a lump-sum rather than a percentage of the project cost.
2. Anticipation. There can be no anticipation of SMA funds (e.g., no county can commit more SMA funds to a project than it has available at the time of letting). However, existing agreements for active projects may be amended with CBLRS advance approval to increase the amount of SMA when it becomes available.

4-2.08 County Consolidated Program

The County Consolidated Program provides \$21.8 million per year of State assistance for distribution to all counties except Cook County. The counties share equally \$8 million of the funds with the remaining portion distributed using the MFT formula, which is based on the amount of motor vehicle license fees. The funds must be deposited in the agency's MFT account and can be expended for any permissible MFT use. See Section 4-3 for more details on the Motor Fuel Tax.

4-2.09 Needy Townships

The Needy Townships Program provides \$10 million per year of State assistance for needy townships and road districts that levy at the maximum tax rate allowed without referendum, but do not generate enough revenue to meet a minimum level of funding per mile of roadway. The funds must be deposited in the MFT account and can be expended for any permissible MFT use. This program is available to areas with the lowest ability to generate revenue on a per-mile basis. The eligible townships and assistance levels are set based on the EAV, annual average MFT distribution per mile, and average maintenance cost per mile.

4-2.10 High-Growth Cities

The High-Growth Cities Program provides \$4 million of State assistance per year to municipalities with populations over 5,000 that are experiencing above-normal population growth. Any municipality having an increase in population of at least 5% either through the comparison of two consecutive decennial censuses or the comparison of a decennial census and a special census within a given decade is eligible for this program. Funding is allocated among eligible cities based on their current population and per capita increase compared to all eligible cities. The funds must be deposited in the LPA's MFT account and can be expended for any permissible MFT use.

4-2.11 County Engineer Salary Program

This program is designed to aid counties in paying a reasonable professional salary for their county engineers. In exchange for an equal amount of a county's federal Surface Transportation Program (STP) allotment, the state will provide state funds to pay up to one-half of a county engineer's salary.

Recommended salaries have been established for the 99 counties in Illinois that receive rural STP federal-aid highway funds. The recommended salaries are established by a ranking system considering five factors:

- county MFT allotment
- county lane mileage
- county population
- county assessed valuation
- county system vehicle miles of travel

The sum of the five individual ranks is used to determine an overall rank. The magnitude of the responsibilities for each ranked county has been related to comparable department civil engineer responsibilities and an equivalent recommended salary established for each county. The county rankings are computed each year using the latest available data, and the respective recommended salaries are adjusted annually in a like manner as the department's salary bracket for civil engineers.

A county must agree to pay the county engineer a salary, exclusive of normal expenses, of at least 95% of the recommended salary to be eligible for the program. The amount of the exchange shall be no more than one-half of the salary paid to the county engineer with no upper salary limit, recognizing that a county may pay more than the recommended salary.

The county and the department shall enter into an agreement covering the terms of the exchange. An agreement can be entered into at any time during the year.

A county who shares an engineer with another county will qualify for this program by paying at least 95% of either the following:

1. The salary of at least 60% of the current recommended salary, or
2. A salary that, when combined with the salary paid by the county sharing the engineer, totals 60% of the sum of the current recommended salaries of the two counties.

4-2.12 Funding for Jurisdictional Transfers

Funds may be provided by the State, based on the present worth of the highway or structure, to the LPA that agrees to assume jurisdiction for the facility. The present worth is determined using the life-cycle cost of keeping the highway in a serviceable condition.

4-2.13 Park Access Program

The Park Access Program provides funding for road projects that are located within or provide access to State parks and historic sites. The projects are selected jointly by IDOT, IDNR, and the State Historic Preservation Officer (SHPO). Applications should be sent to IDNR. Funding is allocated at 100% of the total project cost.

4-2.14 Noise Abatement Program

The Noise Abatement Program provides State funding for noise abatement projects along existing fully access-controlled State routes in urban areas. LPAs are required to provide 50% local matching funds. Federal funds can be used to supplement the project cost if the project is designed to meet federal criteria. Costs associated with preliminary engineering, construction, and construction engineering are eligible. Costs associated with right-of-way and utilities are not eligible. The sponsoring agency must document the traffic-generated noise levels prior to applying for funds, and it must also pass a zoning ordinance regarding land use. Contact OPP for more information.

4-3 MOTOR FUEL TAX (MFT)

4-3.01 Source

In 1929, the Illinois General Assembly adopted a law placing a tax (e.g., 19 cents/gallon and an additional 2.5 cents/gallon on diesel fuel) on the operation of a motor vehicle on public highways and of operation of recreational watercraft on the water based on the consumption of motor fuel. Proceeds from this tax are administered by IDOT, with a portion of these revenues being allotted to counties, townships, and municipalities. The collection and distribution of these funds are outlined in the Motor Fuel Tax Law, [35 ILCS 505/1 et seq.](#) and are referred to as MFT funds.

4-3.02 Distribution

4-3.02(a) General

MFT funds are paid out to the units of local government in accordance with the MFT Fund, [35 ILCS 505/8](#) provisions. All money collected by the Department of Revenue is distributed after the first day of each month. No funds are held in escrow for retroactive changes in allocations. The amount of MFT collected is based on the previous month's sale of motor fuel statewide; therefore, allocations will vary from month to month.

Figure 4-3A illustrates the distribution of MFT funds. After deductions set by law, 54.4% of the remainder is distributed to LPAs. The following sections describe the allocation of the MFT funds to the counties, municipalities, and townships. See the IDOT publication, *MFT Funds: Source, Distribution and Uses by* ([Municipalities](#)) ([Counties](#)) ([Townships](#)) for more information.

4-3.02(b) Municipalities

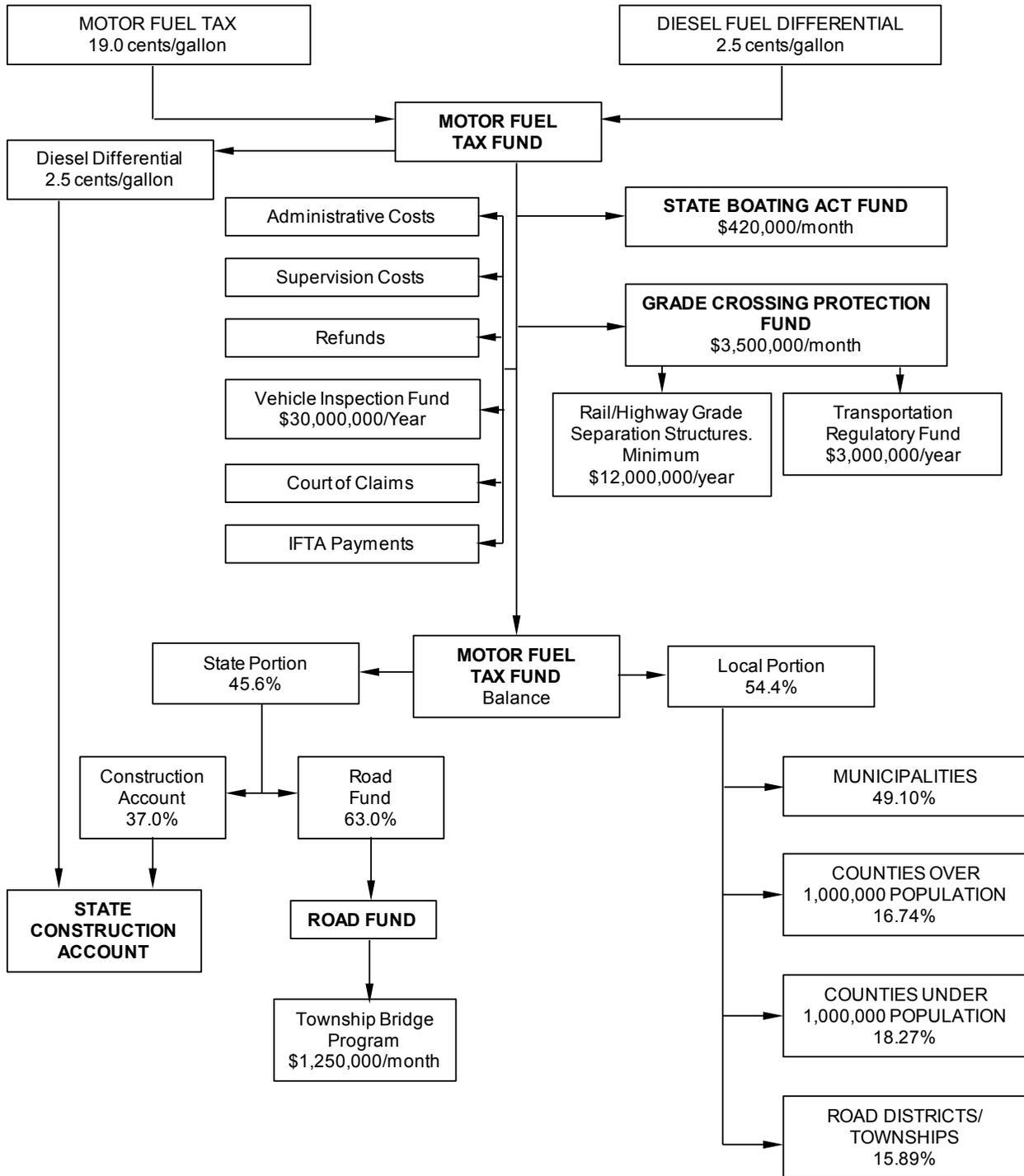
A municipality's share of the total MFT municipal allocation is based on the ratio of that municipality's population to the total population of all incorporated areas in the State. The population figure is determined by the latest decennial census taken by the U.S. Bureau of Census. When the Illinois Secretary of State certifies the population count ([65 ILCS 5/1-7-2](#)), IDOT adjusts the municipal population figure on which the MFT allotment is based to agree with the certification ([35 ILCS 505/8](#)).

This municipal population figure for the purposes of determination of MFT allotments will remain in effect until the next decennial census, or if a change in population has been determined in accordance with the law. The following also applies to MFT allotments:

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Figure 4-3A

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1. MFT Allotments to New Municipalities. Before MFT allotments can be made to a newly incorporated municipality, articles of incorporation must be first filed with the Secretary of State. After the Secretary of State officially notifies IDOT that a Certificate of Incorporation has been issued, and after a census has been conducted, monthly MFT allotments will be made to the new municipality.

With respect to the census that must be made by the municipality, IDOT requires the submittal of:

- an ordinance adopted by the municipal board or council providing for the taking of the census;
- an affidavit executed by the municipal clerk and attached to the ordinance certifying to the passage of the ordinance; and
- an affidavit signed by the municipal clerk and president or mayor, and attested to by a notary public, giving the date of the census and the population of the municipality.

Forms [BLR 04310](#), [BLR 04311](#), and [BLR 04312](#) may be used.

If all required information is provided, the municipality will be notified of the date on which the first allotment will be made.

2. Change in Municipal MFT Allotments Due to Annexing of New Territory. If new territory has been annexed after the last federal census was taken, and the municipality desires to have its allotment increased because of this fact, it must take a census of the annexed territory. The municipality must provide IDOT with executed copies of the information listed above. If all required information is provided, IDOT will notify the municipality of the date when the first allotment, reflecting the new population, will be made.

3. Change in Municipal MFT Allotments Due to Special Census. To change the population figure upon which MFT allocations are based, a municipality must contact the Director of the Census, Department of Commerce, Washington, D.C. to determine the procedures to conduct a special census. No other census will be accepted. This census must be an actual count of all inhabitants residing within the corporate boundaries; estimates or a census taken of only selected areas within a municipality are not acceptable.

After the Census Bureau determines the census, the Director of the Census will furnish to the Office of the Secretary of State and the municipality a report of the results. The Office of the Secretary of State will then certify that it has received the results with a copy to the municipality and IDOT giving the new population of the municipality.

Upon receipt and review of the certification, IDOT will change the population figure upon which the municipality's MFT allocations are based and will notify the municipality of the date when the first allotment will be made due to the population change. MFT funds may not be used to pay for the cost of conducting any census.

4-3.02(c) County

Counties that have 1,000,000 or more inhabitants receive a special designated allocation. Allocations to counties having less than 1,000,000 inhabitants receive allocations in proportion to the amount of motor vehicle license fees received from vehicles registered in each county during the preceding calendar year. On or before April 15 of each year, the Secretary of State submits a full report to IDOT detailing the amount of motor vehicle license fees received from vehicles registered in each county during the preceding calendar year, pursuant to [35 ILCS 505/8\(e\)](#).

4-3.02(d) Townships (Road Districts)

[35 ILCS 505/8](#) defines “road district” as any road district provided for by the Illinois Highway Code. Road districts also include park districts, forest preserve districts, and conservation districts organized under Illinois law. The term “township or district road” also includes roads maintained by park districts, forest preserve districts, and conservation districts.

The following applies to MFT funds for road districts:

1. **Road Districts.** MFT funds apportioned for use by road districts are allotted to the several counties in the State. These allotments are apportioned among the counties in the proportion which the total mileage of township or district roads in that county bears to the total mileage of all township or district roads within the State. Funds allotted to the counties for the use of its road districts must be apportioned among the eligible road districts in proportion to the eligible mileage of township or district road systems in each eligible road district.

Any park district, forest preserve district, or conservation district must comply with all statutes related to road districts with respect to receiving MFT allotments (Attorney General’s Opinion No. 85-024, dated December 2, 1985).

2. **Minimum Taxes.** To be eligible for MFT allocations, the road district must levy a tax or taxes for road and bridge purposes. To receive the maximum MFT allocation, the road district must levy a tax or taxes for road and bridge purposes at an extension rate of at least 0.08% of its assessed valuation. To meet this requirement, the road district may use both its regular road fund ([605 ILCS 5/6-501](#)) and permanent road fund ([605 ILCS 5/6-601](#)) either separately or in combination to equal the required percentage. If the road district does not levy a tax or taxes for road and bridge purposes at an extension rate of at least 0.08% of its assessed valuation, the road district’s MFT allocation shall be the percentage of the maximum allocation equal to the percentage obtained by dividing the rate extended by the road district for road and bridge purposes by 0.08%.

On or before July 1 of each year, the county clerk of each county will file a certificate with IDOT certifying the rate of road district tax levies in that county in accordance with the above formula. Certifications are date stamped when returned to the Department to ensure the certifications are filed before the deadline. If the county clerk fails to file this certificate, the allotment to the county for the road districts will not be made. However, if the county clerk later in the year does make a proper certification, the allocation will be made beginning with the first month’s allotment following the date of certification.

If the tax and/or taxes are not levied in accordance with the Motor Fuel Tax Law, the MFT allotments of the ineligible road district will be reallocated to the eligible road districts within the county. The ineligible road district, upon subsequent compliance with the MFT law, will once again be eligible; however, allotments will not be retroactive.

3. Property Tax Extension Limitation Law (PTELL). PTELL limits the increases in a taxing district's extensions. PTELL allows a taxing district to receive a limited inflationary increase in tax extensions on existing property. Increases in property tax extensions are limited to a lesser of 5% or the increase in the Consumer Price Index. This affects non-home-rule taxing districts in Cook County and in the collar counties (i.e., DuPage, Kane, Lake, McHenry, Will). PTELL allows the county board of other counties, by ordinance or resolution, to submit to the voters of the county, the question of whether to make all non-home rule-taxing districts that have all or a portion of their equalized assessed value situated in the county subject to PTELL ([35 ILCS 200/18-185 to 200/18-245](#)).

As a result of PTELL, some road districts are unable to levy the minimum 0.08% road and bridge tax, which would result in some road districts becoming ineligible to receive the maximum MFT funds. [35 ILCS 505/8](#) enables road districts under PTELL to receive the maximum MFT funds. To become eligible, the road district must have been levying the minimum 0.08% road and bridge tax prior to PTELL and continue to tax at the maximum allowable amounts allowed by PTELL or, in DuPage County, an amount equal to or greater than \$12,000 per mile of road under the jurisdiction of the road district, whichever is less.

4. Eligible Roads. According to [35 ILCS 505/8](#), IDOT is required to determine the mileage of all township and road district highways within the State for the purpose of allotting and allocating Motor Fuel Tax funds for use in road districts. Generally, a portion of a highway improved, designed, or ordinarily used for vehicular travel, exclusive of the berm or shoulder, is referred to as the roadway and is included in the mileage total provided that the highway is a public way for vehicular travel. Previously unreported public highways must be 0.04 miles (0.06 km) or longer to be included in the inventory for mileage totals.

To be considered a public way for vehicular travel, a road must be both "open" and "passable." The roadway must be free of obstructions (e.g., no gates, chains, fences, fallen trees) that prevent the public from gaining access to the full length of the road. There cannot be any no-trespassing, road-closed, or other signs or markers that prohibit public travel. Roads leading up to a closed bridge or culvert are considered a public way for vehicular travel if the approaches are passable. Vehicular travel may be prohibited or restricted for no more than 90 days in any one calendar year, pursuant to [625 ILCS 5/15-316](#).

A road is "passable" if the road can be traversed in a four-wheel drive vehicle in dry conditions without having to leave the roadway. The following criteria are used by IDOT to determine passability:

- a. Ruts. The roadway must be free of excessive ruts or potholes. Ruts more than 9 in (225 mm) should not exist on the majority of the roadway unless a four-wheel drive vehicle can straddle the ruts and traverse the road with relative ease at a low rate of speed.

- b. Delineation. For dirt roadways, delineation of the roadway must be readily identifiable, by either wheel paths or cross section recognition.
- c. Clearance. Vegetation and other obstructions lateral to the roadway should be adequately cleared to allow a standard size 4-wheel drive vehicle to pass without rubbing and scratching the vehicle.
- d. Drainage. Adequate drainage is provided to prevent ponding on the roadway or erosion of the roadway, except in instances of seasonal or prolonged flooding.

If the open and/or passable criteria have not been met, IDOT will notify the township road commissioner and the county engineer of the problem and allow 30 days to correct it. If the problem is not corrected within 30 days, the road will be removed from MFT eligibility.

Township roads will be re-inventoried within a cycle to be determined by the district to determine MFT eligibility and verify length. A 5-year cycle is desirable.

4-3.02(e) Engineering Studies

MFT funds may be used by counties and municipalities for engineering studies, as permitted by the Illinois Highway Code. These studies must be restricted to costs incurred in performing only countywide or municipal-wide highway surveys or investigations, where the costs or conditions are such that the work cannot be accomplished as part of one or more construction sections. These surveys and investigations must also be limited to those necessary for the planning of future construction, reconstruction, or rehabilitation of streets and highways including the necessary appurtenances. They should be based on present and future traffic volumes and types, drainage facilities, traffic needs due to future expansion, and factors that will affect the design and location of future improvements. Any reports prepared in connection with these surveys or investigations must be filed with IDOT - one copy with the district and one copy with CBLRS ([605 ILCS 5/5-701.6](#) and [605 ILCS 5/7-202.11](#)).

MFT funds may not be used for the hiring of planning engineers to make a comprehensive survey of the county or municipality that would lead only to the enactment of a new zoning ordinance.

Engineering studies that are designed to provide the highway authority with a report on the present condition and projected service life of specific highways or the entire highway network may be funded with MFT revenues. Pavement evaluation studies should be comprehensive reports that reflect the effects on present conditions produced by environmental factors, traffic volumes, and drainage characteristics. The approval of MFT funding for a pavement evaluation study will be subject to the following conditions:

1. Evaluations. The study should only include those evaluations that are necessary for the planning of future construction, reconstruction, rehabilitation, or maintenance of street and highway systems. Base the evaluations on present and future traffic volumes and types, drainage facilities, and traffic needs due to future expansion that would affect the maintenance or design of future improvements. Do not include any evaluation of streets or highways that obviously have no structural value (e.g., oiled earth).

2. Approval. Prior district approval is required for the individual roads and streets to be evaluated.
3. Treatment Recommendations. Based on the evaluations, provide various rehabilitation treatments for at least a 10-year projected service life. The district must approve the various treatments selected. When the evaluation indicates that none of the selected rehabilitation treatments are adequate, include in the study the needed information to indicate the adequate thickness of overlay to provide satisfactory performance. When an evaluation indicates that reconstruction is necessary, any information furnished in the evaluation is considered as information only. The new design must be based on IDOT's design procedures. See [Chapter 44](#) for information on pavement design.
4. Disclaimer. IDOT is not bound by the results of the evaluation. IDOT reserves the right to approve or disapprove any proposed rehabilitation treatment regardless of the evaluation.

4-3.02(f) Highway and Street Bond Issues

The Illinois Highway Code allows MFT funds to be used for the payment of principal and interest on approved bond issue improvements. Miscellaneous administrative expenses (e.g., legal fees, treasurer's fees, recording fees, and engineering fees) may also be included in the cost of the bond issue to retire the bonds. Election costs incurred in submitting the bond issue to referendum are not considered eligible MFT expenses ([605 ILCS 5/5-701.5](#), [605 ILCS 5/5-701.11](#), [605 ILCS 5/6-701.6](#), and [605 ILCS 5/7-202.18](#)). No more than 50% of the annual MFT allotment should be used to pay off bonds and their interests. This will allow funds to be available for maintenance and other needed improvements.

4-3.03 Uses of MFT Funds

4-3.03(a) General

This Section clarifies issues pertaining to [605 ILCS 5/5-701](#), [605 ILCS 5/6-701](#), and [605 ILCS 5/7-202](#), defines parameters for the use of MFT funds, and determines under what conditions MFT funds may or may not be used. Figures 4-3B through 4-3D summarize the permissible uses of MFT funds for each type of LPA, and reference either the applicable section of the statute or the applicable Section of the BLRS Manual that discusses the use. Also, consider the following:

1. Counties. If the county highway system is being maintained in an acceptable condition, a maximum of 30% of a county's MFT funds may, with IDOT approval, be used for county unit road district roads.
2. Municipalities. For municipalities with a population greater than 500,000, 25% of the MFT funds must be spent on non-arterial streets ([605 ILCS 5/7-202.1c and 202.22](#)). Any municipality can use MFT funds to match a Federal-aid project up to 50% of the cost of the project ([605 ILCS 5/7-202.10](#)).

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3. Municipality Street Extensions. Municipalities may construct and maintain extensions of municipal streets outside the corporate limits of the municipality, including parts of such streets that extend into another municipality, if it is performed pursuant to an agreement between the municipalities, see [605 ILCS 5/7-202.3](#). Municipalities may construct and maintain extensions of municipal streets within the corporate limits of any park district whose territorial limits are coterminous with the territorial limits of the municipality, pursuant to [605 ILCS 5/7-202.4](#).
4. Employees. For employees of an agency who may be paid from the MFT fund under the foregoing instructions, the method of payment may be one of the following:
 - Where the compensation is on an hourly, daily, or monthly basis, the agency may pay the employee directly from the MFT fund for the particular MFT-eligible job on which the work is performed.
 - Where the compensation is on an hourly, daily, or monthly basis, the agency may pay the employee from the fund for which he is regularly paid. This fund may then be reimbursed from the MFT fund for the job on which the work was performed for the amount paid to the employee for the time spent on the MFT job.

Under both methods of payment, the agency must maintain complete records of the dates and times for the employees who are engaged in MFT funded work and the particular projects or sections.

Reimbursements from MFT will be made promptly and periodically, preferably each month.

Payments from MFT funds to other funds for reimbursement are made in the same manner as any other payment (e.g., a claim showing the date, project or section, the class of labor, and the rate of pay must be filed and a warrant drawn against the MFT fund in favor of the fund which is being reimbursed). It is not necessary that individual claims for each employee be filed, but a separate claim must be filed for each project or section and, if it is desired, all employees working on that project during the period covered by the claim may be shown on one claim and reimbursement made by one warrant.

4-3.03(b) Construction Items

Any item included as an integral part of an MFT roadway/construction project is eligible for MFT funding. This includes engineering and land acquisition. When selecting township roads for improvement, preference should be given to school bus and mail routes. See [Section 14-2](#) for guidance on using MFT funds for maintenance issues. The following discusses MFT eligibility for construction items:

1. Sidewalks and Curb Ramps. MFT funds may be used for the construction of sidewalks and related curb ramps providing the following requirements and those of [Sections 41-5 and 41-6](#) are met:
 - a. Municipalities are permitted to construct sidewalks and pedestrian paths within the right-of-way of any street. Also, municipalities are permitted to construct pedestrian subway and overhead crossings.

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- b. Counties and road districts may construct sidewalks provided:
 - The amount of pedestrian use of the street or highway justifies the construction of the sidewalks.
 - The LPA agrees to assume the responsibility for sidewalk maintenance and repair.
 - The sidewalk is constructed as an integral part of, or subsequent to the completion of, a major paving project built by the State or by the county or road district under State supervision.
2. Proposed Street Lighting System. Municipalities may use MFT funds for the construction or reconstruction of a street lighting system on improved (e.g., a construction section) municipal streets, county highways, and State highways ([605 ILCS 5/7-202.6](#)). Counties and townships/road districts may also use MFT funds for roadway lighting ([605 ILCS 5/5-701.1](#) and [605 ILCS 5/6-701.1](#)).

The system must meet the requirements of [Section 41-7](#) and provide the necessary illumination required by the current edition of American National Standard Practice for Roadway Lighting (ANSI/IESNA RP-8) published by the Illuminating Engineering Society of North America (IESNA).
3. Storm Sewers. MFT funds may be used for the construction of storm sewers and appurtenances, or combination storm and sanitary sewers and appurtenances, where legally authorized under the following conditions:
 - a. Location. Storm sewers, except for outfalls, must be built entirely within the limits of the highway improvement under consideration.
 - b. Necessity. The storm sewers must be considered to be an integral and necessary part of a highway improvement. Resolutions proposing an improvement for the express purpose of justifying the construction of a storm sewer are not acceptable.
 - c. Staging. Storm sewers may be built at the first stage of a highway improvement, provided steps are taken for the complete improvement at the time of original approval, or storm sewers may be built coincident with or after a highway improvement has been completed by the State, or by the local highway authority under State supervision.
 - d. Capacity. MFT funds may be used to provide storm sewers and appurtenances of sufficient size to accommodate only the water that would naturally flow to the roadway. If the LPA chooses to provide excess capacity to accommodate sanitary flow or water from other locations, the excess capacity must be paid for with other funds.
 - e. Outfalls. MFT funds may be used to construct municipal storm sewer outfalls outside the corporate limits up to the nearest acceptable natural waterway or connection to an acceptable existing storm sewer.

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- f. Basins. If required by local storm water management agencies, retention/detention basins may be constructed with MFT funds. The MFT participation in construction of these basins will be determined in accordance with the capacity restrictions noted in Item 3d.
 - g. Approval. Combination storm and sanitary sewers must be approved by the [Illinois Environmental Protection Agency \(IEPA\)](#), Bureau of Water.
 4. Parking Facilities. MFT funds may be used by LPAs to acquire right-of-way and construct parking lanes adjacent to the roadway. Municipalities may also use MFT funds for off-street parking facilities ([605 ILCS 5/7-202.17](#)). MFT funds used for parking facilities are subject to the following conditions:
 - a. Public Availability. All parking facilities must be generally available to the public and may not contain individually reserved parking spaces. However, parking facilities in commercial areas or adjacent to public buildings must contain spaces reserved for persons with disabilities.
 - b. Restricted Parking. Parking spaces or lanes restricted for use by “residents only” or other special restrictions will be considered on an individual basis. Requests, presenting the need for and the conditions of the restriction, require approval by CBLRS. Requests should be submitted through the Regional Engineer. Requests that provide for individually assigned parking spaces will not be approved.
 - c. Revenue-Producing Parking. MFT funds may be used for a revenue-producing, off-street parking area. The disposition of parking revenues must be in accordance with the provisions of [Chapter 9](#).
 - d. Resetting Parking Meters. MFT funds may be used for moving and/or resetting parking meters where the work is made necessary by the construction of an MFT improvement.
 5. Traffic Control Devices. MFT funds may be used for the installation and maintenance of all or any warranted traffic control devices. These traffic control devices may include, but are not limited to, traffic signals, beacons, signs, and pavement markings.
 6. Right-of-Way Expenses. MFT funds may be used to purchase any right-of-way that may be required to construct a highway improvement. Legal fees, appraisal fees, and survey fees associated with these purchases may also be paid with MFT funds provided that MFT funds are not used to reimburse any public official or to reimburse any other fund for the salary and expenses of the state attorney, municipal attorney, municipal engineer, or others who are officials of the LPA.

IDOT approval of MFT expenditures for right-of-way is contingent upon adequate documentation that legal requirements have been met, that property owners are being treated equitably, and that the purchase price is fair.

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7. County Garages. Counties may use MFT funds for constructing or maintaining, or both, a county garage used for the servicing, maintenance, or storage of construction or maintenance vehicles or equipment used in the construction or maintenance of county or state highways ([605 ILCS 5/5-701.9](#)). MFT funds may not be used for office space except by counties with a population greater than 1,000,000. MFT funds may not, however, be used to purchase property for the construction of the garage (Attorney General's Opinion F-1968, May 22, 1968).
8. Construction and Maintenance of Salt Storage Facilities. MFT funds may be used for the construction, reconstruction, maintenance, and rental of structures for the storage of salt used for highway maintenance provided that:
 - MFT funds are not used to purchase the property for construction; and
 - MFT funds are not urgently needed for other improvements.
9. Bicycle Facilities. LPAs may use MFT funds to construct bicycle facilities under the following conditions:
 - a. Counties. Counties may use MFT funds for:
 - placing, erecting, and maintaining signs or surface markings to designate official bike routes along a county highway;
 - the construction and maintenance of bicycle routes along county highways or along State highways by agreement with IDOT in counties with a population over 500,000. Also, the Bikeway Act contains provisions that allow the expenditure of MFT funds in counties of over 500,000 population for construction and maintenance of bikeways along public utility or railroad right-of-way ([605 ILCS 30/2](#)); and
 - paying the county's share for bicycle facilities constructed as part of a federally eligible transportation project on, adjacent to, or intended to serve any county highway ([605 ILCS 5/5-701.7](#)).
 - b. Municipalities. Municipalities may use MFT funds for the construction and maintenance of bicycle paths, lanes, or bicycle parking facilities, as well as signing and marking bicycle routes along streets within the municipality ([605 ILCS 5/7-202.20](#)).
 - c. Townships/Road Districts. Township and road districts can use MFT funds for signing and marking bicycle routes along township roads ([605 ILCS 5/6-701.7](#)).
10. Railroad Crossings. Public railroad crossing upgrades are eligible for MFT funds.

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11. Utilities. The cost of moving or removing existing publicly owned utilities, made necessary by road and street improvements, may be paid with MFT funds, with the exception of municipally owned utilities lying outside the corporate limits. The cost of moving or removing existing privately owned utilities, made necessary by road or street improvements, may be paid with MFT funds if the existing facilities are located on private right-of-way. If the existing utilities are located on public right-of-way, the cost of moving or removing them must be borne by the utility company. Utility agreements are necessary when an improvement requires relocation or adjustment of utility appurtenances except when existing permits provide for moving or removing a utility. [Section 5-7](#) provides guidance on the preparation of a utility agreement.
12. Equipment Operations. Equipment operation costs are eligible for MFT funds. However, the purchase and repair of this equipment are not eligible. [Section 12-1](#) provides additional guidance.
13. Cattle Passes. The costs of constructing cattle passes on improvements involving the use of MFT funds must meet the following:
 - a. Property Owners. Where the improvement is on an existing road or street, the property owner is responsible for the entire cost of the cattle pass, except where the crossing is made on any waterway or natural channel for water and where a culvert or bridge is maintained as required for road purposes. In these cases, the owners or occupants are not required to pay for or construct any more of the crossing than the additional cost in excess of the necessary cost of a suitable culvert or bridge for road purposes.
 - b. Local Governments. In special cases, the local governmental agency may participate in the cost of constructing cattle passes to the extent that the highway or traveling public is benefited by having the livestock pass under the highway, rather than at grade and, where new or additional right-of-way is being obtained, the value of the right-of-way can be considered as an offset on all or part of the cost of the livestock pass.
 - c. Submission. Before the authorization of the expenditure of MFT funds can be made for the construction of livestock passes, the LPA must submit the following information for consideration:
 - the estimated cost of the livestock pass;
 - the estimated value of land taken from the property owner plus damages to land not taken, if any;
 - the amount paid the landowner for the land, either in cash or other consideration; and
 - the estimated value to the traveling public because the livestock crossing will be underneath the roadway rather than at grade.

4-3.03(c) Salary and Expenses

The following applies to MFT eligibility for salaries and expenses:

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1. Counties. The county engineer's salary and expenses may be paid out of general or highway funds of the county ([605 ILCS 5/5-202](#)). MFT funds allocated to the county for highway purposes may be used to pay the salary and expenses related to the county engineer's duties required by the Illinois Highway Code ([605 ILCS 5](#)) or the Department. However, MFT funds allocated to counties to be used by road districts may not be used to pay any portion of a county engineer's salary or expense (Attorney General's Opinion No. 457, August 21, 1933).
2. Road Districts. A highway commissioner is an elected public official and an officer of the township or road district. The commissioner's salary may not be paid with MFT funds allotted to the counties for use by the road district (Attorney General's Opinion No. 928, March 14, 1927). Road district treasurer fees may not be reimbursed with MFT funds.
3. Municipalities. If the corporate authorities of a municipality appoint an individual to a position within the Public Works Department or Engineering Department, the municipality must first provide for the individual's compensation for all of the duties of the officer by ordinance. The municipality shall not pay any portion of the salary of the appointed position from the MFT funds allotted to the municipality (Attorney General's Opinion No. 315, April 29, 1952).
4. Employee Salaries and Fringe Benefits. The following applies:
 - a. Wages or Salaries. Other public employees who are not classified as elected public officials or officers of the LPA (e.g., other engineers, technical staff, foreman, laborers) may be paid from the MFT fund for the time actually engaged in MFT funded construction or maintenance projects. They must receive the same rate of pay as they would normally receive from the agency while engaged in other work of a similar classification.
 - b. Holidays, Vacation, and Sick Leave. Payment of a prorated portion of holidays, vacation, and sick leave may be made with MFT funds for costs incurred by the agency while working on MFT funded maintenance and construction projects.
 - c. Health, Hospitalization, and Life Insurance. Payment of a prorated portion of health, hospitalization, and life insurance premiums may be made with MFT funds for costs incurred on MFT funded maintenance and construction projects.
 - d. Workers' Compensation Insurance Premiums. Worker's compensation premiums covering county, road district, and municipal employees are eligible for payment with MFT funds. These premiums may be paid with MFT funds in the prorated share of the employees' salary that is paid from MFT revenues.

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- e. Retirement and Social Security. Counties, municipalities, and road districts whose employees are covered under the provisions of the Illinois Municipal Retirement Fund, [40 ILCS 5/7-101 et seq.](#), may use MFT funds to pay their contributions to the Municipal Retirement Fund. The term “municipality” in the Illinois Municipal Retirement Fund includes not only municipalities, but also other political subdivisions, including counties and townships. The provision provides that the political subdivisions’ contribution will be paid from the same funds from which the employee’s compensation is paid, and provides that the political subdivision may levy a tax to reimburse the fund from which the contribution was made. If a tax is levied for that purpose, the MFT account must be reimbursed as the taxes are collected, and the amount of the reimbursement shown on the statement accompanying the request for expenditure of MFT funds for the next period.

Counties, municipalities, and road districts whose employees are covered under the provisions of the Social Security Enabling Act, [40 ILCS 5/21-101 et seq.](#), of the State may also use MFT funds to pay their contributions to the Social Security fund for work that is part of construction or maintenance of an MFT project.

5. Legal Fees. The following applies:

- a. County. Because the Office of State’s Attorney is statutory and the duties, salary, and expenses of the Office are provided for by the State law, MFT funds cannot be used to pay the Office of State’s Attorney expenses ([55 ILCS 5/3-9001 et seq.](#)).
- b. Municipal. The city attorney is an appointed municipal official, and the salary and duties are prescribed by the governing body of the municipality. MFT funds cannot be used to pay for legal work performed by a city attorney on MFT funded projects. However, because the city attorney’s duties are not prescribed by law, the compensation of other persons, whom the governing body of the municipality might elect to hire to perform legal work in connection with the acquisition of right-of-way for MFT construction improvements, may be paid with MFT funds.
- c. Road Districts. Payment of attorney’s fees and legal costs in connection with the procurement of right-of-way may be paid with MFT funds, providing:
- the right-of-way is in the name of the road district;
 - the right-of-way pertains to an MFT road district construction project; and
 - no fees for legal work are paid to any county, township, or road district official (State’s Attorneys’ fees are not eligible).

4-3.03(d) Non-Dedicated Subdivision Roads Established Prior to July 23, 1959

Counties ([605 ILCS 5/5-701.15](#)), Road Districts ([605 ILCS 5/6-701.8](#)), and Municipalities ([605 ILCS 5/7-202.21a](#)) may use MFT funds for eligible maintenance or construction projects on non-dedicated subdivision roads established prior to July 23, 1959 if property owners in the subdivision where such road is situated provide proportional matching contributions, whether in cash, kind, services or otherwise.

Non-dedicated subdivision road refers only to those roads which were denoted as such on a subdivision plat filed prior to July 23, 1959, which have not been dedicated to the public (Illinois Attorney General's Opinion 96-008). If cash contributions are provided by property owners the cash shall be deposited in the appropriate MFT account. Any in kind, services, or otherwise contribution shall be used on or for the road and shall be documented with auditable paperwork supporting contribution's value. If labor is provided as a matching contribution, the prevailing hourly wage rate published by the Illinois Department of Labor for the type of labor and location of work shall be used. If materials are provided as a matching contribution, materials shall comply with all IDOT policies, specifications, and certifications.

Non-dedicated subdivision roads improved with County or Road District MFT funds to meet standards established by the County, become part of the road district system. Non-dedicated subdivision roads improved with Municipal MFT funds to meet standards as established by the Municipality, become part of the municipal street system.

4-3.03(e) Investments and Deposits

The use of MFT funds involves cash flow planning to determine when MFT funds are available to expend. Generally speaking, MFT funds must be highly liquid to meet the anticipated costs for highway construction projects and/or maintenance projects. If the MFT cash flow analysis shows that funds are available to earn an investment return, MFT funds may then be invested or deposited in financial instruments that have no tolerance for risk of principal. The LPA must comply with the Public Funds Investment Act ([30 ILCS 235](#)). In addition, the Investment of Municipal Funds Act ([50 ILCS 340](#)) provides additional investment options.

The LPA may use MFT funds to purchase:

- tax anticipation warrants that shall bear interest not to exceed four percent;
- municipal bonds;
- bonds and other interest-bearing obligations of:
 - the United States;
 - the State of Illinois;
 - any other state; or
 - any political subdivision or agency of the State of Illinois or of any other state;
- savings certificate of deposits of any State or National Bank if such certificates are fully insured by the Federal Deposit Insurance Corporation; or
- treasury notes and other securities issued by agencies of the United States.

In addition, the LPA may use MFT funds to make deposits in:

- savings accounts of any State or National Bank if such accounts are fully insured by the Federal Deposit Insurance Corporation; or

- withdrawable capital accounts or deposits of State or federal chartered savings and loan associations which are fully insured by the Federal Savings and Loan Insurance Corporation.

No bank or savings and loan association shall receive public funds unless it has complied with [30 ILCS 235/6](#).

A copy of the debt instrument shall be provided to the Department. Any financial instrument that results in a loss of principal shall be considered an ineligible use of MFT funds. Any loss of principal of MFT funds shall be reimbursed with other local funds. Any interest earned less any fees from investments and deposits shall be credited back to the MFT funds according to [Section 9-1](#).

4-3.04 Using MFT in Conjunction with Other Funds

The following applies:

1. County Bridge Funds. MFT funds may be used in conjunction with the County Bridge Fund to construct or repair any bridge, culvert, drainage structure, or grade separation, including approaches thereto, on, across or along any public road provided that the improvement is designed and constructed as an MFT project. The county's commitments to aid road districts and municipalities must comply with [605 ILCS 5/5-501](#). Road districts and municipalities may also use MFT funds to pay their share of the cost of joint bridge improvements with the county.
2. Township Bridge Funds. MFT funds may be used for the local share in conjunction with a bridge constructed under the Township Bridge Program, see Section 4-2.02.
3. Federal Funds. For counties and municipalities, MFT funds may be used to match federal funds. For municipalities, the participation in the cost of the improvement is limited to 50%. In addition, any LPA may use its MFT funds for any eligible MFT item included in a federally funded project.
4. Other Funds. MFT funds may be used for any phase of a project in conjunction with other funds provided that the entire improvement is designed according to MFT policies and constructed under the supervision of IDOT.

4-3.05 Joint Improvements - Written Contracts and Construction or Maintenance Agreements

Any highway authority may enter into a written contract with any other highway authority for the jurisdiction, maintenance, administration, engineering, or improvement of any highway or portion thereof subject to the approval of IDOT ([605 ILCS 5/4-409](#)). MFT funds may be used for any eligible portion of the joint project provided that the entire project is accomplished under the supervision of IDOT.

Any municipality may negotiate an agreement with the Department whereby the municipality may use such funds as are available to it for that purpose for the construction or maintenance of a State highway within its boundaries, or with the corporate authority of a county or road district for the construction or maintenance of a highway on the county highway system or township or district road system outside of its municipal boundaries ([605 ILCS 5/9-101](#)).

The county board may negotiate an agreement with the Department whereby the county may use such funds as are available to it for that purpose for the construction or maintenance of a highway on the State highway system, or with a municipality for the construction or maintenance of streets on the municipal street system of such municipality ([605 ILCS 5/9-101](#)).

4-3.06 Asset Management

4-3.06(a) General

LPAs may use MFT funds for asset management, if the assets are eligible to be constructed or maintained with MFT funds. This includes the following categories:

- Pavements
- Structures
- Culverts/Storm Sewers
- Pavement Markings
- Highway Signs

Asset management may be completed by consulting engineers or LPA staff. See [Section 5-5](#) for preliminary engineering agreements. Employee salaries may be compensated according to Section 4-3.03(c). See [Chapter 6](#) for requirements on structures.

4-3.06(b) Pavement Management Studies

Pavement management involves procedures (e.g., pavement condition rating provided by the pavement evaluation study) that are more comprehensive than the procedures used in the pavement evaluation. Using the values assigned for the existing pavement condition and the present and projected traffic, the Pavement Management Report should provide the following information:

- a projected average pavement condition index using a specified level of funding for a specified period;
- a projected level of funding necessary to provide a specified average pavement index after a specified period; and
- a recommended schedule of pavement improvement strategies and timetable for improvements that will meet the selected parameters.

Projects of this nature will be evaluated and approved by CBLRS on a case-by-case basis. When the LPA requests to use MFT funding, CBLRS, in cooperation with the district, will establish monitoring procedures to evaluate the effectiveness of the Pavement Management Program.

4-3.06(c) Inventories

Inventories are vital to asset management. Each asset class will have a variety of unique inventory categories; however, at a minimum, all inventories should have the following fields:

- ID Number – It is a unique identifier code that allows the asset to be tracked, and may be a sequential or alpha-numeric code, or any other system.
- Description – It is an explanation of the asset that may require numerous fields, including height, width, thickness, material type, etc.
- Condition Rating – It is an evaluation of a current condition of the asset, which should be used to determine future maintenance or rehabilitation.
- Location – It is an identifier that establishes the geographic position of the asset.
- Date(s) – It is the day when an event occurred; it should include installation/construction date, inspection/rating date, maintenance date, and replacement date.

4-3.06(d) Inspections

The asset owner must have a systematic strategy for conducting field inspections and reporting its findings. It must be clear to the inspection team which elements and attributes to investigate. The inspection report should accurately and clearly record all findings and may include photographs representing the condition of the asset and/or any significant defects.

4-3.06(e) Software/Hardware

The asset owner may purchase or develop asset management software to assist with the inventory and inspection management. Annual software license fees and maintenance costs are eligible MFT expense. Hardware may be purchased only if it is a mobile, is an integral part of the asset management system, and is used exclusively for eligible highway assets.

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LOCAL ROADS AND STREETS FUNDING

4-3-19

WORK ITEM	REFERENCE
Construction and Maintenance of:	
• Joint Improvements/ Construction or Maintenance Agreements	605 ILCS 5/4-409, 605 ILCS 5/9-101
• Municipal Streets and Extensions, Municipal Alleys, County Highways and Extensions, State Highways, and Federal-aid Routes within the municipality	605 ILCS 5/7-202.1, 202.1a, 202.1b, 202.2, 202.3 & 202.4
• Traffic Control and School Crossing Signals	605 ILCS 5/7-202.5
• Street Lighting Systems	605 ILCS 5/7-202.6
• Storm Sewers	605 ILCS 5/7-202.7
• Pedestrian Subway or Overhead Crossings	605 ILCS 5/7-202.8
• Sidewalks and Pedestrian Paths	605 ILCS 5/7-202.15
• Off-Street Parking Facilities	605 ILCS 5/7-202.17
• Bicycle Signs, Paths, Lanes, or Bicycle Parking Facilities	605 ILCS 5/7-202.20
• Grade Separations and Approaches	605 ILCS 5/7-202.21
• Non-dedicated Subdivision Roads established before July 23, 1959	605 ILCS 5/7-202.21a
Allotment of Funds for:	
• Investments and Deposits	50 ILCS 340/1
• Matching Federal-aid Funds	605 ILCS 5/7-202.10
• Engineering Services	605 ILCS 5/7-202.12
• Retirement of Indebtedness (MFT Eligible Items)	605 ILCS 5/7-202.13
• Local Mass Transit Districts	605 ILCS 5/7-202.14
• Motor Vehicle Safety Inspection Lanes Operation and Maintenance	605 ILCS 5/7-202.19
• Payment of Principal and Interest on Road Bonds	605 ILCS 5/7-202.18
• Engineering Investigation	605 ILCS 5/7-202.11
• Toll Bridge Studies	605 ILCS 5/7-202.16
Although the Statutes do not explicitly state that MFT funds can be used for the work items below, IDOT has determined that the costs for these items are eligible if they are related to MFT maintenance or construction.	
• Curb Ramps	BLRS Man. Sect. 4-3.03(b)
• Right-of-Way	BLRS Man. Sect. 4-3.03(b)
• Salt Storage Facilities	BLRS Man. Sect. 4-3.03(b)
• Equipment Operations Costs	BLRS Man. Sect. 4-3.03(b)
• Utility Adjustments	BLRS Man. Sect. 4-3.03(b)
• Wages or Salaries	BLRS Man. Sect. 4-3.03(c)
• Holidays, Vacation, and Sick Leave	BLRS Man. Sect. 4-3.03(c)
• Workers' Compensation Insurance Premiums	BLRS Man. Sect. 4-3.03(c)
• Retirement Fund and Social Security Fund	BLRS Man. Sect. 4-3.03(c)
• Health, Hospitalization, and Life Insurance	BLRS Man. Sect. 4-3.03(c)
• Asset Management	BLRS Man. Sect. 4-3.06
• Miscellaneous Expenses in Connection with Bond Issue Improvements	BLRS Man. Sect. 4-4.02 & 4-3.02(f)
• Tree Trimming and Tree Removal	BLRS Man. Sect. 14-1.03(i)
• Railroad Signal Protection and Crossing Work	BLRS Man. Chapter 40

Note: All uses of Motor Fuel Tax are subject to the provisions and limitations reflected in the *BLRS Manual* and the States statutes.

PERMISSIBLE USES OF MFT FUNDS (BY MUNICIPALITIES)

Figure 4-3B

BUREAU OF LOCAL ROADS & STREETS
LOCAL ROADS AND STREETS FUNDING

4-3-20

June 2018

WORK ITEM	REFERENCE
Construction and Maintenance of:	
• County Highways, State Highways, and County Unit Roads	605 ILCS 5/5-701.1, 701.2, 701.3, 701.7 & 701.17
• County Garages	605 ILCS 5/5-701.9
• Office Space (Counties over 1,000,000 population)	605 ILCS 5/5-701.12
• Bicycle Signs/Markings, Paths (counties over 500,000 population)	605 ILCS 5/5-701.13
• Grade Separations and Approaches	605 ILCS 5/5-701.14
• Non-dedicated Subdivision Roads established before July 23, 1959	605 ILCS 5/5-701.15
• Joint Improvements/ Construction or Maintenance Agreements	605 ILCS 5/4-409, 605 ILCS 5/9-101
Allotment of Funds for:	
• Investments and Deposits	50 ILCS 340/1
• Retirement of Indebtedness (MFT Eligible Items)	605 ILCS 5/5-701.4
• Paying Bonds for Superhighways	605 ILCS 5/5-701.5
• Engineering Investigations	605 ILCS 5/5-701.6
• Matching Federal-aid Projects or Projects Eligible for Federal-aid	605 ILCS 5/5-701.7
• Local Mass Transit Districts	605 ILCS 5/5-701.8
• Circuit Court or Other Governmental Expenses Related to County Highway Department (Counties over 1,000,000 population)	605 ILCS 5/5-701.10
• Payment of Principal and Interest on Road Bonds	605 ILCS 5/5-701.11 & 701.16
Although the Statutes do not explicitly state that MFT funds can be used for the work items below, IDOT has determined that the costs for these items are eligible if they are related to MFT maintenance or construction.	
• Engineering Services	BLRS Man. Sect. 4-3.02(e)
• Right-of-Way	BLRS Man. Sect. 4-3.03(b)
• Salt Storage Facilities	BLRS Man. Sect. 4-3.03(b)
• Storm Sewers	BLRS Man. Sect. 4-3.03(b)
• Traffic Control Devices	BLRS Man. Sect. 4-3.03(b)
• Sidewalks and Curb Ramps	BLRS Man. Sect. 4-3.03(b)
• Equipment Operating Costs	BLRS Man. Sect. 4-3.03(b)
• Utility Adjustments	BLRS Man. Sect. 4-3.03(b)
• Salary and Expenses of County Engineer	BLRS Man. Sect. 4-3.03(c)
• Wages or Salaries	BLRS Man. Sect. 4-3.03(c)
• Holidays, Vacation, and Sick Leave	BLRS Man. Sect. 4-3.03(c)
• Workers' Compensation Insurance Premiums	BLRS Man. Sect. 4-3.03(c)
• Retirement Fund and Social Security Fund	BLRS Man. Sect. 4-3.03(c)
• Health, Hospitalization, and Life Insurance	BLRS Man. Sect. 4-3.03(c)
• Asset Management	BLRS Man. Sect. 4-3.06
• Miscellaneous Expenses in Connection with Bond Issue Improvements	BLRS Man. Sect. 4-4.02
• Tree Trimming and Tree Removal	BLRS Man. Sect. 14-1.03(i)
• Railroad Signal Protection and Crossing Work	BLRS Man. Chapter 40

Note: All uses of Motor Fuel Tax are subject to the provisions and limitations reflected in the *BLRS Manual* and the States statutes.

PERMISSIBLE USES OF MFT FUNDS (BY COUNTIES)

Figure 4-3C

BUREAU OF LOCAL ROADS & STREETS
LOCAL ROADS AND STREETS FUNDING

June 2018

4-3-21

WORK ITEM	REFERENCE
Construction and Maintenance of:	
• Township and District Roads	605 ILCS 5/6-701.1 & 701.2
• Grade Separations and Approaches	605 ILCS 5/6-701.1 & 701.2
• Bicycle Signs and Markings	605 ILCS 5/6-701.7
• Non-dedicated Subdivision Roads established before July 23, 1959	605 ILCS 5/6-701.8
• Joint Improvements/ Construction or Maintenance Agreements	605 ILCS 5/4-409, 605 ILCS 5/9-101
Allotment of Funds for:	
• Investments and Deposits	50 ILCS 340/1
• Engineering Services	605 ILCS 5/6-701.3
• Retirement of Indebtedness (MFT Eligible Items)	605 ILCS 5/6-701.4
• Local Mass Transit Districts	605 ILCS 5/6-701.5
• Payment of Principal and Interest on Road Bonds	605 ILCS 5/6-701.6
• Township's Share of the Great River Road Projects	605 ILCS 5/6-701.9
<p>Although the Statutes do not explicitly state that MFT funds can be used for the work items below, IDOT has determined that the costs for these items are eligible if they are related to MFT maintenance or construction.</p>	
• Right-of-Way	BLRS Man. Sect. 4-3.03(b)
• Salt Storage Facilities	BLRS Man. Sect. 4-3.03(b)
• Storm Sewers	BLRS Man. Sect. 4-3.03(b)
• Traffic Control Devices	BLRS Man. Sect. 4-3.03(b)
• Sidewalks and Curb Ramps	BLRS Man. Sect. 4-3.03(b)
• Equipment Operating Costs	BLRS Man. Sect. 4-3.03(b)
• Utility Adjustments	BLRS Man. Sect. 4-3.03(b)
• Wages or Salaries	BLRS Man. Sect. 4-3.03(c)
• Holidays, Vacation, and Sick Leave	BLRS Man. Sect. 4-3.03(c)
• Workers' Compensation Insurance Premiums	BLRS Man. Sect. 4-3.03(c)
• Retirement Fund and Social Security Fund	BLRS Man. Sect. 4-3.03(c)
• Health, Hospitalization, and Life Insurance	BLRS Man. Sect. 4-3.03(c)
• Asset Management	BLRS Man. Sect. 4-3.06
• Miscellaneous Expenses in Connection with Bond Issue Improvements	BLRS Man. Sect. 4-4.02
• Tree Trimming and Tree Removal	BLRS Man. Sect. 14-1.03(i)
• Railroad Signal Protection and Crossing Work	BLRS Man. Chapter 40

Note: All uses of Motor Fuel Tax are subject to the provisions and limitations reflected in the *BLRS Manual* and the States statutes.

PERMISSIBLE USES OF MFT FUNDS
(By Townships and Road Districts)

Figure 4-3D

4-4 LOCAL FUNDING

4-4.01 Local Road and Bridge Taxes

County and road districts can impose taxes to provide local funding for roadway and bridge projects. These funds are typically used solely for costs associated with these roadway and bridge projects.

4-4.02 Bonds

Any LPA may finance a highway improvement project with the proceeds of a bond issue and request that the use of MFT funds for the payment of principal and interest when retiring the bonds. If MFT funds will be used to pay any portion of the project cost or LPA indebtedness, the entire improvement must be accomplished under the general supervision of IDOT. Any portion of the improvement that is ineligible for MFT funding may not be included in the cost of the indebtedness to be repaid with MFT funds.

There are generally two types of bond issues for which a LPA may commit future MFT allotment; these are discussed in the following subsections.

4-4.02(a) **General Obligation Bonds**

Any LPA may issue General Obligation Bonds for constructing a highway improvement. The LPA issuing the bonds establishes a general tax levy that is pledged toward retiring the bonds. When MFT funds are used to retire the bonds, the tax levy must be cancelled. Except as otherwise permitted by law, the question of issuing the bonds must be submitted by referendum to the voters of the taxing district ([605 ILCS 5/5-605](#), [605 ILCS 5/6-510](#), [605 ILCS 5/6-513](#), and [65 ILCS 5/8-4-1](#)).

4-4.02(b) **MFT Fund Bonds**

Counties, road districts, and municipalities are authorized to issue bonds to construct highway improvements and to repay the principal and interest with MFT funds, pursuant to [30 ILCS 385/1 - 385/4](#). These are identified as “Motor Fuel Tax Fund Bonds” and must be administered in a manner similar to General Obligation Bonds. Because the bond issue is not secured by a property tax levy, it will not be necessary to provide a “certification of cancellation of tax levy.”

4-4.03 Special Assessments

Article 9 of the Illinois Municipal Code, [65 ILCS 5/9-1-1 et seq.](#) provides legislative authority for municipalities to construct local improvements that will be paid for by assessments against the properties affected. When a municipality undertakes a highway or street improvement using special assessment financing, the public benefit portion assessed against the agency may be paid with MFT funds, providing that the project itself is eligible for MFT funding. The project must be constructed under the general supervision and approval of IDOT. The procedures for initiating a special assessment project are similar to those used for a bond issue project, see [65 ILCS 5/9-1-1, et seq.](#), [605 ILCS 5/7-202.13](#).

A municipality may use a special assessment to finance the local share of a project constructed with Federal-aid funds, pursuant to [65 ILCS 5/9-2-113](#).

4-4.04 Road Impact Fees

LPAs have the authority to adopt and implement road improvement impact fee ordinances and resolutions. Road improvement impact fee means any charge or fee levied or imposed by a unit of local government as a condition to the issuance of a building permit or a certificate of occupancy in connection with a new development, when any portion of the revenues collected is intended to be used to fund any portion of the costs of road improvements ([605 ILCS 5/5-901, et seq.](#)).

4-4.05 Local General Funds

Local general funds refer to all funds that are received by the LPA through property taxes, income taxes, sales taxes, and other taxes assessed by the LPA. A portion of these funds may be allocated to roadway and bridge projects at the discretion of the LPA.

4-5 ACRONYMS

This is a summary of the acronyms used within this chapter.

ADT	Average Daily Traffic
BBS	Bureau of Bridges and Structures
BLRS	Bureau of Local Roads and Streets
CBLRS	Central Bureau of Local Roads and Streets
CMAQ	Congestion Mitigation and Air Quality Improvement
EAV	Equalized Assessed Valuation
EDP	Economic Development Program
ER	Emergency Relief
<i>FAST</i>	<i>Fixing America's Surface Transportation Act</i>
FBP	Ferry Boats and Ferry Terminal Program
FHWA	Federal Highway Administration
FLAP	Federal Land Access Program
GCPF	Grade Crossing Protection Fund
HPP	High Priority Project
HPR	Highway Planning and Research
HRRR	High Risk Rural Roads
HSIP	Highway Safety Improvement Program
HTF	Highway Trust Fund
IDNR	Illinois Department of Natural Resources
IDOT	Illinois Department of Transportation
IEPA	Illinois Environmental Protection Agency
IESNA	Illuminating Engineering Society of North America
<i>ILCS</i>	<i>Illinois Compiled Statutes</i>
IRIS	Illinois Roadway Information System
IROADS	Illinois Roadway Analysis Database System
ISIS	Illinois Structure Information System
ITEP	Illinois Transportation Enhancement Program
LBU	Local Bridge Unit
LPA	Local Public Agency
<i>MAP-21</i>	<i>Moving Ahead for Progress in the 21st Century Act</i>
MFT	Motor Fuel Tax
MPO	Metropolitan Planning Organization
NHPP	National Highway Performance Program
NHS	National Highway System
OPP	Office of Planning and Programming
PL	Metropolitan Planning
PTELL	Property Tax Extension Limitation Law
RTP	Recreational Trails Program
SHPO	State Historic Preservation Officer
SMA	State Match Assistance
SRTS	Safe Routes to School
STBGP	Surface Transportation Block Grant Program
STP	Surface Transportation Program
STR	Surface Transportation Program – Rural

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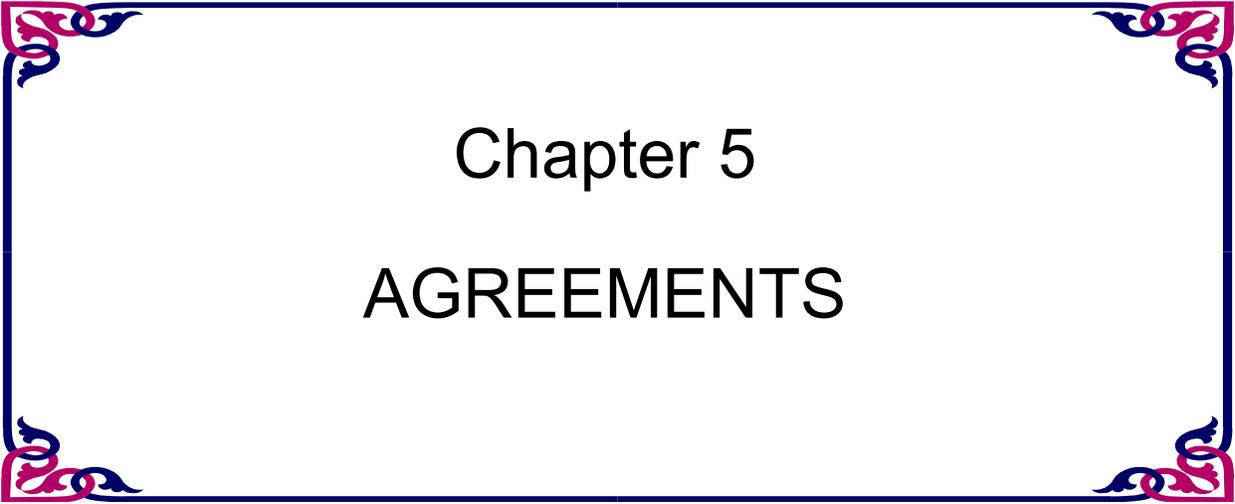
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STU	Surface Transportation Program – Urban
TA	Transportation Alternative
TARP	Truck Access Route Program
TBP	Township Bridge Program
TIP	Transportation Improvement Program

4-6 REFERENCES

1. [Illinois Compiled Statutes](#)
2. *A Guide to the Federal-Aid Highway Emergency Relief Program*, FHWA
3. *FHWA Emergency Relief Manual*, FHWA, May 2013
4. [A Guide to Federal-Aid Programs and Projects](#), FHWA



Chapter 5

AGREEMENTS

BUREAU OF LOCAL ROADS AND STREETS MANUAL

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Chapter 5
AGREEMENTS

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5-1 AGREEMENTS OF UNDERSTANDING

5-1.01 Statutory Background

Generally, highway construction by local highway authorities that is funded in whole or in part with federal funds, State funds, and Motor Fuel Tax (MFT) funds, requires Illinois Department of Transportation (IDOT) supervision and approval. However, [605 ILCS 5/5-402](#) and [605 ILCS 5/7-203.2](#) provide that counties and municipalities may enter into Agreements of Understanding (AOU) with IDOT to construct and/or maintain highways or streets using MFT funds, or other State funds administered under MFT policies and procedures, without the approval and supervision of IDOT. The local public agency (LPA), however, must show that it is adequately organized, staffed, equipped, and financed to discharge satisfactorily such statutory requirements and duties. LPAs must have an appointed full-time engineer. The district will determine if the LPA has met these requirements.

Road construction projects that are funded entirely by a county (e.g., do not receive any State or federal financing) may be performed under the supervision and approval of IDOT at the option of the county.

5-1.02 Agreement Content

An AOU between IDOT and a LPA are typically used for maintenance and construction, or maintenance only. Counties may include work done by road districts under the supervision of the county engineer. IDOT and the LPA must prepare the terms of the agreement to ensure that funds are expended consistent with the intent of the law. The following stipulations should be included in the agreement:

- The responsibilities of the LPA and IDOT must be listed.
- In the event that a vacancy occurs in the LPA's position responsible for overseeing expenditure of MFT funds (e.g., county engineer, city/public engineer), the AOU is terminated and a new AOU would need to be sought by the LPA once the vacancy is filled.
- IDOT may make periodic inspection of the jobsite and project files, as it deems necessary, to satisfy itself that the work is being done in compliance with the plans, specifications, and IDOT policies and procedures.
- The agreement must state what work is covered by the agreement.
- The provisions of the agreement do not apply to any federal or State funded projects that are not administered under the MFT policies and procedures.
- The agreement can be terminated at the discretion of either party.

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- The use of MFT funds, other than specified in the agreement, will require approval by IDOT.
- The provisions of the agreement may be tailored to the LPA.

5-1.03 LPA Responsibilities

The LPA is responsible for the following items and any other items that are pertinent to providing a clear understanding between the parties in the agreement:

1. To maintain an adequate, fully staffed organization and to keep IDOT advised of the organization and key staff changes.
2. To follow the procedures set forth by [605 ILCS 5/5-403](#) and [605 ILCS 5/6-701.3](#) for counties, and [605 ILCS 5/7-203](#) for municipalities for maintenance and construction of any highway or street.
3. To use the design criteria and to follow the policies and procedures adopted by the Bureau of Local Roads and Streets (BLRS). Modifications and deviations must be approved by IDOT.
4. For construction projects, to ensure all plans and specifications are prepared by an Illinois licensed professional engineer or by individuals under the direct supervision of an Illinois licensed professional engineer. All plans are required to have an engineer's professional and/or structural seal and signature, as applicable.
5. For counties to obtain the Bureau of Bridges and Structures (BBS) approval for all preliminary bridge design and hydraulic reports, and all final bridge plans for bridges and culverts having a clear span of more than 30 ft (9 m) ([605 ILCS 5/5-205.1](#)).
6. To obtain all necessary environmental clearances and construction permits before advertising a project for letting or constructing the project with its own forces.
7. Securing all right-of-way (ROW) prior to advertising a project for letting, unless prior approval by IDOT has been secured.
8. To obtain IDOT's approval of plans and specifications for improvements or connections to State highways and/or appurtenances prior to advertising for bids. The LPA is responsible for withholding the final payment to the contractor until written certification is received by IDOT that the project has been completed according to the plans and specifications and the work is acceptable to IDOT.
9. To advertise for bids using IDOT's Notice to Contractor Bulletin and to let contracts for maintenance or construction to the lowest responsible bidder, or to do the work itself through its officers, agents, or employees.
10. To perform, or have someone else perform, construction and material inspections required for its construction and maintenance projects using procedures in accordance with the IDOT's [Project Procedure Guide \(PPG\)](#).
11. To make available, upon request, all records for review and/or audit by IDOT. These documents must be retained for a minimum of five years after the work has been completed. LPAs operating under AOU are required to supply IDOT, if applicable to the project, with one copy of the various documents for record purposes as specified in AOU.
12. To obtain IDOT approval prior to any use of MFT funds, other than those specified in the agreement. For approvals by the LPA, the approval must be prior to any use of MFT funds.

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13. To request IDOT's authorization of MFT funds on a timely basis.
14. To submit an annual report to the district listing the projects undertaken, the funds expended, and the projects' status.
15. To furnish the district all documents required by AOU.

5-1.04 District Responsibilities

The district is responsible for the following items and any other items that are pertinent to providing a clear understanding between the parties in the agreement:

- to authorize MFT funds when requested by the LPA,
- to provide a general review of the LPA's operation under the AOU, and
- to perform a documentation review of MFT projects.

5-1.05 Processing Agreements of Understanding

A LPA desiring to operate under AOU or desiring additional information about AOU should contact the district. Sample agreements are available from the district. If the district determines that a LPA is qualified to operate under AOU, the agreement must be executed by the LPA and Central Bureau of Local Roads and Streets (CBLRS).

5-2 JURISDICTIONAL TRANSFERS

5-2.01 Jurisdictional Responsibility

Jurisdiction is the authority and obligation to administer, control, construct, maintain, and operate a highway subject to the provisions of the Illinois Highway Code. A highway is defined as any public way for vehicular travel which has been established by statute, dedication, or prescription. The term highway includes rights of way, bridges, drainage structures, signs, guardrails, and all other appurtenances necessary for vehicular travel. A highway in a rural area may be called a road. A highway in a municipality may be referred to as a street ([605 ILCS 5/2-202](#)). See [Chapter 3](#) for a discussion on jurisdiction responsibilities.

When a highway authority has jurisdiction of a highway, it has various obligations that include reconstruction, signing, maintenance, etc. All of these obligations remain with the highway authority until the jurisdiction is transferred to another highway authority. Transfer of the maintenance or any other portion of jurisdiction is not allowed. For example, a county can enter into an agreement to have another highway authority perform maintenance on a section of highway; however, this does not relieve the county from the ultimate obligation of ensuring that the maintenance is performed. The agreement for the performance of services is not an agreement for the transfer of jurisdiction. In other words, a maintenance agreement does not transfer jurisdiction.

A jurisdictional transfer will occur because it is either mandatory or agreed. A municipality that annexes territory that includes a township/road district road within the annexed territory or adjacent to a township road is mandated to assume jurisdiction of the township road within the annexed area ([65 ILCS 5/7-1-1 et seq](#) and [605 ILCS 5/6-203](#)). Agreed-to jurisdictional transfers occur because of the logical need to transfer authority to another highway system. For example, relocating an existing State highway may result in decreased traffic occurring on the old State highway. Therefore, the old State highway may be better served under the jurisdiction of a county, municipality, or township/district road system.

It should also be noted a jurisdictional transfer agreement in itself does not automatically include the transfer of land rights associated with the highway. A separate process involving transfer of land rights must be performed; see Section 5-2.04.

A highway authority may provide MFT or other local funds based on the present worth of the highway or structure to the highway authority that agrees to assume jurisdiction for the facility. The present worth is determined using the life-cycle cost of keeping the highway in a serviceable condition. The highway authority assuming jurisdiction of the roadway must deposit all present worth funds, regardless of source, into their MFT account and must be expended in accordance with MFT standards, policies, and procedures.

The CBLRS should be notified of all jurisdictional transfers (both mandatory and agreed-to) for review and recordkeeping purposes. The District and/or the LPA is responsible for notifying the CBLRS of proposed and completed jurisdictional transfers, and ensuring the proper documentation is submitted to IDOT for processing. See Section 5-2.03 for documentation and procedures required for agreed-to jurisdictional transfers.

5-2.02 Jurisdictional Transfers - IDOT Responsibilities

[605 ILCS 5/4-409](#) authorizes IDOT to enter into a written contract with any other highway authority for the jurisdiction of any highway or section of highway. IDOT may also, upon application of any highway authority, authorize the highway authority to enter into a written contract with any other highway authority for the jurisdiction of any highway or section of highway. IDOT is therefore required to be a party to all agreements involving the transfer of jurisdiction of a highway from one highway authority to another. If the transfer involves the State highway system, IDOT is one of the executors of the agreement. If the transfer is between two highway authorities, IDOT approval of the jurisdictional transfer agreement is required. The Director of Program Development approves all jurisdictional transfers between two local highway authorities.

Jurisdictional transfers involving marked or unmarked state highways may require additional review by Office of Planning and Programming, Bureau of Operations, and the IDOT Route Marking and Signing Committee prior to execution of the agreement by IDOT. If the changes involve a U.S. Route, then IDOT must seek federal approval from the AASHTO Special Committee on U.S. Route Numbering. The department will review LPA proposals for jurisdictional transfers of state highways on a case-by-case basis. Jurisdictional transfers mandated by the Illinois Compiled Statutes (ILCS) do not require IDOT approval. However, a municipality is required to notify a township regarding an annexed township road that automatically becomes the municipality's jurisdiction ([65 ILCS 5/7-1-1](#)). The municipality should also notify IDOT and the county engineer. Agreed-to jurisdictional transfers between two highway authorities will require IDOT approval.

The CBLRS is responsible for maintaining records of jurisdictional transfers on microfilm/microfiche. The original hard copies of jurisdictional transfer agreements are retained at the Illinois State Archives.

The Highway Systems Manager in the CBLRS serves as the clearinghouse for jurisdictional matters. In this capacity, the Highway Systems Manager reviews documents requiring IDOT approval, maintains records/documentation of highway jurisdiction, and review of jurisdictional matters requiring clarification.

5-2.03 Jurisdictional Transfers - Procedures and Documentation

Transfers of jurisdiction shall be accomplished in accordance with the BLRS publication, [Highway Jurisdiction Guidelines for Highway and Street Systems](#). Although these guidelines shall be used as a general guide to develop documentation, each proposed transfer shall be evaluated on a case-by-case basis. The Highway Systems Manager of the CBLRS is responsible for reviewing documents involving jurisdictional transfers. To avoid delays in the review and execution of jurisdictional transfer agreements, it is strongly recommended that draft agreements for all proposed jurisdictional transfers be submitted to the CBLRS for review prior to execution.

Any jurisdictional transfer agreement involving a local highway authority will require documentation by a written jurisdictional transfer agreement. The district staff or LPA

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developing the agreement should use the standard jurisdictional transfer agreements developed by the department in order to provide compliance with the Illinois Compiled Statutes, to maintain records of all jurisdictional transfers, and to approve those transfers requiring departmental approval. These transfer documents are maintained by the department and are considered official legal documents for establishing jurisdiction.

One of the three Bureau of Local Roads (BLR) forms listed below shall be used for agreed-to jurisdictional transfers. The first two are for jurisdictional transfers between the state and a local highway authority. The third form is for jurisdictional transfers between two local highway authorities only. Each form lists the additional documents required for jurisdictional transfers involving municipalities, counties, or townships. The BLR forms should not be altered.

The following standard agreement forms are provided by CBLRS:

- Form [BLR 05210](#) – Local Public Agency - State Jurisdictional Transfer
Applicability: State and Local Highway Authority Transfers with Improvement or when a Present Worth transfer involves the exchange of MFT funds.
- Form [BLR 05211](#) – Local Public Agency - State Agreement for Jurisdictional Transfer
Applicability: State and Local Highway Authority Transfers without Improvement
- Form [BLR 05212](#) – Local Public Agency Agreement for Jurisdictional Transfer
Applicability: Local to Local Highway Authority Transfers only

At a minimum, the jurisdictional transfer agreements should contain the following items and any other items pertinent (intergovernmental agreements, plans, plats, letters of intent, correspondence, present worth, etc.) to providing a clear understanding and legal representation between the parties in the transfer:

1. Conveyor/Recipient. The document should clearly indicate the highway authority conveying and the highway authority receiving the segment of highway involved.
2. Termini Description. Provide a clear description of the highway and the beginning and ending points involved in the transfer. Use route numbers and local highway names. Include federal route numbers when available.
3. Length. Accurately measure the length of highway to be transferred to the nearest hundredth of a mile (hundredth of a kilometer).
4. Structures. Indicate and identify all National Bridge Inspection Standards (NBIS) structures to either be included or excluded in the transfer by their structure number(s). Any structure(s) not excluded is considered a part of the jurisdictional transfer.
5. Illinois Statutes. The jurisdictional transfer should identify the State law that authorizes the legality of the transfer.
6. Other Information. Include any additional information that may assist in identifying the transfer. Jurisdictional transfers involving an improvement should include the applicable project number, State section number, LPA section number, contract number, etc.
7. Location Map. Include a map (minimum 8½" x 11") to provide the location of the affected highway involved. The map should be legible (reproducible by photocopy) and indicate the limits of the portion of highway to be transferred.

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8. Resolutions and Ordinances. The State law requires that a resolution from the county and an ordinance from the municipality be executed for an agreed-to jurisdictional transfer. Examples are contained in the [Highway Jurisdiction Guidelines for Highway and Street Systems](#).
9. Effective Date of Jurisdictional Transfer. Clearly define the date and method by which a jurisdictional transfer will take place. Jurisdictional Transfers between two local highway authorities will normally be effective upon the Director of Program Development's approval. If a construction improvement is tied to the transfer, these will normally become effective 21 days after final inspection and acceptance of the improvement.

It is strongly recommended that a draft agreement be submitted for review. Submit a minimum of three original signed and sealed documents of the final agreement to the district for final review and execution by the department.

5-2.04 Transfer of Land Rights

[605 ILCS 5/4-508](#) allows for the conveyance of any real estate interest from the State to another highway authority in conjunction with a past or present transfer of jurisdiction. The conveyance of any real estate interest from the State to another highway authority is not mandatory and must be mutually agreeable to both parties. Therefore, the State can transfer jurisdiction to another highway authority without the conveyance of any real estate interest. This conveyance can be part of the jurisdictional master agreement. For conveyance of land associated with a highway in which the jurisdiction has been previously transferred, a Letter of Intent between IDOT and the LPA is prepared to initiate the transfer; see Section 5-4. After concurrence of the concerned parties, a plat and legal description of the property to be transferred is prepared. If the transfer material is acceptable, the LPA must pass and execute the appropriate ordinances/resolutions to accept the transfer and submit five certified copies to the district. The transfer is then approved by the Secretary of Transportation.

No part of the transferred land can be vacated or disposed of without the approval of IDOT that may require compensation for non-public use. For additional guidance on real estate transfers, see the IDOT [Land Acquisition Policies and Procedures Manual](#).

5-3 JOINT AGREEMENTS

Certain state and federal funds are required to follow [30 ILCS 708/](#), the Grant Accountability and Transparency Act (GATA). Additional information and requirements of state agencies and/or grantees (LPAs and others) may be found at the State of Illinois website for grants.

GATA will provide a uniform, effective, and efficient method of providing notice of funding opportunities, selection of recipients, and monitoring of funds provided. For projects using funds covered by GATA additional requirements and procedures may be required in addition to those in Section 5-3.

Website: <https://grants.illinois.gov>

Procedures and policies for other projects not required to follow GATA procedures are discussed in this Section.

5-3.01 Joint Agreements Between State and LPAs

5-3.01(a) Requirements for a Joint Agreement

IDOT may enter into a joint agreement for maintenance, engineering, administration, or improvement of a highway with any other highway agency. A local-State agreement is required when LPAs are involved in projects financed in part with State and/or federal funds. A joint agreement is required for a project when one or more of the following conditions apply:

- The project involves planned improvements on the local highway system for which construction, engineering, utility relocation, and/or ROW acquisition will be paid totally, or in part, with State or federal funds.
- The project involves planned improvements on the State highway system for which the LPA is participating in the cost and/or any subsequent maintenance thereof on any phase of the improvement or in energy and/or maintenance costs of traffic signals or street lighting. If a highway is constructed to a greater width or of a different type than is required by IDOT, the LPA will be responsible for the excess cost ([605 ILCS 5/4-404](#)).
- The project involves planned improvements on the State or local highway system involving a jurisdictional transfer between the State and the LPA.

5-3.01(b) Agreement Content

For most LPA projects involving Federal-aid and/or State funds, standard agreement forms ([BLR 05310](#) or [BLR 05311](#)) should be used. These forms cannot be used if there are three or more parties to the agreement. Multiple parties may be included on standard agreements if one agency is designated as the lead agency. All transactions with IDOT will be with the lead agency. A separate Intergovernmental Agreement (IGA) should be prepared to specify payment and other responsibilities between the lead and additional LPAs, this is not required to be submitted to IDOT.

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If an individual joint agreement is required to be written, the agreement must clearly identify the responsibilities of each party. The agreement should incorporate the following items and any other items pertinent to providing a clear understanding between the parties relative to the project:

- Include the LPA name, MFT section number for each agency that is a party to the agreement, federal project number (for Federal-aid projects), and State job number.
- Provide a description of the work to be accomplished.
- Include a location description and location map.
- Identify who is responsible for the surveys, plan preparation, letting and awarding of the contract, and construction supervision of the work.
- Specify the method of construction (e.g., State-let contract, local-let contract, LPA day-labor forces).
- Note if a separate concurrence in the award of the contract is required.
- Separate the division of cost by showing the funding responsibilities and the type of funds being used. Clearly identify any limiting amounts. Attach any supporting documentation (e.g., resolutions).
- Identify the method of payment and/or reimbursement by each party.
- Identify the specific Disadvantaged Business Enterprise (DBE) program being followed by the LPA.
- Identify who is responsible for any utility adjustments and disposition of encroachments.
- Note any parking restriction applicable to the project.
- Specify jurisdiction of the facility, both before and after construction.
- Specify who is responsible for maintenance after the project is completed.
- Specify who is responsible for maintenance and energy costs for traffic signals and/or street lighting.
- If a transfer of jurisdiction is involved, identify limits of the roadway included in the jurisdictional transfer and attach all necessary transfer documents in accordance with the BLRS publication, [Highway Jurisdiction Guidelines for Highway and Street Systems](#).
- Identify who is responsible for record retention during and after the project completion.
- Note the agreement expiration date and any other special conditions.

When the LPA desires to use one or more lump-sum amounts before the federal percentage is calculated, specify the order in which it should be used and the “not to exceed” amount. The following provides an example of the wording that should be used on Form [BLR 05310](#) with regards to State Match Assistance (SMA) or other funds:

- Lump-sum \$60,000 TARP funds not to exceed 50% of final cost of project credited to the project to be utilized first.
- Lump-sum to be utilized second not to exceed \$20,000 EDP funds.
- Lump-sum to be utilized third not to exceed \$40,000 SMA funds.

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These specified amounts will be used in sequence, with the federal and local percentages calculated after they are deducted.

When the LPA desires to use a percent “not to exceed” commitment, the federal and State funds will be used concurrently at the specified percentages up to the “not to exceed” amount (e.g., 20% not to exceed \$40,000 SMA Funds).

Be advised that the “not to exceed” amount specified under a percentage commitment will be tied up and unavailable for programming until the project is closed out and a documentation review has been complete by IDOT or the Federal Highway Administration (FHWA), if required.

5-3.01(c) Draft Agreement

Draft joint agreements should be prepared for all projects. They will be reviewed by both the district and CBLRS for those projects involving special funding or conditions that are not adequately addressed in the standard agreement format. The purpose of this review is to ensure that the improvement is compatible with the State highway system, the work is included in the State’s Annual Construction Program and ROW and other provisions in the proposed agreement are adequate to permit federal and/or State participation in the project. Comments and recommendations on the draft agreement will be provided for incorporation into the final agreement.

5-3.01(d) Final Agreement

A minimum of three original agreements by the appropriate LPA official(s) must be furnished to the district. Provide one additional original agreement for each LPA that is a party to the agreement.

If the improvement is on the State highway system, the joint agreement will be processed through Bureau of Design & Environment (BDE) unless the project is being funded with Federal-aid funds allocated for improvements selected by LPAs. Agreements for these projects, as well as improvements on the local highway system, will be processed through BLRS.

There may be special cases where these procedures will need to be modified. Contact the appropriate bureau office for guidance.

The agreements should be signed by the chairman of the county board, mayor, or village president. If the agreement is signed by an appointed local official, the local official signing the agreement must be authorized to do so by resolution of the local governing body. This resolution should also be on file in the district office. See [Section 2-3.05\(b\)](#) on signature requirements.

Since the highway commissioner has jurisdiction of township road district highways, the highway commissioner must also approve the expenditure of township road district funds, and the construction, repair, and maintenance of township roads within the road district.

A copy of the executed agreement is furnished to the LPA upon execution by IDOT. Copies are also sent to the district and all bureaus and agencies affected by the project.

5-3.01(e) Amendment to Federal-Aid Agreement

If a revision to the Division of Cost of the original joint agreement ([BLR 05310](#)) or any subsequent amendments is required, the LPA should use [BLR 05311](#). [BLR 05310](#) was not designed to function as an amendatory document.

All requirements of Section 5-3.01(c) and 5-3.01(d) should be addressed.

5-3.02 Agreement for County Engineer's Salary

When a county elects to transfer part of its Surface Transportation Program (STP) funds to IDOT in return for State funds to be used to pay a portion of its county engineer's salary, a joint agreement is needed. [BLR 09220](#) can be used for this type of agreement.

This agreement will remain in force and effect for a period of six years from the date of execution unless terminated by either party upon 30 days written notification by either party. The agreement will be temporarily suspended during any period for which the county does not have sufficient STP funds available to be transferred.

5-3.03 Joint Agreements Between LPAs

[605 ILCS 5/4-409](#) allows IDOT to authorize a highway authority to enter into a contract with another highway authority for the jurisdiction, maintenance, administration, engineering, or improvement of any highway.

5-3.03(a) Guidelines for an Agreement

When two LPAs are jointly constructing a highway improvement, a joint agreement between the LPAs is always advisable. In some circumstances, IDOT requires this joint agreement to be submitted for approval. In all other cases, one copy of an executed joint agreement should be submitted to IDOT for informational purposes. A joint agreement is required for a project when any of the following conditions apply:

- A municipality proposes to improve a municipal street extension that extends into another municipality ([605 ILCS 5/7-202.3](#)).
- A county proposes to improve a street (not a county highway) within a municipality with a population exceeding 500 persons to connect or complete a county highway within a municipality ([605 ILCS 5/5-408](#)).
- A municipality and a township propose a joint improvement ([65 ILCS 5/11-85](#)).
- A county elects to surrender its jurisdiction over the ROW and improvement of a county highway ([65 ILCS 5/11-91.2](#) and [605 ILCS 5/5-410.1](#)).
- When a county(ies) deems it necessary to make improvements of county line roads ([605 ILCS 5/5-405](#)) or to make improvements with adjacent counties ([605 ILCS 5/5-406](#) and [407](#)).
- LPAs in adjacent States.

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- When a municipality maintains a county highway within a municipality ([605 ILCS 5/5-410](#)).

5-3.03(b) Format

Clearly identify the responsibilities of each party. Address in the agreement any applicable items listed in Section 5-3.01(b). Also, address in the agreement any additional items that might be pertinent to ensure a clear understanding between the agencies executing the agreement.

5-3.03(c) Draft Agreement

Furnish a draft copy of the joint agreement to the district for review and comment if IDOT approval of the agreement is required. The purpose of this review is to ensure the agreement is compatible with statutory requirements.

5-3.03(d) Signatures

The agreement should be signed by the chairman of the county board, mayor or village president, or highway commissioner, as appropriate. If an appointed local official signs the agreement, then the official must be authorized to do so by resolution of the local governing body. This resolution should also be on file in the district. See [Section 2-3.05\(b\)](#) on signature requirements.

5-3.03(e) Distribution

When IDOT approval of the joint agreement is required, a minimum of four original agreements by the appropriate LPA official(s) must be furnished to the district. Provide additional original agreement if more than two LPAs are a party to the agreement.

A copy of the executed agreement is furnished to each LPA upon approval by IDOT. Copies are also furnished to the CBLRS and all agencies affected by the project. When IDOT requires copies of the agreement for informational purposes only one copy of the executed agreement needs to be provided to the district.

5-3.04 Interagency Cooperative Agreements

The *Intergovernmental Agency Act*, [5 ILCS 220](#) allows any power, privilege, function, or authority that may be exercised by a public agency to be exercised, combined, transferred, or exercised jointly with another public agency. These contracts must be approved by the governing bodies of each participating agency. These agreements should reflect a sustaining working relationship between the agencies. It should emphasize the mutual benefits and costs and should not focus on one particular project. When the agreement involves functions that affect roads and streets, the agreement should be sent to IDOT for review.

5-4 LETTERS OF INTENT / LETTERS OF UNDERSTANDING

Jurisdictional transfers are usually initiated by IDOT or a LPA that identifies a need for an improvement of a specific roadway or structure on a State unmarked route; however, certain transfers of jurisdiction can occur without an improvement. Negotiations for a jurisdictional transfer of State unmarked routes should begin when an improvement is being formulated and should be documented with a letter of intent (LOI) (accepting or refusing the jurisdictional transfer) and signed by the LPA. Subsequently, a Joint Agreement with all affected agencies (State, county, and/or municipality) must be executed before the jurisdictional transfer occurs. Section 5-2 discusses jurisdictional transfers.

State improvements that do not involve local financial participation may at times be covered by Letters of Understanding (LOU). The LOU can also cover local improvements with no State or federal participation. A LOU may be used to delineate maintenance responsibilities (e.g., parking lanes, curbs and gutter flags, sidewalks, manholes, catch basins, storm sewers, traffic signals, utilities, appurtenances). Many of the provisions typically included in a Joint Agreement of Understanding should also be included in a LOU (e.g., ordinances for sewer, parking, and encroachments; provisions for curb ramps and plan approval).

The district will prepare the LOU. A brief description of the proposed project and description of the responsibilities of both parties must be included in the LOU. The LOU will be signed by the Regional Engineer, and transmitted to the LPA for the local official's signature.

5-5 ENGINEERING AGREEMENTS

5-5.01 General

If a LPA elects to use a consultant for engineering services, the LPA shall enter into an agreement with a consultant meeting the requirements of [225 ILCS 325/23](#) to provide engineering services financed in whole or in part with Federal, State, Motor Fuel Tax (MFT), or Township Bridge Program (TBP) funds.

Funds will be limited to the amount of compensation called for in the agreement. These funds cannot be expended for payment of engineering services until an agreement has been submitted to, and approved by, the IDOT.

The term consultant refers to a professional design firm (private firm) or sole proprietorship (individual) for engineering services. Services provided for land surveying or architectural design meeting the requirements of [225 ILCS 330](#), [225 ILCS 305](#), or [225 ILCS 315](#); respectively, will be referred as professional services, when they are not included with the engineering services agreement.

5-5.02 Types of Services

1. Project Specific. A contract between the LPA for the performance of services and defined scope of work related to a specific project.
2. Multiphase. A project-specific contract where the defined scope of work is divided into phases which may be negotiated and authorized individually as the project progresses.
3. Master Task Order. A contract for the performance of services On Call or Indefinite Delivery/Indefinite Quantity (IDIQ) under task or work orders issued on an as-needed or on-call basis, for an established contract period. The solicitation and contract provisions shall:
 - Specify a reasonable maximum length of contract period, including the number and period of any allowable contract extensions.
 - Specify a maximum total contract dollar amount which may be awarded under contract;
 - Include a statement of work, requirements, specifications, or other description to define the general scope, complexity, and professional nature of the services.
 - Individual task orders or work orders shall be assigned to the Master Task Order. Once assigned, the LPA should negotiate with the consultant according to Section 5-5.06(c). If negotiations are unsuccessful, the LPA may use a different Master Task Order or may follow the Qualifications Based Selection (QBS) procedures for selecting a different consultant.

5-5.03 Length of Services

The maximum term including extensions of the engineering services contract may not exceed 10 years for contracts using non-federal funds or for project specific using federal funds. If federal funds are used for an IDIQ the maximum term length is five years and all work orders must be issued during the term of the contract. The total time from execution of an IDIQ contract to the completion of all work orders issued cannot exceed 10 years. However, the length of the contract should be determined based on the scope of work. The LPA shall comply with any established Illinois statutory or local ordinance that further limits the length of a contract.

5-5.04 Conflict of Interests

It is important to understand that conflicts of interest may be direct or indirect when securing engineering services (e.g., as result of a personal or business relationship). Additionally, the appearance of a conflict of interest should be avoided, as an apparent conflict may undermine public trust if not sufficiently mitigated.

Conflict of interest requirements include but are not limited to the following:

1. The requirement that no LPA elected official, officer, or employee who participates in the procurement, management, or administration of engineering services contracts or subcontracts shall have, directly or indirectly, any financial or other interest in connection with such engineering contracts or subcontracts. For instance, a county may not enter into a contract with a professional design firm if the county engineer is also a member of that professional design firm.
2. The requirement that no person or entity performing services for a LPA shall have, directly or indirectly, any financial or other interest in any real property acquired for the project.
3. The person or entity performing services for a LPA may perform design and construction engineering/management and/or inspection on the same project provided the LPA has established the necessary controls and provides sufficient oversight to ensure that a conflict of interest does not exist, or has approved procedures to mitigate any conflict or potential for a conflict. Prior to allowing a person or entity to provide engineering services on multiple phases of a project, the LPA shall evaluate that their policies, procedures, and practices associated with the procurement, management, and administration of engineering consultant services comply with Federal and State laws and FHWA requirements.

A person or entity performing construction engineering/management and/or inspection services on the same project on which the person or entity also performed design services provides the person or entity an opportunity to influence or affect project decisions on scope changes, design changes, construction revisions, contract change orders, and other related issues. This may result in project delivery efficiencies, as the person or entity that designed the project is well-suited to verify that the project is being constructed in accordance with the design and may resolve issues related to the design on behalf of the contracting agency. However, procuring a different person or entity other than the consultant to provide the necessary construction engineering/management and/or inspection services provides another level of review and reduces the potential for a conflict of interest.

4. IDOT employees shall not participate in the procurement, management, and administration of engineering and design related consultant services on behalf of the LPA.

5-5.05 Retainage

The LPA may withhold retainage on state, MFT, or TBP funded engineering services agreements. However, withholding retainage provides no substantial benefits to the LPA. The LPA shall not withhold retainage on federally funded engineering agreements.

5-5.06 Qualifications Based Selection for Engineering and Professional Services

5-5.06(a) Introduction

The principal objective of the QBS procedures is to allow a LPA to locate a qualified consultant to undertake the project; then, through negotiations, engage the consultant to provide the creative and technical work required at a fair and reasonable cost. The area and magnitude of responsibility in the process can vary widely according to project type.

5-5.06(b) Applicability

The procurement procedures outlined in Section 5-5.06(c) and (e) apply to the selection of all engineering and professional services based on the following funding type parameters:

1. State, MFT or TBP Funded Engineering and Professional Services. QBS procedures for public notice, evaluation, selection, and contract negotiations shall be used whenever a project requiring architectural, engineering, or land surveying services is proposed for a LPA of fewer than 3,000,000 inhabitants, except home rule units, unless the LPA has a satisfactory relationship for services with one or more firms ([50 ILCS 510](#)).

A LPA may also waive the requirements of public notice, evaluation and selection if the LPA determines, by resolution, that an emergency situation exists and a consultant must be selected in an emergency manner, or if the total cost of services from a consultant is estimated to be less than \$25,000 ([50 ILCS 510/8](#)). If the LPA estimates the total cost of services within the contract will be less than \$25,000, IDOT will not approve any agreement or supplemental that exceeds the \$25,000 threshold; unless the LPA followed state statutes.

2. Federally Funded Engineering Services. LPAs shall use QBS in accordance with The Brooks Act, (40 USC 11) and the FHWA's requirements for Procurement, Management, and Administration of Engineering and Design related Services (23 CFR 172) to promote open competition by advertising, ranking, selecting, and negotiating contracts based on demonstrated competence and qualifications for the type of engineering and design related services being procured, and at a fair and reasonable price.

If a consultant is selected to work on multiple phases of a project, the dollar limits apply to the total combined cost of all included phases. If the LPA included an option to perform one or more other phases as part of the original solicitation, the LPA is then not required to conduct another QBS unless the LPA elects to select a different consultant for subsequent phases.

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3. Small Purchases for Federally Funded Engineering Services. If the cost of any individual contract for engineering services (Phase I, II, III, etc.) will be less than \$25,000, then the small purchase procurement method may be used (23 CFR 172.7(a)(2)). The following additional requirements shall apply to the small purchase procurement method:
 - a. The scope of work, within one project phase shall not be broken down into smaller components merely to permit the use of small purchase procedures.
 - b. A minimum of three consultants are required to satisfy the adequate number of qualified sources reviewed. In instances where less than three qualified consultants respond to the solicitation, the LPA shall contact the District LR&S office for verification of the LPA's solicitation to determine the solicitation did not contain conditions or requirements which arbitrarily limited competition.
 - c. Contract costs may be negotiated in accordance with State small purchase procedures; however, the allowability of costs shall be determined in accordance with the Federal cost principles.
 - d. If the cost of any supplemental changes to the contract for the engineering services exceeds \$25,000 and federal QBS procedures were not followed, federal funds become ineligible above the \$25,000 on engineering services.
4. Locally Funded Engineering Services. The IDOT does not have oversight over contracts for engineering services funded entirely with local funds. However, the LPA is still required to comply with [50 ILCS 510](#).

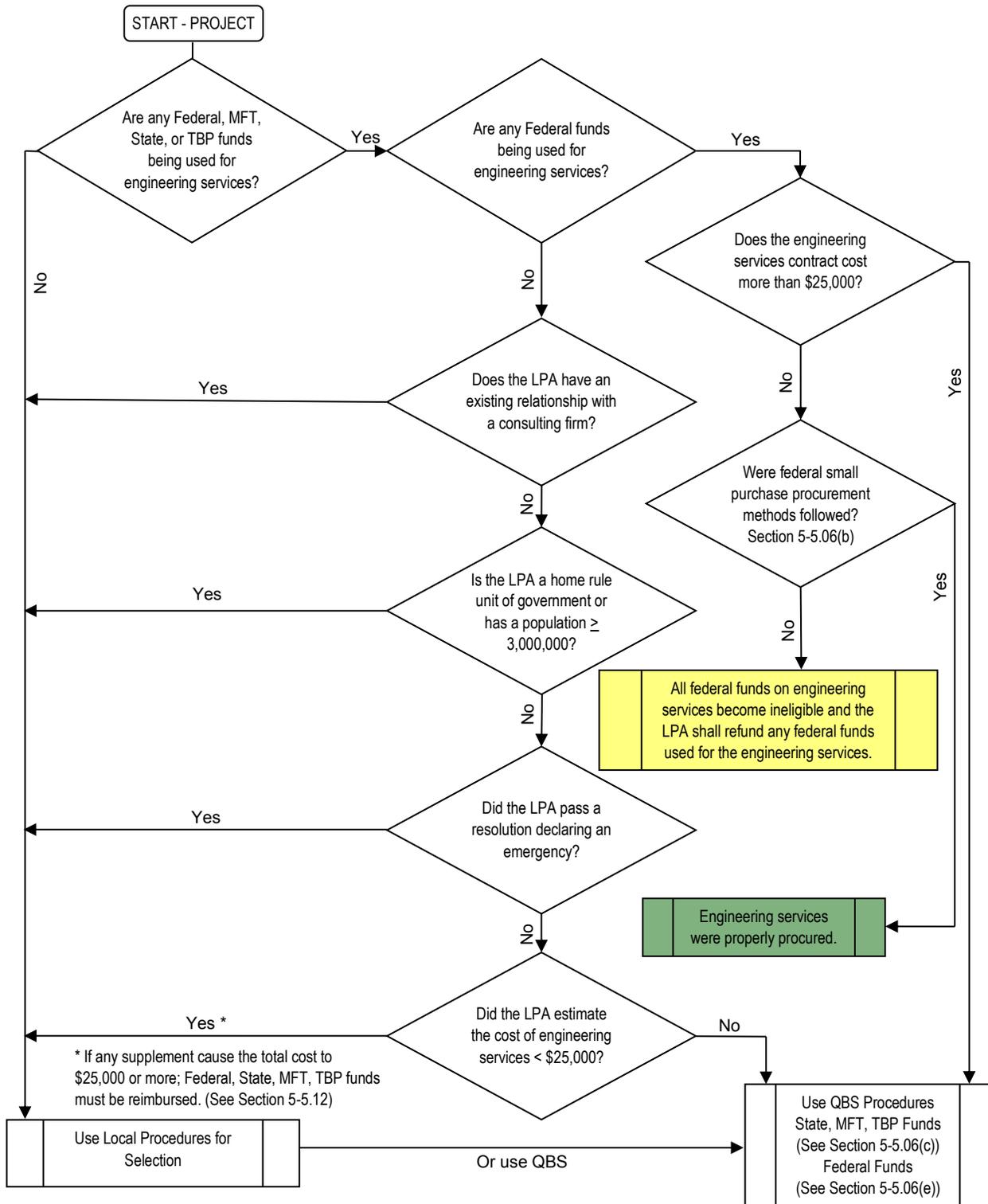
If a consultant is selected to work on multiple phases of a project, the dollar limits apply to the total combined cost of all included phases. If the LPA included an option to perform one or more other phases as part of the original solicitation, the LPA is then not required to conduct another QBS unless the LPA elects to select a different consultant for subsequent phases.

The procurement method used for selection of engineering services will not impact funding for the construction of a project.

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REQUIREMENTS FOR QBS

Figure 5-5A

5-5.06(c) State Required QBS Procedures using State, MFT or TBP Funds

The procedure for State required QBS procurement consists of the following five basic steps:

1. Define the Project. Clearly define the scope of the services desired. Depending on the amount of data, this may be on one or more pages. This information should include the following:
 - describe in general terms the need, purpose, and objective of the project;
 - identify the various project components;
 - establish the desired timetable for the effort;
 - identify any expected problems; and
 - determine the total project budget.

A comprehensive evaluation of the problem or need that resulted in the project is essential to the procurement process. The solution, approach, and eventual design for the project will evolve out of the expertise offered by the consultant responding to the request for technical proposals. To ensure that the respondents address the project properly and effectively, clearly articulate all known parameters of the project.

The LPA may skip to Step 5 when both of the following criteria are met.

- The LPA elects to select a consultant that has a satisfactory working relationship with the LPA; and
 - The engineering services contract is not being paid for using federal funds.
2. Public Notice. Whenever a project requiring engineering services is proposed, the LPA shall post a public notice requesting a statement of interest along with the qualifications and performance data from consultants. This may be accomplished through an advertisement in a local newspaper, posting on the LPA's website, or through various trade magazines or websites.

Consider the following sources when preparing a list of potential firms:

- identification of consultants from the LPA's or IDOT's prequalification list;
 - a directory or source list identifying small, minority, and women owned businesses with capabilities relevant to the project;
 - discussions with other persons or agencies who have accomplished similar work;
 - lists of consultants secured from professional societies; and/or
 - lists of consultants secured from the agency's own experience of consultants.
3. Evaluation. The LPA shall evaluate the consultant submitting letters of interest, taking into account qualifications, ability of professional personnel, past record and experience, performance data on file, willingness to meet time requirements, location, workload of the consultant, and such other qualifications-based factors.

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The first objective of evaluation is the elimination of all respondents who are not qualified or who do not have the experience for the required work. The LPA may conduct discussions with and require presentations by consultants deemed to be the most qualified based on their qualifications, approach to the project, and ability to furnish the required services. When conducted, interviews shall occur separately with a minimum of three consultants, or all qualified consultants if less than three qualified consultants respond. If the LPA decides to conduct discussions with and/or require presentations by consultants deemed to be the most qualified, this should be included in the public notice.

In no case shall the LPA, prior to selecting a consultant for negotiation, seek formal or informal submission of verbal, written, or sealed estimates of costs or proposals in terms of dollars, hours required, percentage of construction cost, or any other measure of compensation.

4. Selection. On the basis of evaluations, discussions and presentations, the LPA shall select no less than three consultants which it determines to be the most qualified to provide services for the project and rank them in order of qualifications to provide services regarding the specific project. The LPA shall then contact the consultant ranked most preferred and attempt to negotiate a contract at a fair and reasonable compensation, taking into account the estimated value, scope, complexity, and professional nature of the services to be rendered. Typical criteria for evaluating and ranking consultants are included in Figure 5-5B. If fewer than three qualified consultants submit letters of interest and the LPA determines that one or both are so qualified, the LPA may proceed to negotiate a contract.
5. Contract Negotiation. The LPA shall prepare a written description of the scope of the proposed services to be used as a basis for negotiations and shall negotiate a contract with the highest qualified consultant at compensation that the LPA determines in writing to be fair and reasonable. In making this decision, the LPA shall take into account the estimated value, scope, complexity, and professional nature of the services to be rendered.

An important objective of the negotiation process is to reach a complete and mutual understanding of the scope of professional services to be provided and the degree of performance desired. The general scope of professional services developed in the procurement process should be broad in order to serve as the basis for negotiation. The negotiation process offers the opportunity for refinement, amendment, and complete definition of the services to be rendered, as well as the areas of responsibility and liability for those services. Mutual understanding on these points at the negotiation stage can minimize the possibility of misunderstanding as the project progresses.

Special elements of the engineering portion of the project to be established during negotiation include:

- project schedule,
- manpower requirement and timing,
- level of engineering effort,
- avenues of research, and
- areas of responsibility/liability.

Any percentage fee contract should be fully supported by an acceptable estimate of man-hours, anticipated hourly payroll rates by classification of employee for the project, and applicable overhead and burden rates. These rates should be evaluated and, if determined to be acceptable, the percentage fee may be approved by the district.

The consultant's method of dividing the project into work units and calculating related time units are to be such that the estimate can be readily reviewed. The consultant will use its own estimates of man-hours, rates of pay, overhead, profit, and itemized non-salary costs based on the consultant's work force and past job experience.

When the prime consultant requires the services of another consultant to provide expertise, advice, or information to the prime consultant, the prime consultant will complete an analysis of fee for engineering services (including a breakdown of direct salary and direct non-salary costs) or supply specific rate for services (e.g. testing). The prime consultant is responsible for ensuring that Disadvantage Business Enterprises (DBEs) will have an equitable opportunity to compete for subcontracts. See [Chapters 8](#) and [24](#) for information on DBEs for LPAs.

Contracts between LPAs and consultants must be set forth in fully executed agreements. If there is an agreement with the consultant, and if the fee is within range of the budget, then proceed to finalize an agreement. If problems arise with the scope of the project or the fee, further discussion and clarification may be required.

Selection of a consultant by qualification provides no guarantee that the LPA and the consultant will come to an agreeable fee. For that reason, the ranking process provides, in addition to the first preference, at least two alternative qualified consultant. If agreement cannot be reached on the scope and fee, the LPA may drop negotiations with the top-ranked consultant and continue the process with the second ranked consultant at Step 5.

6. Summary. Ranking and negotiations involve a considerable amount of subjective judgment. Engineering projects involve a large expenditure of public funds, accountability for decisions, and value judgments is most important. To ensure adequate accountability:
 - involve more than one knowledgeable person in the evaluation process,
 - be consistent in reviewing each applicant,
 - keep accurate and complete records of all correspondence, memoranda, evaluations, and decisions.

The primary purpose of undertaking the QBS process is to locate the most qualified consultant to do the work and negotiate a fair and equitable agreement. Federal and Illinois law prohibits selecting consultants based on cost for any project exceeding \$25,000. The selection shall be based on the consultant's experience and expertise in projects of the same type as proposed.

5-5.06(d) Development of Selection Criteria and Weighting

LPAs must determine and publish selection criteria and weightings for projects requiring federal QBS. These criteria and weightings are suggested for all projects regardless of funding. The criteria "must assess the demonstrated competence and qualifications for the type of professional services solicited". LPAs must determine and publish selection criteria and

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weightings for projects requiring federal QBS. The total of all weights must equal 100%. Factors may include but are not limited to the following and Figure 5-5B:

- Technical Approach (10 - 30%)
 - e.g., project understanding,
 - innovative concepts,
 - quality control procedures, or
 - other items
- Firm Experience (10 - 30%)
- Specialized Expertise (10 - 30%)
- Staff Capabilities (Prime/Sub) (10 - 30%)
- Work Load Capacity (10 - 30%)
- Past performance (10 - 30%)

In addition there are two nominal non-qualifications based criteria for evaluation. They are limited to a combined weight of 10% or less*:

- *In-State or Local Presence
 - not based on political or jurisdictional boundaries and may be applied on a project by project basis,
 - used where a need to provide a local presence has been established, a local presence will add value to quality and efficiency of the contract and application of the criteria results in an appropriate number of qualified consultants, and/or
 - if the consultant indicates in the proposal that a local project office will be established the criteria is satisfied.
- *Participation of Qualified and Certified DBE Sub-consultants

The following shall not be used as a factor in the evaluation, ranking and selection:

- All price and cost related items.
 - This includes: cost proposals, direct salaries/wage rates; indirect costs (overhead), and other direct costs.
- In-State or Local Preference (other than as explained above).

The weight given to each evaluation criterion in the ranking process may vary from project to project, with more weight towards the criteria that are critical to the success of the project. Typical technical criteria for both evaluating and ranking entities should include but not be limited to the following:

- (1) The education, experience, and expertise of the entity's principals and key employees.
- (2) The entity's general experience, stability, and history of performance on projects similar to the one under consideration.
- (3) Availability of adequate personnel, equipment, and facilities to do the required work expeditiously.
- (4) The name, or names, of individuals in the entity who will be assigned key project responsibilities, with particular attention to their qualification, competence, and past performance.
- (5) The entity's approach to the planning, organizing, and management of a project effort, including communication procedures, approach to problem solving, data gathering methods, evaluation techniques, and similar factors.
- (6) Facilities and equipment owned by the entity, including computer capability, reproduction and communication equipment, laboratory and testing equipment, or other specialized equipment applicable to the project under consideration.
- (7) Present workload with attention to current and future commitments of available personnel, particularly those key persons expected to be assigned to your project.
- (8) Financial stability, with particular attention to avoiding a situation in which the entity is solely dependent on income from the project at hand for its existence.
- (9) Recommendations and opinions of each entity's previous clients as to its ability to meet deadlines and remain within budget. Prior clients may also be able to advise you as to each entity's sense of responsibility; attitudes of key personnel; concern for economy, efficiency, and environment; and quality of service.
- (10) If practical, observation of each entity's facility and the sites of current and/or completed projects.
- (11) The reputation and integrity of the engineering entity within the professional field and the community.
- (12) Awards received by the entity and technical papers authored by employees.
- (13) Special considerations for some projects might include staff conversant in foreign languages.

Non-technical criteria may not exceed 10% of the total evaluation and rank weighting. Typical non-technical criteria for both evaluating and ranking entities may include but not be limited to the following:

1. Proximity of the engineering entity to the proposed project site and/or the agency's office.
2. Qualified minority representation.
3. How DBE goals are addressed.

CONSULTANT RANKING CRITERIA

Figure 5-5B

5-5.06(e) Federal QBS Requirements

For engineering agreements \$25,000 or greater which include federal funds, LPAs are required to use QBS which is fully compliant with Federal requirements of 23 CFR 172 and the Brooks Act. As sub-grantees, LPAs must use competitive negotiation supported by qualification based selection procedures. This is the primary method of procurement for engineering and design related services using federal funding. See Figure 5-5C for specific requirements.

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The procedure for federal QBS procurement consists of the following steps. Section 5-5.07 provides an example of a LPA's QBS policies and procedures.

A box (similar to this) will indicate minimum requirements to be addressed for each step. If the LPA's QBS policies and procedures will match the existing language in any step from Section 5-5, their QBS cannot reference the *BLRS Manual* but must include the language.

1. Initial Administration. LPAs shall develop and sustain organizational capacity and provide the resources necessary for the procurement, management, and administration of engineering and design related consultant services.

The LPA must include in their QBS procedures the organizational structure for the procurement, management, and administration for consultant services.

2. Written Policies and Procedures. The LPA shall prepare and maintain written policies and procedures for the procurement, management, and administration of engineering and design related consultant services. All LPAs must have their own QBS procedure. When it follows the policies and procedures as outlined in Section 5-5 and specifically Section 5-5.06(e), further approval is not required. However; if the LPA's QBS procedure has significant differences then IDOT approval is required, see Section 5-5.06(g).

An example of a significant difference would be a multi-step selection process, which would require submission to IDOT for approval.

LPAs who decide their procedures will result in significant differences from that shown in Section 5-5.06(e) must submit their QBS procedures for review and approval by IDOT.

3. Define the Project. Clearly define the scope of the services desired. Depending on the amount of data, this may be on one or more pages. This information should include the following items:
 - describe in general terms the need, purpose, and objective of the project;
 - identify the various project components;
 - establish the desired timetable for the effort;
 - identify any expected problems; and
 - determine the total project budget.

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A comprehensive evaluation of the purpose and need that resulted in the project is essential to the procurement process. The solution, approach, and eventual design for the project will evolve out of the expertise offered by the consultant responding to the request for technical proposals. To ensure that the respondents address the project properly and effectively, clearly articulate all known parameters of the project. This may be the appropriate time to prepare an independent in-house estimate of engineering costs as discussed in Step 9.

The LPA must include at a minimum the five (5) items outlined above in their QBS procedures to define the scope and services desired for the project.

4. Public Notice. Whenever a project requiring engineering services is proposed, the LPA shall post a public notice for a Request for Proposal (RFP) along with the qualifications and performance data expected of consultants. This may be accomplished through an advertisement in a local newspaper, posting on the LPA's website, or through various trade magazines or websites. The notice shall provide no less than 14 calendar days from the last date of acceptance of proposals.

As a minimum, the following must be included in the LPA's QBS procedures:

- if an interview will or will not be required;
- where the public notice will be published;
- the time periods the public notice will be published.

Consider the following sources when preparing a list of potential firms:

- identification of consultants from the LPA's or IDOT's file;
- a directory or source list identifying small, minority, and women owned businesses with capabilities relevant to the project;
- discussions with other persons or agencies who have accomplished similar work;
- lists of consultants secured from professional societies; and/or
- lists of consultants secured from the agency's own experience of consultants.

If the LPA plans to use a multi-step process to minimize the efforts of the LPA in narrowing the list of qualified and interested consultants, this must be described in their QBS procedures and submitted to IDOT for approval. The process must also be described in the initial public notice.

As a minimum, the following must be included in the LPA's QBS procedures:

- if an interview will or will not be required;
- where the public notice will be published;
- the time periods the public notice will be published.

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5. Conflicts of Interest. See Section 5-5.04.

As a minimum, the LPA must include Section 5-5.04, when determining a conflict of interest for engineering services. The LPA may also require the consultants to submit a disclosure statement with their SOI or RFP. IDOT uses the [BDE DISC 2 Template](#), which provides an example of a consultant's disclosure statement. A copy of the LPA's consultant's disclosure statement shall be included in their QBS procedures, if required by their QBS procedures.

6. Suspension and Debarment. Verify any suspension or debarment actions and eligibility of consultants as specified in 2 CFR Part 1200 and 2 CFR Part 180. This may be accomplished by checking the System for Award Management Exclusions (SAM Exclusions); obtaining a disclosure statement; or adding a clause or condition to the covered transaction with the consultant. A LPA may want to also verify by checking the [Chief Procurement Office's \(IDOT\) \(CPO\) website](#), including the other three associated CPOs (Capital Development Board, General Services, and Higher Education), the Illinois Department of Labor and the Illinois Department of Human Rights. Hyperlinks to these other websites can be found on the [CPO IDOT website](#).

As a minimum, the LPA must include the procedure to verify consultant suspension or debarment. The LPA may also require the consultants to submit a disclosure statement with their SOI or RFP. IDOT uses the [BDE DISC 2 Template](#), which provides an example of a consultant's disclosure statement. A copy of the LPA's consultant's disclosure statement shall be included in their QBS procedures, if required by their QBS procedures.

7. Evaluation. The LPA shall evaluate the consultant submitting letters of interest, taking into account qualifications, ability of professional personnel, past record and experience, performance data on file, willingness to meet time requirements, workload of the consultant, and other qualifications-based factors.

The first objective of the evaluation is to determine the most qualified respondents who have the experience for the required work. The LPA may conduct discussions with and require presentations by consultants deemed to be the most qualified based on their qualifications, approach to the project, and ability to furnish the required services. When conducted, interviews shall occur separately with a minimum of three consultants, or all qualified consultants if less than three qualified consultants respond. If the LPA decides to conduct discussions with and/or require presentations by consultants deemed to be the most qualified, this must be included in the public notice.

Criterion and weighting for the evaluation is discussed further in Section 5-5.06(d) and Figure 5-5B.

In no case shall the LPA, prior to selecting a consultant for negotiation, seek formal or informal submission of verbal, written, or sealed estimates of costs or proposals in terms of dollars, hours required, percentage of construction cost, or any other measure of compensation.

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If the LPA plans to use a multi-step process to minimize the efforts of the LPA in narrowing the list of qualified and interested consultants, this must be described in their QBS procedures. This is discussed in Step 4 – Public Notice above.

The criterion and weighting for evaluation and selection is discussed in Section 5-5.06(d) and Figure 5-5B. If there is a possibility of additional discussions or presentations being required, this must be described in their QBS procedures. The criterion and weighting need to be included in all RFPs.

If a form will be used during the evaluation, a copy of a typical form must be included in their QBS procedures.

8. Selection. The selection committee is typically composed of individuals, who have some knowledge of the project and procedures. This could be the county / city engineer, public works director, LPA staff, an elected official, municipal manager, private citizen, etc. On the basis of evaluations (Step 7), discussions and presentations, the LPA shall select no less than three consultants which it determines to be the most qualified to provide services for the project and rank them in order of qualifications to provide services regarding the specific project. The LPA shall contact the consultant ranked most preferred and attempt to negotiate a contract at a fair and reasonable compensation, taking into account the estimated value, scope, complexity, and professional nature of the services to be rendered.

If fewer than three qualified consultants submit letters of interest and the LPA determines that one or both are so qualified, IDOT approval is required. After IDOT approval is received, the LPA may proceed to negotiate a contract.

The LPA must include who (titles) will serve on the selection committee. Procedures for selecting must also be described, an example of IDOT's selection procedures may be found in [Section 8-2.05](#) of the *BDE Manual*.

9. Estimate of Cost for Engineering. The LPA must prepare an independent in-house estimate for the cost of engineering prior to the start of negotiations. This will be used during the contract negotiation process.

The LPA must prepare an independent in-house estimate for the cost of engineering prior to the start of negotiations. This should be prepared early in the process, but must be completed before starting contract negotiations.

10. Contract Negotiation. The LPA shall prepare a written description of the scope of the proposed services to be used as a basis for negotiations. The LPA shall negotiate a contract with the highest qualified consultant at compensation that the LPA determines in writing to be fair and reasonable. In making this decision, the LPA shall take into account the estimated value, scope, complexity and professional nature of the services to be rendered.

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An important objective of the negotiation process is to reach a complete and mutual understanding of the scope of professional services to be provided and the degree of performance desired. The general scope of professional services developed in the procurement process should be broad in order to serve as the basis for negotiation. The negotiation process offers the opportunity for refinement, amendment, and complete definition of the services to be rendered, as well as the areas of responsibility and liability for those services. Mutual understanding on these points at the negotiation stage can minimize the possibility of misunderstanding as the project progresses.

Special elements of the engineering portion of the project to be established during negotiation include:

- project schedule,
- manpower requirement and timing,
- level of engineering effort,
- avenues of research, and
- areas of responsibility/liability.

Any percentage fee contract should be fully supported by an acceptable estimate of man-hours, anticipated hourly payroll rates by classification of employee for the project, and applicable overhead and burden rates. These rates should be evaluated and, if determined to be acceptable, the percentage fee may be approved by the district.

The consultant's method of dividing the project into work units and calculating related time units are to be such that the estimate can be readily reviewed. The consultant will use its own estimates of man-hours, rates of pay, overhead, profit, and itemized non-salary costs based on the consultant's work force and past job experience.

When the prime consultant requires the services of another consultant to provide expertise, advice, or information to the prime consultant, the prime consultant will complete an analysis of fee for engineering services (including a breakdown of direct salary and direct non-salary costs) or supply specific rate for services (e.g. testing). The consultant is responsible for ensuring that DBEs will have an equitable opportunity to compete for subcontracts. See [Chapters 8](#) and [24](#) for information on DBEs for LPAs.

Contracts between LPAs and consultants must be set forth in fully executed agreements. See Section 5-5.08 for the BLR forms, which must be used for the agreement between the LPA and the consultant when federal funds are used for professional services. If there is an agreement with the consultant, and if the fee is within range of the budget, proceed to finalize an agreement. If problems arise with the scope of the project or the fee, further discussion and clarification may be required.

Selection of a consultant by qualification provides no guarantee that the LPA and the consultant will come to an agreeable fee. For that reason, the ranking process provides at least two alternative qualified consultants, in addition to the first preference. If agreement cannot be reached on the scope and fee, the LPA may drop negotiations with the top-ranked consultant and continue the process with the second ranked consultant at Step 9. The LPA shall develop procedures for proper disposal of concealed cost proposals of unsuccessful bidders.

The LPA must describe their procedures for contract negotiations, including procedures if a contract cannot be negotiated with the selected consultant along with the proper disposal of sealed cost proposals.

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11. Acceptable Costs. IDOT will review and approve the engineering agreement to verify elements of contract costs, acceptable indirect cost rate(s) for application to contracts, and assuring consultant compliance with the Federal cost principles.

The LPA must describe their process for review, if one exists; before forwarding the engineering agreement to IDOT for further review and approval.

12. Invoice Processing. See Section 5-10.

The LPA must describe their process for review and approving for payment; before forwarding the request for reimbursement to IDOT for further review and approval.

13. Ongoing and Finalizing Administration. The following are ongoing and finalizing requirements:

- Monitoring the consultant's work and compliance with the terms, conditions, and specifications of the contract;
- Preparing a consultant's performance evaluation when services are completed and using such performance data in future evaluation and ranking of consultant to provide similar services;
- Closing-out a contract;
- Retaining supporting programmatic and contract records;
- Determining the extent to which the consultant, who is responsible for the professional quality, technical accuracy, and coordination of services, may be reasonably liable for costs resulting from errors and omissions in the work furnished under its contract;
- Assessing administrative, contractual, or legal remedies in instances where consultants violate or breach contract terms and conditions, and providing for such sanctions and penalties as may be appropriate; and
- Resolving disputes in the procurement, management, and administration of engineering and design related consultant services.

This is a compilation of items 12 through 18 as shown in Figure 5-5C and further discussed in Sections 5-5.13 and 5-5.14. The LPA must describe their process for these items.

In summary, the ranking and negotiations involve a considerable amount of subjective judgment. Because engineering projects involve a large expenditure of public funds, accountability for decisions and value judgments is most important. To ensure adequate accountability:

- involve more than one knowledgeable person in the evaluation process,
- be consistent in reviewing each applicant,
- keep accurate and complete records of all correspondence, memoranda, evaluations, and decisions.

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The primary purpose of undertaking the QBS process is to locate the most qualified consultant to do the work and negotiate a fair and equitable agreement. Current federal regulations limit contracts in the amount to the lesser of \$150,000 or the state limits ([50 ILCS 510/8](#)). The state limit on contracts is currently less than \$25,000, therefore; contracts above this amount require federal QBS in the selection of a consultant (see Section 5-5.06(b) Item 2). For contracts below this amount the Small Purchases requirements need to be followed (see Section 5-5.06(b) Item 3). The selection shall be based on the consultant's experience and expertise in projects of the same type as being solicited.

Per 23 CFR 172.5 - Program management and oversight.

- (a) **STA responsibilities.** STAs or other recipients ... (*i.e.* STA State Transportation Agency – IDOT)
- (b) **Subrecipient responsibilities.** Subrecipients shall develop and sustain organizational capacity and provide the resources necessary for the procurement, management, and administration of engineering and design related consultant services, reimbursed in whole or in part with FAHP funding as specified in 23 U.S.C. 106(g)(4)(A). Responsibilities shall include the following:
 - (1) Adopting written policies and procedures prescribed by the awarding STA or other recipient for the procurement, management, and administration of engineering and design related consultant services in accordance with applicable Federal and State laws and regulations; or when not prescribed, shall include:
 - (i) Preparing and maintaining its own written policies and procedures in accordance with paragraph (c) of this section; or
 - (ii) Submitting documentation associated with each procurement and subsequent contract to the awarding STA or other grantee for review to assess compliance with applicable Federal and State laws, regulations, and the requirements of this part;
 - (2) Procuring, managing, and administering engineering and design related consultant services in accordance with applicable Federal and State laws, regulations, and approved policies and procedures, as specified in 23 CFR 1.9(a).
- (c) Written policies and procedures. The contracting agency shall prepare and maintain written policies and procedures for the procurement, management, and administration of engineering and design related consultant services. The FHWA shall approve the written policies and procedures, including all revisions to such policies and procedures, of the STA or recipient to assess compliance with applicable requirements. The STA or other recipient shall approve the written policies and procedures, including all revisions to such policies and procedures, of a subrecipient to assess compliance with applicable requirements. These policies and procedures shall address, as appropriate for each method of procurement a contracting agency proposes to use, the following items to ensure compliance with Federal and State laws, regulations, and the requirements of this part:
 - 1. Preparing a scope of work and evaluation factors for the ranking/selection of a consultant;
 - 2. Soliciting interests, qualifications, or proposals from prospective consultants;

Federal QBS Requirements

Figure 5-5C

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3. Preventing, identifying, and mitigating conflicts of interest for employees of both the contracting agency and consultants and promptly disclosing in writing any potential conflict to the STA and FHWA, as specified in 2 CFR 200.112 and 23 CFR 1.33, and the requirements of this part.
4. Verifying suspension and debarment actions and eligibility of consultants, as specified in 2 CFR part 1200 and 2 CFR part 180;
5. Evaluating interests, qualifications, or proposals and the ranking/selection of a consultant;
6. Determining, based upon State procedures and the size and complexity of a project, the need for additional discussions following RFP submission and evaluation;
7. Preparing an independent agency estimate for use in negotiation with the selected consultant;
8. Selecting appropriate contract type, payment method, and terms and incorporating required contract provisions, assurances, and certifications in accordance with § 172.9;
9. Negotiating a contract with the selected consultant including instructions for proper disposal of concealed cost proposals of unsuccessful bidders;
10. Establishing elements of contract costs, accepting indirect cost rate(s) for application to contracts, and assuring consultant compliance with the Federal cost principles in accordance with § 172.11;
11. Ensuring consultant costs billed are allowable in accordance with the Federal cost principles and consistent with the contract terms as well as the acceptability and progress of the consultant's work;
12. Monitoring the consultant's work and compliance with the terms, conditions, and specifications of the contract;
13. Preparing a consultant's performance evaluation when services are completed and using such performance data in future evaluation and ranking of consultant to provide similar services;
14. Closing-out a contract;
15. Retaining supporting programmatic and contract records, as specified in 2 CFR 200.333 and the requirements of this part;
16. Determining the extent to which the consultant, which is responsible for the professional quality, technical accuracy, and coordination of services, may be reasonably liable for costs resulting from errors and omissions in the work furnished under its contract;
17. Assessing administrative, contractual, or legal remedies in instances where consultants violate or breach contract terms and conditions, and providing for such sanctions and penalties as may be appropriate; and
18. Resolving disputes in the procurement, management, and administration of engineering and design related consultant services.

FEDERAL QBS REQUIREMENTS

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Figure 5-5C

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5-5.06(f) Major Differences between Federal and State Requirements

The major differences between federal and state requirements are:

- The existing relationship and home rule requirements permitted with state, MFT, and TBP QBS are not allowed for federal QBS.
- IDIQ contracts are limited to a maximum term length of five years for federal QBS and ten years for non-federal.
- A maximum of 10% of the evaluation criteria can be assigned to local presence and DBE participation for federal QBS.
- Notification must be provided to responding applicants of the final ranking of the three most highly qualified applicants for federal QBS.
- Preparing a consultant's performance evaluation when services are completed and using such performance data and ranking of the consultant with regard to providing similar services in the future is required for federal QBS.
- Additional work which was not included in the scope of services and evaluation criteria may not be allowed to be added to contracts for federal QBS.
- If non-competitive procurement (sole source, emergency, or less than three consultants) is used; it must be approved by IDOT in advance for federal QBS.
- LPAs are responsible for ensuring a consultant's costs billed are allowable in accordance with the federal cost principles and consistent with the contract terms for federal QBS.

5-5.06(g) Approval of LPA's Federal QBS Procedures

When federal funds are used to fund a portion of engineering and design related services, LPAs must have their own QBS procedures. If it follows the policies and procedures as outlined in Section 5-5 and specifically Section 5-5.06(e), further approval may not be required. However; if the LPA's QBS procedures has significant differences then IDOT approval is required.

An example of a significant difference would be a multi-step selection process, which would require submission to IDOT for approval.

The LPA's QBS procedures should address items discussed in Section 5-5.06, along with:

- Purpose and applicability.
- Definitions.
- Program management and oversight.
- Procurement methods and procedures.
- Contracts and administration.
- Allowable costs and oversight.

The above topics are expanded in 23 CFR 172 – *Procurement, Management, And Administration of Engineering and Design Related Services*.

5-5.07 Federal QBS Examples

In order to assist LPAs in implementing Federal QBS requirements two examples are provided with a) written policies and procedures and b) project specific information. Either example can be modified by LPAs to meet their individual organization structures and needs or project specific details. Contact the appropriate District LR&S office, if your QBS requires IDOT approval (see Section 5-5.06(g)) or for additional questions.

5-5.07(a) Written Policies and Procedures Example

[LPA Name] receives federal funds, which may be used to fund the engineering and design related consultant services. Our written policies and procedures as describe herein for QBS will meet the requirements of 23 CFR 172 and the Brooks Act.

1. Initial Administration – [LPA Name] QBS policy and procedures assigns responsibilities to the following [**describe the titles and/or other departments**] within [LPA Name] organization for the procurement, management, and administration for consultant services.
2. Written Policies and Procedures – [LPA Name] believes their adopted QBS written policies and procedures substantially follows Section 5-5 of the *BLRS Manual* and specifically Section 5-5.06(e), therefore; approval from IDOT is not required.
3. Project Description – [LPA Name] will use the following five items when developing the project description and may include additional items when unique circumstances exist.
 - Describe in general terms the need, purpose, and objective of the project;
 - Identify the various project components;
 - Establish the desired timetable for the effort;
 - Identify any expected problems
 - Determine the total project budget.
4. Public Notice – [LPA Name] will post an announcement on our website [**website address**] and/or publish an ad in a newspaper with appropriate circulation. The item will be advertised for at least 14 days prior to the acceptance of proposals, and at least twice in the newspaper and/or on continuous display on our website.
5. Conflict of Interest – [LPA Name] require consultants to submit a disclosure statement with their procedures. [LPA Name] require the use of the IDOT BDE DISC 2 Template as their conflict of interest form.
6. Suspension and Debarment – [LPA Name] will use of SAM Exclusions, IDOT's CPO's website and the three other state CPO's websites to verify suspensions and debarments actions to ensure the eligibility of firms short listed and selected for projects.
7. Evaluation Factors – [LPA Name] allows the following [**specify title**] to set the evaluation factors for each project, but must include a minimum of [**number**] criterion and stay within the established weighting range. The maximum of DBE and local presence combined will not be more that 10% on projects where federal funds are used.

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Project specific evaluation factors will be included at a minimum in the Request for Proposals. **[List the criterion and weighting range].**

8. Selection – **[LPA Name]** require a **[number]** person selection committee. Typically the selection committee members include **[specify title 1, title 2 ..., title x]**. The selection committee members must certify that they do not have a conflict of interest. Selection committee members are chosen by the **[specify title]** for **[each project or a specific period of time]**. **[LPA Name]** require each member of the selection committee to provide an independent score for each proposal using the form below prior to the selection committee meeting.

<i>Criteria</i>	<i>Weighting</i>	<i>Points</i>	<i>Firm 1</i>	<i>Firm 2 ...</i>	<i>Firm x</i>
<i>Criterion 1</i>					
<i>Criterion 2 ...</i>					
<i>Criterion x</i>					
<i>Total</i>	<i>100%</i>				

The selection committee members' scores are averaged for a committee score which is used to establish a short list of three firms. The committee score is adjusted by the committee based on group discussion and information gained from presentations and interviews to develop a final ranking. If there are other firms within **[xx%]** of the minimum score, the **[specify title]** may choose to expand the short list to include more than three firms.

9. Independent Estimate – **[LPA Name]** will prepare an independent in-house estimate for the project prior to contract negotiation. The estimate is used in the negotiation.
10. Contract Negotiation – **[LPA Name]** require a **[number]** person team to negotiate with firms. The team consists of **[specify title 1, title 2 ..., title x]**. Members of the negotiation team **[may / may not]** delegate this responsibility to staff members.
11. Acceptable Costs – **[LPA Name]** require the **[specify title]** to review the contract costs and the indirect cost rates to assure they are compliant with Federal cost principles prior to submission to IDOT.
12. Invoice Processing – **[LPA Name]** require the **[specify title]** assigned to any project using federal funds to review and approve all invoices prior to payment and submission to IDOT for reimbursement.
13. Project Administration – **[LPA Name]** require the assigned **[specify title]** to monitor work on the project in accordance with the contract and to file reports with the **[specify title]**. The **[LPA Name]** procedures require an evaluation of the consultant's work at the end of each project. These reports are maintained in **[LPA Name]** consultant information database. **[LPA Name]** follows IDOT's requirements and the required submission of BLRS Form 05613 to the IDOT district at contract close-out along with the final invoice.

5-5.07(b) Project Specific Information Example

The City of Giant Springs plans to reconstruct Main Street and improve their sidewalks along the street to comply with ADA requirements. In order to proceed with Phase I and II engineering, the city decided to hire an engineering consultant to handle the design. The city has federal funds available to help fund the design of the project and realizes the total engineering costs will exceed \$25,000. The city knew they were required to use written QBS procedures which complied with state and federal guidelines. Their QBS procedures and example forms are included along with discussion in this example.

City of Giant Springs Qualification Based Selection Procedure (*Project Specific Information is italicized*)

1. Initial Administration – Giant Springs has a City Engineer. The City Engineer’s office has two junior engineers and a technician and an administrative assistant, who will handle the day-to-day management and administration. The City Engineer’s office will work with the City Purchasing office in procurement.
2. Written Policies and Procedures – Giant Springs believes their written procedures substantially follows Section 5-5 of the *BLRS Manual* and specifically Section 5-5.06(e), therefore; approval from FHWA is not required.
3. Project Description – Giant Springs will use the following five items when developing the project description and may include additional items under unique circumstances.
 - Describe in general terms the need, purpose, and objective of the project;
 - Identify the various project components;
 - Establish the desired timetable for the effort;
 - Identify any expected problems
 - Determine the total project budget.

Project Description:

The scope of services desired is to have Phase I and II engineering provided for the reconstruction of Main Street between Price Street and Oak Street. Main Street is the primary transportation corridor through the city. This reconstruction is necessary because the existing street and sidewalks are older and in poor condition. The major components of the design are roadway and pavement design, parking and traffic control, sidewalks, and drainage. Phase I is expected to last 18 months and Phase II is expected to last another 12 months. Providing detours for both vehicular traffic and pedestrians will be challenging because there are both businesses and the elementary school located along this section of Main Street. Minimizing impacts to both the school and businesses is an important consideration in the design of this project. Because both a school and part of the city’s business district are located within the limits of the project compliance with ADA requirements is also critical. The total budget for this project \$1,540,000.

4. Public Notice – Giant Spring’s procedures requires the city to post an announcement on the city’s website ([provide hyperlink](#)) and publish an ad in the Big City Telegraph, a

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newspaper with appropriate circulation. The item will be advertised at least 14 days prior to the acceptance of proposals and at least twice in the newspaper and will be on continuous display on the city's website for.

The ad for this project was placed on the city's website and in the newspaper on two consecutive Mondays. Here is the example advertisement.

"Giant Springs is accepting proposals from consultants for Phase I and Phase II engineering design of Main Street between Price and Oak Street. The evaluation criteria and weighting for this project is as follows: technical approach - 30%, firm experience - 20%, staff capabilities - 20%, work load capacity - 20%, and local presence - 10%.

Consultants should request a proposal packet from the city. The packet contains a detailed description of the project, conflict of interest forms, and specific requirements for the format and content of their submission.

Proposal responses are due October 18th, 2017 at 2:00 pm at City Hall, 205 W. Main Street, Room 205, Giant Springs, IL 62764. The technical proposal must not contain any cost information. All proposals shall include a conflict of interest form.

Proposals will be evaluated and at least three consultants will be selected to interview for this project. Interviews of consultants for this project will be held the week of November 1, 2017."

5. Conflict of Interest – Giant Spring's procedures require consultants to submit a disclosure statement with their procedures. The city uses the IDOT BDE DISC 2 Template as their conflict of interest form.

All three firms included a disclosure statement with their submittal; no conflicts of interest were discovered.

6. Suspension and Debarment – Giant Spring's procedures require verification of suspension and debarment actions to ensure the eligibility of firms short listed and selected for projects. The city uses the SAM Exclusions, IDOT's CPO's website and the three other state CPO's websites to verify suspensions and debarments.

All three firms were checked and verified not to be suspended or debarred.

7. Evaluation Factors – Giant Spring's procedures for QBS allow the City Engineer to set the evaluation factors for each project, but will include a minimum of five criterion and stay within the established range. The maximum of DBE and local presence requirements combined cannot be more that 10% on projects where federal funds are being used. Project specific evaluation factors will be included at a minimum in the Request for Proposals.

Criteria and weighting per the city's QBS procedures

Technical Approach (10 - 30%)

Firm Experience (10 - 30%)

Specialized Expertise (10 - 30%)

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Staff Capabilities (Prime/Sub) (10 - 30%)
Work Load Capacity (10 - 30%)
Past Performance (10 - 30%)
In-State or Local Presence*
Participation of Qualified and Certified DBE Sub-consultants*
(* The combined total of these two items cannot exceed 10%)

For this project the City Engineer set the following selection criteria and weighting.

<i>Technical Approach</i>	<i>30%</i>
<i>Firm Experience</i>	<i>20%</i>
<i>Staff Capabilities</i>	<i>20%</i>
<i>Work Load Capacity</i>	<i>20%</i>
<i>Local Presence</i>	<i>10%</i>

The city is requiring interviews with the top three firms. The interviews will be used to adjust the preliminary scores selection committee members individually develop based on the proposal.

8. Selection – Giant Spring's procedures require a five person selection committee. Typically the selection committee members include the director of public works, the city engineer, and at least one of the other public works staff members. Usually the city has at least one member, but not more than two members from outside the public works department. These outside members may be public works directors or engineers from nearby communities, their county engineer, council members, or members of the community. The selection committee members will certify that they do not have a conflict of interest. Selection committee members are chosen by the director of public works for each project. The selection committee members individually review and score each proposal prior to the selection committee meeting. Their scores are averaged for a committee score which is used to establish a short list of three firms. If there are other firms within 10% of the minimum score, the public works director may choose to expand the short list to include more than three firms. The committee score is adjusted by the committee based on group discussion and information gained from presentations and interviews to develop a final ranking.

For this project the city's selection committee was composed of the public works director, the city engineer, two staff engineers from the public works department and their county engineer.

The city's procedure requires the use of this basic form to score the submissions. Each member of the selection committee is to provide an independent score for each proposal using the form below prior to the selection committee meeting.

Their scores are averaged for a committee score which is used to establish a short list of three firms. The committee score is adjusted by the committee based on group discussion and information gained from presentations and interviews to develop a final ranking. If there are other firms within [10%] of the minimum score, the public works director may choose to expand the short list to include more than three firms.

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Criteria	Weighting	Points	Firm 1	Firm 2	Firm 3
<i>Technical Approach</i>	30%	30			
<i>Firm Experience</i>	20%	20			
<i>Staff Capabilities</i>	20%	20			
<i>Work Load Capacity</i>	20%	20			
<i>Local Presence</i>	10%	10			
Total	100%	100			

9. Independent Estimate – Giant Spring’s staff will prepare an independent in-house estimate for the project prior to contract negotiation. The estimate is to be used in the negotiation.

The City Engineer prepared a detailed estimate for the Phase I and II engineering for this project. His estimate was \$231,000.

10. Contract Negotiation – Giant Spring’s procedures require a two person team to negotiate with firms. The team consists of the public works director and the city’s manager. When necessary either the public works director or the city manager may delegate this responsibility to staff members.

For this project, the city engineer and city manager began negotiations with the highest ranked firm. The firm’s cost exceeded the engineer’s estimate by 40% and the firm did not believe they could adjust their scope or staffing in any way to reduce costs. The team moved to negotiation with the second ranked firm. The costs were slightly below the city’s estimate and their project scope covered all the city’s requirements. Negotiations with the second ranked firm were successful. A sealed cost proposal from the third ranked firm was returned to the firm unopened. The proposal from the first ranked firm was disposed of by shredding.

11. Acceptable Costs – Giant Spring’s procedures require the city manager to review the contract costs and the indirect cost rates to assure they are compliant with Federal cost principles prior to submission to IDOT.

For this project, the city manager reviewed the costs and found no issues and forwarded to IDOT for final review and approval.

12. Invoice Processing – Giant Spring’s procedures require the project manager assigned to any project using federal funds to review and approve all invoices prior to payment and submission to IDOT for reimbursement.

13. Project Administration – Giant Spring’s procedures require the assigned project manager to monitor work on the project in accordance with the contract and to file reports with the public works director. The city’s procedures require an evaluation of the consultant’s work at the end of each project. These reports are maintained in the city’s consultant information database. The city follows IDOT’s requirements and they require submission of form [BLR 05613](#) to the IDOT district at contract close-out along with the final invoice.

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When submitting form BLR 05510, the completion of Exhibit C (Figure 5-5D) is required. See Section 5-5.08 for information concerning the BLR forms for engineering agreements.

Exhibit C
Federal Qualification Based Selection (QBS) Checklist

Local Public Agency City of Giant Springs
 Section Number 17-00123-00-PV
 Project Number _____
 Job Number _____

The LPA must complete Exhibit C, if federal funds are used for this engineering agreement and the value will exceed \$25,000. The LPA must follow federal small purchase procedures, if federal funds are used and the engineering agreement has a value less than \$25,000.
 Form Not Applicable (engineering services less than \$25,000)

1.	Do the written QBS policies and procedures discuss the initial administration (procurement, management, and administration) concerning engineering and design related consultant services? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																					
2.	Do the written QBS policies and procedures follow the requirements as outlined in Section 5-5 and specifically Section 5-5.06(e) of the <i>BLRS Manual</i> ? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, IDOT's approval date: _____																					
3.	Was the scope of services for this project clearly defined? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																					
4.	Was public notice given for this project? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Due date of submittal: <u>10/18/2017</u> Method(s) used for advertisement and dates of advertisement: <u>City's website (provide hyperlink) beginning 10/02/2017 and Big City Telegraph on 10/02/2017 and 10/09/2017</u>																					
5.	Do the written QBS policies and procedures cover conflicts of interest? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																					
6.	Do the written QBS policies and procedures use covered methods of verification for suspension and debarment? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																					
7.	Do the written QBS policies and procedures discuss the method of evaluation? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																					
	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Criteria for this project</th> <th style="text-align: center;">Weighting</th> <th style="text-align: left;">Criteria for this project</th> <th style="text-align: center;">Weighting</th> </tr> </thead> <tbody> <tr> <td>Technical Approach _____</td> <td style="text-align: center;">30 %</td> <td>Local Presence _____</td> <td style="text-align: center;">10%</td> </tr> <tr> <td>Firm Experience _____</td> <td style="text-align: center;">20 %</td> <td>_____</td> <td style="text-align: center;">%</td> </tr> <tr> <td>Staff Capabilities _____</td> <td style="text-align: center;">20 %</td> <td>_____</td> <td style="text-align: center;">%</td> </tr> <tr> <td>Work Load Capacity _____</td> <td style="text-align: center;">20 %</td> <td>_____</td> <td style="text-align: center;">%</td> </tr> </tbody> </table>	Criteria for this project	Weighting	Criteria for this project	Weighting	Technical Approach _____	30 %	Local Presence _____	10%	Firm Experience _____	20 %	_____	%	Staff Capabilities _____	20 %	_____	%	Work Load Capacity _____	20 %	_____	%	
Criteria for this project	Weighting	Criteria for this project	Weighting																			
Technical Approach _____	30 %	Local Presence _____	10%																			
Firm Experience _____	20 %	_____	%																			
Staff Capabilities _____	20 %	_____	%																			
Work Load Capacity _____	20 %	_____	%																			
8.	Do the written QBS policies and procedures discuss the method of selection? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Selection committee (titles) for this project: <u>The public works director, the city engineer, two staff engineers from the public works department, and their county engineer.</u> Top three consultants selected for this project in order: 1) Firm 1 _____ 2) Firm 2 _____ 3) Firm 3 _____ If less than 3 responses were received, IDOT's approval date: _____																					
9.	Was an estimated cost of engineering for this project developed in-house prior to contract negotiation? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																					
10.	Were negotiations for this project performed in accordance with federal requirements? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																					
11.	Were acceptable costs for this project verified? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> LPA will rely on IDOT review and approval of costs.																					
12.	Do the written QBS policies and procedures cover review and approving for payment, before forwarding the request for reimbursement to IDOT for further review and approval? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																					
13.	Do the written QBS policies and procedures cover ongoing and finalizing administration of the project (monitoring, evaluation, closing-out a contract, record retention, responsibility, remedies to violations or breaches to a contract, and resolution of disputes)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No																					

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BLR 05610 (Rev. 11/09/17)

EXHIBIT C – FORM BLR 05510 (EXAMPLE)

Figure 5-5D

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5-5.08 Standard Engineering Services Agreements

While use of standard engineering agreement forms is not required, the LPA should use the standard engineering agreements developed by the department in order to ensure compliance with all federal and state requirements. If a standard engineering agreement form is modified, the department logo, form number, and any other department identifier shall be removed. Separate engineering agreements are required for preliminary and construction engineering services.

The following standard agreement forms are provided by CBLRS:

- Form [BLR 05510](#) – Engineering Services Agreement
- Form [BLR 05520](#) – Maintenance Engineering to Be Performed by a Consulting Engineer
- Form [BLR 05530](#) – Request for Engineering Services Performed by Local Forces

5-5.08(a) Form [BLR 05510](#)

Form [BLR 05510](#) provides a standard agreement form for preliminary engineering and construction engineering using federal, state, MFT, or TBP funds. Form [BLR 05510](#) is used to compensate the consultant for all work based on methods of payment outlined in Section 5-5.10. The agreement must contain a maximum amount payable, which cannot be exceeded without modification of the agreement.

1. Preliminary Engineering. Preliminary engineering is divided into two phases. Phase I includes preparation of the environment documents, project development or design report, bridge condition reports, and preliminary bridge design and hydraulic report (with Type, Size, & Location (TS&L) as required). Phase II includes preparation of the plans, specifications, and estimates. The work covered by Phase II shall not begin until Phase I has been completed and design approval has been given by IDOT.

For federally funded preliminary engineering services agreements, the LPA shall award a construction contract or acquire ROW within 10 years of the federal authorization date of the preliminary engineering services agreement unless an extension has been granted by FHWA. The IDOT Bureau responsible for individual federal program categories may have more stringent requirements; therefore, the LPA should review all program requirements when requesting funds.

2. Construction Engineering. Construction engineering by the consultant may include the duties of the Resident Construction Supervisor and/or construction inspection. The LPA shall remain in responsible charge. Requirements for construction supervision and in responsible charge are contained in [Section 13-2.01](#) and [Section 25-1.02](#).

5-5.08(b) Form [BLR 05520](#)

LPAs may enter into an agreement with a consultant to provide engineering services for maintenance work funded in whole or in part with MFT funds. Formal agreements may include preliminary engineering and/or engineering inspection.

Typically, the consultant is responsible for the following duties during preliminary engineering:

- investigation of the condition of the streets and/or structures;

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- determination, in consultation with the local officials, of the maintenance operations to be included in the maintenance program;
- preparation of the maintenance resolution, estimate, and proposal;
- attendance at meetings of the governing body as may reasonably be required;
- attendance at the public letting and preparation of the contract or acceptance of proposal forms; and
- preparation of the maintenance expenditure statement.

For engineering inspection projects, the consultant is usually responsible for the following:

- furnishing the engineering field supervision of maintenance operations requiring professional on-site inspection;
- checking materials invoices for payment; and/or
- preparing the payment estimate for contract maintenance, including any necessary changes-in-plans, and providing a final estimate of the contract maintenance cost.

Form [BLR 05520](#) may be used for maintenance preliminary engineering and/or engineering inspection agreements. The agreement requires the signature and seal of the licensed professional engineer, or structural engineer as applicable, and the signature and title of the local official. Attach the formal agreement to the maintenance documents submitted to the district for approval showing the estimated cost of maintenance and the operations requiring engineering inspection.

5-5.08(c) Form [BLR 05530](#)

If federal funds will be requested to pay for engineering services provided by the LPA, CBLRS approval is required. The department is required to pre-audit all projects receiving federal funding in accordance with applicable federal regulations. Any services performed prior to the approval from the department may jeopardize the eligibility of federal funding reimbursement. Any invoices submitted for reimbursement for services performed by a LPA will not be processed for payment until a request for a pre-audit and approval is submitted to the CBLRS.

5-5.09 Other Engineering Services Agreements

5-5.09(a) Road District Engineering and Administration

[605 ILCS 5/6-701.3](#) allows a County to be paid administrative and engineering costs for road district MFT construction and maintenance. Engineering and administrative work may be performed on either an actual cost or a fixed-percentage basis, or a combination of these methods. The following will apply:

1. Work Force. This work may be done by one, or an approved combination, of the following:
 - a. by the county with its own forces, with payments to be made directly from MFT funds on an actual cost basis;

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- b. by the county with its own forces, with payments to be made on a percentage basis, as determined and agreed on by and between the county and the road district and approved by IDOT; and/or
 - c. by a consulting engineer under agreement with the county and approved by IDOT.
2. Resolution. The county board will adopt a resolution informing IDOT of the method or methods it proposes to use. The resolution must include the following:
 - a. Identify the method or methods of performing the work and the program(s) to which it is applicable (e.g., MFT Construction, MFT Maintenance, Township Bridge Program);
 - b. if method 1(b) above is used, include the rate of compensation to be applied to each application;
 - c. provide the effective date of the resolution; and/or
 - d. note the supersedes of any preceding resolution.
3. Approval. Submit two originals of the resolution to the Regional Engineer for approval.
4. Renewal. Annual formal agreements are required for road district maintenance where the county is not performing the engineering services with its own forces; see Section 5-5.08(b).

5-5.09(b) Inspection and Testing Services

LPAs may enter into an agreement with a consultant, or a testing company authorized to do business in the State of Illinois as a "Testing Laboratory" to provide inspection services for projects financed in whole or in part with MFT funds provided the costs will be assigned to the MFT project for which the testing is being done. The consultant or a testing company shall have the appropriate prequalification and training.

Formal agreements may include the following:

1. Scope of Services. This may include:
 - a. obtaining samples for inspection;
 - b. material testing;
 - c. reporting results;
 - d. obtaining material certification; and/or
 - e. providing proof that the materials concerned meet the requirements of the appropriate specifications.

This work should be performed in accordance with IDOT's [PPG](#) and with IDOT's Quality Control/Quality Assurance (QC/QA) Program, where applicable.

2. Method of Measurement. The method of measurement will be based on the services to be performed. Methods of measurement will be in accordance with standard test methods, IDOT's [Manual of Test Procedures for Materials](#), and good engineering practices. Pay rates may be based on units of measurement. The following are some units that may be used:
 - a. plant proportioning control, ton or yd³ (metric ton or m³);
 - b. in-place density determination, hourly rate;
 - c. flexural strength tests, each;

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- d. Marshall tests, each;
- e. mix design, each;
- f. core drilling, ft (m);
- g. soil reports, per hour laboratory time;
- h. structural steel shop inspection and testing, hourly rate.

5-5.09(c) Non-Standard Engineering Services Agreement Required Clauses

The following clauses shall be included in all non-standard engineering services agreement for preliminary and/or construction engineering:

1. Services. Define the services to be performed.
2. Contract Length. Identify the section or time period covered by the agreement.
3. Compensation. Include the amount and type of compensation to be paid to the consultant. Where the major portion of services is to be provided on a cost-plus basis, provide a list of personnel by occupational title or professional class and the rate of pay for each. If the principal engineer or other consultant's employee perform routine services (e.g., field material inspection, detailed inspection, standard design, drafting work) that could be performed by lesser salaried personnel, the wage rate billed directly for these services cannot exceed those rates paid to the consultant's salaried personnel performing the same or similar work.
4. Payment. Identify the time schedule at which payments are to be made.
5. Non-discrimination. Include the standard clauses for non-discrimination and fair employment practices.

For federally funded engineering services agreements, all required clauses contained in 23 CFR Part 172 shall be included.

5-5.09(d) Municipal Engineer

If a municipality decides to use a consultant to perform the duties of the municipal engineer; using MFT funds, the municipality shall use the State QBS according to Section 5-5.06. However, if the original scope of work does not include all the work needed to be performed by the municipal engineer, the municipality shall perform another selection while avoiding any direct, indirect, or appearance of conflict of interests.

For example, a municipality hires the consultant as their municipal engineer using MFT funds. Since the municipality has a satisfactory relationship with the consultant and state funds are being used, the municipality is not required to provide public notice, evaluate multiple firms, and select highest rated firm. The scope of work includes providing preliminary and construction engineering for the municipality's annual MFT maintenance program and street resurfacing program; and to apply for federal funding through the metropolitan planning organization (MPO) and special department programs.

- If the municipality decides to replace a bridge and plans to use MFT funds for the engineering, the municipality would need to perform another State QBS to complete this engineering work, since it was not included in the original scope of work of the municipal engineer.

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- The consultant, who is acting as the municipal engineer, applies for and the municipality receives federal funds for a complete reconstruction of Main Street through the downtown business district. The federal funding includes preliminary engineering, construction, and construction engineering. The estimated engineering cost for the project is \$75,000. The municipality would need to perform a federal QBS to complete this engineering work. Since the estimated cost is \$25,000 or greater and the engineering contains federal funds, the existing satisfactory relationship process is not allowed.

5-5.10 Method of Payment

5-5.10(a) **Compensation Formulas**

The following costs are used in one or more of the compensation formulas:

- Direct Labor - the consultant's direct salary cost, which is the salary expense for professional and technical personnel and principals for time that they are productively engaged in work necessary to fulfill the terms of the agreement;
- In-House Direct Costs - the consultant's non-labor costs identified with a particular project. Form [BDE 436](#) shall be used to submit eligible items;
- Overhead - The consultant's actual overhead factor (including payroll additives) or a negotiated overhead factor;

Note(s): 1. A negotiated overhead factor may only be used on MFT, state, and TBP funded projects. The maximum negotiated overhead factor is 1.4.

2. Field Rates shall be used for construction engineering projects expected to exceed one year in duration or if the construction engineering contract exceeds \$1,000,000.00 for any duration.

- Outside Direct Costs – the consultant's outside project costs performed by vendors (i.e. outside printing costs, etc.)
- Service By Others – the consultant's services performed by a sub-consultant (i.e. another engineering firm, lab testing firm, landscape architect, etc.)

The engineering agreement will be negotiated based on one of the following methods of compensation. The compensation method selected for the prime consultant shall be used by any sub-consultant, with the exception of construction engineering agreements, when a specific rate is allowed for testing services.

1. Lump-Sum. Lump-sum compensation may be used for engineering services contracts less than \$20,000. For federally funded engineering services agreement, the lump sum shall be developed using CPFF formula (see Item 3 below).
2. Specific Rate. Specific rate compensation may be used only for small engineering services contracts less than \$25,000 and where the work can be clearly defined (e.g., testing). The rate includes payroll, overhead, and profit.
3. Cost-Plus-a-Fixed-Fee Amount (CPFF). CPFF compensation is used when the estimate of the work, labor, and other expenses required for its execution cannot be accurately estimated by LPA's personnel in advance.

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The fixed fee allows for the consultant's profit and other miscellaneous amounts. The fixed fee is based on the initial contract estimate.

Note: The fixed fee may be renegotiated when significant changes in the scope, complexity, character, or duration of work are warranted.

One of the following fixed fee formulas shall be used:

$$FF = 0.145[DL + R(DL) + OH(DL) + IHDC]$$

$$FF = 0.145[DL + R(DL) + 1.4(DL) + IHDC]$$

$$FF = 0.145[(2.3 + R)DL + IHDC]$$

Where:

DL = Direct Labor
IHDC = In-House Direct Costs
OH = Overhead
R = Complexity Factor

The total compensation of the consultant shall use the following formula:

$$CPFF = DL + IHDC + OH(DL) + FF + ODC + SBO$$

Where:

DL = Direct Labor
IHDC = In-House Direct Costs
OH = Overhead
FF = Fixed Fee
ODC = Outside Direct Costs
SBO = Service by Others

Lump Sum, Specific Rate, CPFF or the following compensation formulas may also be used for State, MFT, or TBP funded engineering services contracts:

1. Direct Labor Multiplier (DLM). The DLM method of compensation allows every consultant a different percentage of profit depending on the level of a firm's overhead. The DLM formula is:

$$DLM = [(2.80 + R) \times DL] + IHDC$$

See CPFF for definitions of DLM pay factors.

2. Actual Costs. The actual costs of services plus a specified percentage for overhead.

For MFT funded engineering service contracts on LPA maintenance projects, the compensation may be as shown in Figure 5-5D.

Note: If Lump Sum or Actual Costs is used, the total engineering cost cannot exceed the amount determined under Base Fee.

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Preliminary engineering fees for MFT maintenance projects are applied to the total approved estimated cost of each MFT maintenance operation included in the MFT maintenance estimate except MFT maintenance engineering. The MFT engineering inspection fee is applied to the final cost of those MFT maintenance operations inspected by the engineer. If retainage is used on MFT maintenance engineering, 10% of the total fee is withheld until the final cost of inspected items is known and the final payment estimate and/or final documents and the MFT maintenance expenditure statement have been submitted.

BASE FEE		
Value of Program ≤ \$20,000		Negotiated (\$1,250 Maximum)
Value of Program > \$20,000		\$1,250
PLUS		
Engineering Group*	Preliminary Engineering (Maximum Fee (%))	Engineering Inspection (Maximum Fee (%))
I	N/A	N/A
II-A	2%	1%**
II-B	3%	3%
III	4%	4%
IV	5%	6%

* *Engineering Group Definitions:*

Group I. Services purchased without a proposal such as electrical energy or materials purchased from Central Management Services' Joint Purchasing Program (www.purchase.state.il.us) or another joint purchasing program that has been approved by the District BLRS or CBLRS.

Group II-A. Maintenance items that are not included in Group I or do not require competitive sealed bids according to [Section 12-1.02\(a\)](#) or a local ordinance/resolution.

Group II-B. Routine maintenance items that require competitive sealed bids according to [Section 12-1.02\(a\)](#) or a local ordinance/ resolution. Routine maintenance includes all items in the following work categories: snow removal, street sweeping, lighting and traffic signal maintenance, cleaning ditches or drainage structures, tree trimming or removal, mowing, crack sealing, pavement marking, shoulder maintenance, limited amounts of concrete curb and gutter repair, scour mitigation, pavement patching, and minor drainage repairs.

Group III. Maintenance items that are not covered by Group IIB and require competitive bidding with a material proposal or a deliver and install proposal.

Group IV. Maintenance items that are not covered by Group IIB and require competitive bidding with a contract proposal.

** *An Engineering Inspection Fee for Group IIA is only allowed for items that require inspection and/or acceptance testing.*

FEE FOR MAINTENANCE ENGINEERING

Figure 5-5D

5-5.10(b) Efficiency Factor

The consultant may also opt to include an efficiency factor. When provided in an agreement, the consultant has the opportunity to share in any direct labor cost savings achieved by the efficiencies of the consultant from the original direct labor estimate. Upon submission and approval of the final bill, when the negotiated direct labor cost upper limit is not reached, the consultant will be entitled to 1% of the remaining funds.

An efficiency factor may also be applied to those contracts using the cost plus fixed fee method. When the contract's direct labor cost upper limit is not reached, the consultant will receive 1% of the difference between negotiated and actual direct labor plus overhead.

5-5.10(c) Complexity Factor

Figure 5-5E presents a description for the various levels on the complexity of work.

R Value	Complexity of Work
CPFF = 0.0 DLM = 0.0	Low complexity projects that involve such work as project surveys, routine drafting functions, minor simple span bridges, small rural projects, project reports, and simple environmental assessments.
CPFF = 0.035 DLM = 0.003	Complex jobs that involve such work as small urban projects, freeway interchanges, projects on new alignment, freeways, multi-span continuous bridges, complex environmental assessments, and design reports.
CPFF = 0.070 DLM = 0.008	Very complex work that involves such work as multi-level interchanges, movable bridges, complex major bridges, major urban freeways, complex design reports, environmental impact statements, and major engineering studies requiring special expertise.

COMPLEXITY FACTOR

Figure 5-5E

5-5.11 Agreement Processing

Once the LPA and the consultant have agreed on scope, terms, and compensation, the engineering agreement shall be submitted to the District BLRS for review.

1. MFT, State, and TBP Funded Engineering Services Agreements. The District BLRS will provide approval to the LPA.

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2. Federally Funded Engineering Services Agreements. The District BLRS will provide an initial review and then submit to the CBLRS for processing.

CBLRS will conduct a financial review of the agreement to ensure acceptability.

For construction engineering services agreements, the Form [BC 775](#) (and Form [BC 776](#) if required) shall be completed by the LPA and approved by the IDOT District prior to pre-construction meeting. Failure to attach these forms to the federally funded construction engineering services agreements may result in delay in IDOT approval.

After all internal IDOT sign offs have been received, the CBLRS will request federal authorization. Once federal authorization is received, the CBLRS will issue a notice to proceed. If the LPA allows the consultant to perform any work and/or costs to be incurred prior to federal authorization and approval by the IDOT, the work and/or costs will not be eligible for federal reimbursement and will not be allowed as a match to the federal funds. The LPA proceeds at their own risk with the understanding that if the IDOT approval is not obtained, federal, State, MFT, and/or TBP funds will not be allowed for the engineering services contract.

5-5.12 Supplements to the Agreements

When the consultant is requested to complete work outside the scope of the original agreement, or other material contract changes (i.e. the addition or substitution of a sub-consultant); the LPA must provide a written supplement to the original agreement. This may be done by a letter supplement. Where applicable, the LPA should:

- Review the original agreement prior to negotiation of any proposed supplemental agreement.
- Provide a statement to the district explaining the reasons that the original agreement will be supplemented to add/change/amend conditions.
- Describe the scope of work in sufficient detail to clearly outline the additional work that the consultant is to do. The scope of work must meet the definition of the project (see Sections 5-5.06(c) or 5-5.06(e)).

Example: If it is discovered on a proposed resurfacing project, work off of the ROW is needed and the supplemental is to provide environmental and plat work; this would be eligible. However if under this same proposed project, it is discovered the bridge must be replaced; this would not be eligible and a new selection for engineering services would be required.

- Include the mode of payment (e.g., cost plus a fixed fee, specified hourly rate, daily rate, any indirect cost). This mode of payment must be the same as the original agreement. Always include a maximum amount payable.
- Specify a time for beginning and completion of the contract. Be specific (e.g., calendar days, specified day of the year).
- Specify if subletting is authorized; if so, specify to whom, for what, and the amount payable.

- Attach, as exhibits, a finance summary of estimated costs of the supplement(s). Include only the costs to be incurred by the additional scope of work.

Provide spaces for the consultant and the LPA to sign the letter supplement. Ensure that both parties to the agreement have the authority to act and the supplement does not exceed any dollar threshold contained in Section 5-5.06(b). The supplement will require IDOT approval.

5-5.13 Administration of the Agreement

5-5.13(a) Project Administrator

The LPA is responsible for assigning one of its personnel as project administrator to work with the consultant. The project administrator will conduct the following:

- Prepare supplements and letter supplements to existing consultant agreements for additional services or services beyond the scope of the work of the original agreement, and include the LPA's estimate of the costs for the work involved.
- Perform as liaison between the LPA and the consultant to ensure compliance with the terms of the agreement and with regard to the work performed by the consultant.
- Monitor the consultant's progress reports to ensure that problem areas are reported and corrective action is taken.
- Establish controls to monitor time for completion of each agreement to ensure that the time limitations are not exceeded.
- Ensure the accuracy of bills presented by the consultant and submit the bills to the district for reimbursement.
- Maintain cumulative cost records for each agreement.
- Establish controls to prevent payment in excess of contract limitations.
- Monitor the consultant to ensure compliance with any and all Equal Employment Opportunity provisions of the agreement.

5-5.13(b) Final Check

Upon completion of the work under the engineering agreement, the LPA will ensure that all terms and conditions of the agreement have been complied with and that all services to be performed under the agreement have been completed prior to final release of the consultant.

The agreement will be terminated in writing by the LPA. A copy of any termination should be sent to the district.

5-5.13(c) Project Closeout

The LPA is responsible for ensuring that all terms and conditions of the engineering agreement have been fulfilled and that all services to be performed under the agreement have been completed. For state let projects with construction engineering services contracts, all project closeout documentation required by the Bureau of Construction Procedure Memorandum 12-79 shall be submitted to the District Bureau of Construction prior to the construction engineering services contract being closed out by the District.

Documentation (e.g., itemized cost lists, time cards, payroll ledgers, related bills, cancelled checks) to support invoiced engineering costs shall be included in all invoice submissions. The LPA shall comply with all required retention schedules established for LPAs by the Secretary of State. For department auditing purposes, copies (electronic copies are suitable) of all invoices and supporting documentation shall be retained for a period of 3 years after payment of the final voucher. The following applies:

1. MFT and TBP Funded Engineering Services. The LPA shall submit Form [BLR 13510](#) upon completion of the project if MFT or TBP funds are used to fund any portion of the engineering services.
2. State Funded Engineering Services. The LPA shall submit to IDOT a final invoice for the agreed compensation incurred, in accordance with the approved agreement and any supplements. Submit this invoice within 90 days following IDOT approval of the plans, specifications, and estimates (PS&E).

Upon receipt of the final invoice, the District will prepare the Form [OPP 336](#) to notify the appropriate office of the project completion.

3. Federally Funded Engineering Services. The requirements for state funded engineering services apply. IDOT will audit invoices in accordance with FHWA approved auditing procedures (see Section 5-10.04). Upon completion of the audit and resolution of any findings, IDOT will close out the Contract Obligation Document (COD) and submit a final voucher to FHWA.

The prime consultant shall complete Form [BLR 05613](#) and submit to the district at the conclusion of the contract. The district will submit this form to the CBLRS along with the final invoice.

5-5.14 Evaluation

The LPA's project administrator is responsible for evaluating the consultant's performance. Upon completion of the evaluation place a copy in the LPA's file for consideration when a consultant is to be hired for future work. If federal funds are used, then a copy of the evaluation is to be sent to IDOT.

5-6 RAILROAD AGREEMENTS

As changes take place on the railroads and local highway systems, there will be a need for crossing improvements, structure replacements, or the elimination of a crossing. Before these actions can take place, an agreement must be in place that describes the scope of work, the responsibilities of the parties involved, and the method(s) of payment.

For both upgrades to existing crossings and the construction of new crossings, contact the railroad early in the process of planning and design. Long approval times are typical for any work within railroad ROW.

5-6.01 Requirements for a Railroad Agreement

A railroad agreement is required where:

- there are proposed joint improvements between railroad(s) and LPAs involving changes in a railroad grade separation structure or grade crossing, including changes in protection that will be paid totally or in part with MFT, State, or federal funds,
- there are improvements on the local highway system that require a relocation or removal of the railroad facilities, and/or
- if there is a change in circuitry and/or traffic signal preemption.

A separate railroad agreement is not normally required when the Illinois Commerce Commission (ICC) issues an order or develops a stipulated agreement. See Section 5-6.06 covering the improvements listed above. A supplemental agreement will be required if the ICC order does not cover all of the federal requirements or fund types.

5-6.02 Agreement Format

In the agreement, specify the responsibilities of each party. The agreement should contain the following items plus any additional items applicable to the project:

1. Identify the railroad name, LPA name, and MFT section number, if applicable. For Federal-aid projects, also identify the project and job number.
2. Include a description of the work to be done.
3. Provide a location description and location map. Include the AAR DOT number and the railroad milepost.
4. For projects with federal funds, include a statement that the project is subject to FHWA requirements.
5. Identify who is responsible for the surveys, plan preparation, specifications, and estimates.
6. Include the responsibilities for special signal and pavement markings at railroad crossings.
7. Identify which agency is responsible for letting and awarding the contract and who will provide construction supervision of the work.

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8. Identify the selected method of construction (e.g., State or local let contract, railroad or local forces).
9. Note if concurrence in the award of the contract is required.
10. Provide a division of cost showing funding responsibilities and the type of funds being used.
11. Identify the method of payment and/or reimbursement by each party.
12. Note the LPA appropriation for their share of the cost.
13. For federally funded projects, include any statements regarding DBEs. Note the DBE program being followed by the LPA if it is a locally let contract.
14. Identify who is responsible for railroad adjustments and the salvage of old equipment.
15. Identify who is responsible for maintenance of the completed work (e.g., crossing surfaces, warning signals, power lines, roadway approaches).
16. If protection work is involved, the agreement must stipulate that the work conforms to the ICC Requirements for Railroad-Highway Grade Crossing Protection and to the [Illinois Manual on Uniform Traffic Control Devices \(ILMUTCD\)](#).
17. Note who is responsible for the retention of records for inspections, audits, etc. As a minimum, railroads must retain records for three years after completion of the project.
18. Identify the proposed completion date of the project.
19. Provide provisions in the agreement to allow termination of the project.
20. Include a statement that IDOT audits railroad bills for work performed by railroad forces in accordance with FHWA requirements on all projects involving the use of State or federal funds.

5-6.03 Preparation and Execution

Typically, the LPA or the LPA's consultant will prepare the railroad and LPA agreement. At the request of a LPA, the CBLRS can provide assistance to the LPA during the agreement preparation process. The draft agreement is circulated among the affected parties and is sent to the district, the LPA, the railroad, and the CBLRS for corrections/comments. Once corrected, the agreement is executed by all parties.

Upon review of the draft agreement by IDOT, the LPA arranges with the railroad to have an estimate of cost and plans submitted to the district for approval prior to execution of the agreement.

A minimum of three original agreements should be provided by the appropriate parties. Additional original agreements should be included, if more than one LPA and/or railroad is a party to the agreement.

The agreement should be signed by the authorized LPA and company representative. Usually, the LPA representative is the chairman of the county board, highway commissioner, mayor, or village president. In the case of a county or municipality, if another local official signs the agreement, the official must be authorized to do so by resolution of the county board, city council, or village board. See [Section 2-3.05\(b\)](#) on signature requirements. The railroad representative who signs the agreement is usually the company president, general manager, or chief engineer. IDOT approval of the executed agreement must be secured prior to authorizing the railroad company to proceed with the work.

Railroad agreements involving MFT funds require the approval of the district.

For guidance on coordinating with railroads, see [Section 10-2.01](#).

5-6.04 Procedure for Joint State-LPA Railroad Agreements

For joint State and LPA improvements involving railroad crossing work where the construction contract will be awarded by the State, negotiations with the railroad may be handled by IDOT or the LPA as provided in the joint agreement. If the joint agreement makes no provisions for railroad negotiations, the development of agreements and negotiations with railroad companies will be handled by the LPA. For railroad work to be performed in conjunction with a Federal-aid highway improvement, FHWA requirements and/or the provisions of [Chapter 7](#) of the *BDE Manual* will apply. When the plans are prepared by the LPA, a plan and profile of the highway adjacent to the railroad crossing is submitted to IDOT by the LPA before negotiations are started. When the LPA will award the contract for joint improvements, all negotiations with the railroad are handled by the LPA and the required documents are secured by the LPA.

5-6.05 Compensation

Compensation for railroad work is usually based on an actual cost basis.

5-6.06 Illinois Commerce Commission (ICC)

5-6.06(a) ICC Jurisdiction

Rail carriers (railroads) are corporations engaged in the transportation of passengers and/or goods for hire in the State of Illinois, as defined in [625 ILCS 5/18c](#), and come under the jurisdiction of the ICC. The State law states, in part:

No public road, highway, or street shall hereafter be constructed across the track of any rail carrier at grade, nor shall the track of any rail carrier be constructed across a public road, highway, or street at grade, without having first secured the permission of the Commission;

The Commission's rules, regulations, and requirements cover the construction, maintenance, division of cost, marking, and signaling of highway and railroad crossings in the State of Illinois.

5-6.06(b) General Procedures

When ICC is involved in a highway-railroad improvement, ICC will either approve a stipulated agreement with the railroad and LPA, then issue an ICC order, or issue an order after a petition has been filed, and a public hearing has been held.

Section 5-6.06(c) defines when a petition is required and when a stipulated agreement may be used. Petition and stipulated agreement procedures are discussed in Sections 5-6.06(d) and 5-6.06(e) respectively.

5-6.06(c) Petition and Stipulated Agreements Guidance

1. Petition. In certain instances, a petition followed by a hearing with ICC is required. The following are cases in which a petition is required:
 - the establishment of a new public at-grade railroad crossing,
 - the elimination of any existing public at-grade crossing or grade-separated structure,
 - new construction of any grade-separated structure with a cost greater than \$1,000,000,
 - the installation of automatic warning devices at a crossing with less than two trains per day, and
 - where a crossing does not meet the minimum stipulated agreement criteria for signal improvements or one of the parties involved is unwilling to execute a stipulated agreement.
2. Stipulated Agreements. Stipulated agreements are generally used under the following conditions:
 - a. Automatic Flashing Light Signals (AFLS) with Gates. AFLS with gates may be recommended by the stipulated agreement procedure when any of the following conditions are met or exceeded unless a diagnostic team finds automatic flashing lights signals and gates are not warranted and recommends the installation of an alternative active/passive warning device:
 - the product of the seasonally adjusted average daily traffic count and the average daily train movements exceeds 3,000 for the mainline or branch line tracks having two or more train movements daily,
 - the clearing sight or stopping sight distances for normal highway conditions, for actual rail and vehicular traffic speeds are restricted and the product of trains per day times vehicles per day exceeds 1,000,
 - there is an unusual highway or track geometric or vehicle/train operation that creates a hazardous condition that cannot be reasonably improved by other means, or
 - a diagnostic team recommends the improvement.
 - b. Other. The stipulated agreement procedure may also be used for the following conditions:
 - reconstruction or minor relocation of existing grade separation structures,
 - construction of new grade separations costing less than \$1,000,000,
 - upgrading control circuitry,
 - installation of cantilevered signals due to the widening of the roadway,

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- the construction of connector roads where crossing closures are involved,
- improvement, reconstruction, relocation, or realignment of the highway approaches at any existing public grade crossing, and/or
- improvement, reconstruction, relocation, or removal of track structures and railroad appurtenances that may be in the interest of public safety at an existing public grade crossing.

In any condition where the party desiring the crossing improvements is unsure which procedure to use, contact the ICC for a determination.

5-6.06(d) Petition Procedures

If the LPA can reach agreement with the railroad concerning the type of warning device needed and the division of cost for an existing crossing, it may not be necessary to hold a formal hearing before ICC. If the LPA cannot reach an agreement with the railroad, a formal hearing must be held before ICC. Either the LPA or the railroad may submit a petition requesting a hearing to ICC. Application forms are available from ICC. The petition should state the location of the crossing(s) involved, the improvements desired (including the reasons why the improvements are necessary), and that amount of financial assistance requested, if applicable. When filing a petition with ICC, also provide a copy of the petition to the railroad or LPA and IDOT.

Upon receipt and review of the petition, ICC will send out a notice of the date, time, and place of the hearing to all parties involved. The hearings are conducted in a manner similar to that of a court trial, but on a more informal basis. During the hearing, each party will have the opportunity to express their concerns regarding the proposed safety improvement.

The petitioner should present all pertinent information relative to the physical characteristics of the highway and approaches near the crossing and surrounding area. Data should be presented depicting existing and projected vehicular traffic on the crossing. The petitioner should present evidence showing why the improvements are needed. Information regarding the roadway work should be presented if there will be a highway project in connection with the crossing improvement.

Typically, the railroad company involved will have a representative present who can testify with regard to train traffic and the estimated cost of warning devices and/or crossing surface work. However, it is advised that the LPA have some knowledge of this information prior to the hearing. While it is not required, the parties may choose to have an attorney present to provide assistance at the hearing.

ICC issues an order based on findings made from evidence presented at the hearing. The order includes a description of the work to be performed, the parties responsible for ensuring that the work is performed, the division of cost between affected parties, and the date by which all work should be completed.

In contested cases, ICC issues a proposed order where all affected parties are given an opportunity to comment within a specified time frame, usually two weeks, before the final order is issued.

5-6.06(e) Stipulated Agreement Procedures

Generally, the LPA initiates the stipulated agreement procedure by contacting ICC in writing or by phone and requesting that a meeting be scheduled. However, a railroad or IDOT may also request a meeting. Because the nature of the proposed crossing improvements may vary considerably, ICC contacts each affected party regarding the necessary preparation prior to the meeting.

On the date and time mutually agreed upon, all affected parties meet at the site and discuss the crossing needs and possible solutions. Should it be determined at the meeting that the project meets the minimum warrants under the ICC's stipulated agreement procedures and all parties are in agreement with the improvements and division of cost, ICC will prepare a stipulated agreement for signature by all parties; see Section 5-6.06(c). Prior to the circulation of a stipulated agreement, all necessary cost estimates (e.g., signals, surfaces, approaches, bridge construction) must be submitted to ICC. After all parties execute the stipulated agreement, ICC will issue an order for completion of work.

If the proposed project does not satisfy the requirements for a stipulated agreement or there is disagreement among the parties regarding the proposed work or division of cost, any affected party (e.g., LPA, railroad, IDOT) may petition ICC for a hearing; see [Section 10-2.01](#).

5-7 UTILITY AGREEMENTS

5-7.01 Requirements for Utility Agreements

A utility agreement is required when a proposed highway improvement requires relocation or adjustment of an existing utility and existing permits do not provide for moving the utility. Typically, these are projects that affect utilities located outside the existing highway ROW.

5-7.02 Agreement Format

When a project requires a utility agreement, the LPA is normally responsible for its preparation and execution in consultation with the district. Each utility agreement must specify the responsibilities of each party and contain the following items plus any additional items applicable to the project:

1. Identify the utility name, LPA name, and MFT section number, if applicable. For Federal-aid projects, also identify the project and job number.
2. Include a description of the work to be done.
3. Provide a location description and location map.
4. For projects with federal funds, include a statement that the project is subject to FHWA requirements.
5. Identify who is responsible for the surveys, plan preparation, specifications, and estimates.
6. Identify which agency is responsible for letting and awarding the contract and who will provide construction supervision of the work.
7. Identify the selected method of construction (e.g., State- or local-let contract, utility forces, or contract by utility company).
8. Note if concurrence in the award of the contract is required.
9. Provide a division of cost showing funding responsibilities and the type of funds being used.
10. Identify the method of payment and/or reimbursement by each party.
11. Note the LPA appropriation for their share of the cost.
12. For federally funded projects, include any statements regarding DBEs. Note the DBE program being followed by the LPA, if it is a locally let contract.
13. Note who is responsible for the retention of records for inspections, audits, etc. As a minimum, the utility company must retain records for three years following completion of work.
14. Identify the proposed completion date of the project.
15. Provide provisions in the agreement to allow termination of the project.
16. Include a statement that IDOT will audit utility bills for work performed by utility forces in accordance with FHWA requirements on all projects involving the use of State or federal funds.

5-7.03 Preparation and Execution

The draft agreement is circulated among the affected parties, including the district, for corrections/comments. Once corrected, the agreement is executed by the LPA and the utility company.

Upon review of the draft agreement by the district, the LPA arranges with the utility company to have an estimate of cost and plans submitted to the district for approval prior to execution of the agreement.

The agreement is signed by the authorized LPA and utility company representative. Usually, the LPA representative is the chairman of the county board, highway commissioner, mayor, or village president. In the case of a county or municipality, if another local official signs the agreement, the official must be authorized to do so by resolution of the county board, city council, or village board. See [Section 2-3.05\(b\)](#) on signature requirements. The utility representative who signs the agreement is usually the company president, general manager, or chief engineer. The agreement must be approved by the district.

Federal participation in the relocation or removal cost of a utility, required by a highway project, may be secured by following the federal procedures for project authorization/obligation of funds and obtaining the district's approval of the agreement and PS&E prior to the beginning of utility work. If the utilities are located on the public ROW, the associated cost for relocation or removal must be borne by the utility company.

For additional guidance on coordinating with utility companies, see [Section 10-4](#).

5-8 MAINTENANCE AGREEMENTS FOR STATE HIGHWAYS

5-8.01 Traffic Signal Master Agreements

For most traffic signals on State highways, the districts will select local contractors to provide maintenance. However, in some cases, municipalities may perform the signal maintenance work that is the State's responsibility under the terms of a master agreement. LPAs are reimbursed by the State for maintenance and/or energy costs associated with the signals.

The Traffic Signal Master Agreement is prepared by the district Bureau of Operations. The agreement should:

- Identify the location of each traffic signal.
- Indicate the level of maintenance that should be provided.
- Identify the party that will be responsible for the maintenance costs and energy costs. If the cost is shared between the parties, indicate the portion of the cost for which each agency is responsible.
- Indicate whether the LPA will maintain the traffic signal through the use of its own forces or through an ongoing contractual agreement with a local contractor.

The agreement is signed by the LPA and IDOT.

For additional guidance on master agreements, contact the appropriate IDOT district office.

5-8.02 Municipal-State Maintenance Agreements

IDOT is authorized to enter into contracts with any municipal corporation to maintain any State highway located within the municipal corporation ([605 ILCS 5/4-406](#)). The agreement will provide for a minimum level of maintenance, a discussion of the route included, and the amount of reimbursement for the LPA.

5-9 TIERED APPROACH TO CORRECTIVE ACTION OBJECTIVES AGREEMENTS

Illinois environmental law requires the Illinois Pollution Control Board to consider land use controls in determining risk to human health from contamination in soil and groundwater. This approach is known as the Tiered Approach to Corrective Action Objectives (TACO). As a result of IDOT's effort, IDOT has developed [Highway Authority Agreements](#) (HAA), which is the land use controls recognized in TACO; see the [HAA](#) for TACO agreements. In the agreement, IDOT or a local highway authority is responsible, depending on who signs the agreement, for the following commitments:

- The agency will not allow drinking water wells to tap groundwater in the area of the ROW that may be contaminated.
- If soil in the ROW that may be contaminated is excavated, human health and the environment will be protected.

For a highway authority willing to make these commitments, there are a number of significant benefits. These include:

- (1) Notification. A company is required to notify the agency that it has contaminated the ROW and will take responsibility. These agreements could cover nearly any type of pollutant.

Release. The company gives the agency a legal release from liability and indemnifies the agency for claims that may be made.

Reimbursement. Should the LPA excavate through contaminated soil in the ROW (e.g., release of petroleum), the company will reimburse the LPA's costs of dealing with the contamination (e.g., cost of disposing of the contaminated soil in a landfill).

A company that has contaminated the ROW has two choices:

- it can clean up the ROW, or
- it can negotiate a [Highway Authority Agreement](#) that is acceptable to the LPA.

The first choice is expensive and an unnecessary drain on the Leaking Underground Storage Tank (LUST) Fund. This fund reimburses owners for their cleanup costs of those tanks. Money for this fund comes from tax on motor fuel sold at the pump, similar to the Motor Fuel Tax. Clean up of the ROW is typically unnecessary because the cleanup is not needed to protect human health and the environment. However, the LPA still must meet its commitments made in the [Highway Authority Agreement](#).

5-10 INVOICE PROCESSING

5-10.01 General

According to the terms of the joint agreement, a LPAs may invoice IDOT for reimbursement of State and federal funds.

5-10.02 Supporting Documentation

To process an invoice, BLRS requires copies of documentation verifying LPA payments. Two copies of the invoice and supporting documentation shall be submitted to the District LRS office. Supporting documentation must include, but not limited to, the following:

- Copies of all cancelled checks paid for the project,
- Letter from recipient that payment was made if cancelled check(s) is/are not available,
- List and itemization of all direct costs and unit rates for each direct cost item,
- List of employees by classification, time spent by each employee on the project for the Invoice service period (Note: ensure the time charges are for the service dates shown on the Invoice and that they are within the period for the obligated funds.), and the hourly rate of each employee. Verify that the computations for total employee labor costs are correct.
- Low bid amount and award date, if applicable.

Proper preparation of the invoice in accordance with the above guidelines is essential to avoid delays in processing. The district shall use Form [BLR 05620](#) to forward to the proper bureau for final processing.

LPAs shall retain all invoice documentation for a minimum of three years after the project is completed to allow for State and/or LPA audits.

5-10.03 Payment Status

Once invoice payments have been processed by the BLRS, payment status may be checked on the official Illinois State Comptroller's website. Click on "Vendor Payments" and follow the instructions. A Tax Identification Number is required to access the system.

5-10.04 LPA Single Audit Requirement

If a LPA receives a significant amount of federal funding (currently \$500,000 a year or more), a single audit must be submitted to IDOT. This requirement is set forth by the U.S. Office of Management and Budget, Circular No. A-133 (2007). If an audit is required, the LPA shall identify federal funds received through IDOT. The Catalog of Federal Domestic Assistance (CFDA) number for the Federal-Aid Highway Program is 20.205 – Highway Planning and Construction.

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5-10.05 Obligation Time Limit

Final invoices shall be submitted to BLRS within one year of the completion of the project. If a final invoice is not received within one year of completion of the project, the last invoice received will be considered the final and the contract obligation will be closed. If this deadline is not met, an extension of time may be requested. An extension of time request shall include justification for the delay and an estimated final invoice date.

5-11 ACRONYMS

This is a summary of the acronyms used within this chapter.

AFLS	Automatic Flashing Light Signals
AOU	Agreements of Understanding
BBS	Bureau of Bridges and Structures
BDE	Bureau of Design and Environment
BLRS	Bureau of Local Roads and Streets
CBLRS	Central Bureau of Local Roads and Streets
CFDA	Catalog of Federal Domestic Assistance
CFR	Code of Federal Regulations
COD	Contract Obligation Document
CPFF	Cost-Plus-a-Fixed-Fee Amount
CPO	Chief Procurement Office
DBE	Disadvantaged Business Enterprise
DL	Direct Labor
DLM	Direct Labor Multiplier
FF	Fixed Fee
FHWA	Federal Highway Administration
GATA	<i>Grant Accountability and Transparency Act</i>
HAA	Highway Authority Agreements
ICC	Illinois Commerce Commission
IDIQ	Indefinite Delivery/Indefinite Quantity
IDOT	Illinois Department of Transportation
IGA	Intergovernmental Agreement
ILCS	Illinois Compiled Statutes
IHDC	In-House Direct Costs
ILMUTCD	Illinois Supplement to the Manual of Uniform Traffic Control Devices
LOI	Letter of Intent
LOU	Letter of Understanding
LPA	Local Public Agency
LUST	Leaking Underground Storage Tank
MFT	Motor Fuel Tax
MPO	Metropolitan Planning Organization
NBIS	National Bridge Inspection Standards
ODC	Outside Direct Costs
OH	Overhead
PPG	Project Procedure Guide
PS&E	Plans, Specifications, and Estimates
QC/QA	Quality Control/Quality Assurance
QBS	Qualifications Based Selection
RFP	Request for Proposals
ROW	Right-of-way
SAM	System for Award Management (Exclusions)
SBO	Service by Others

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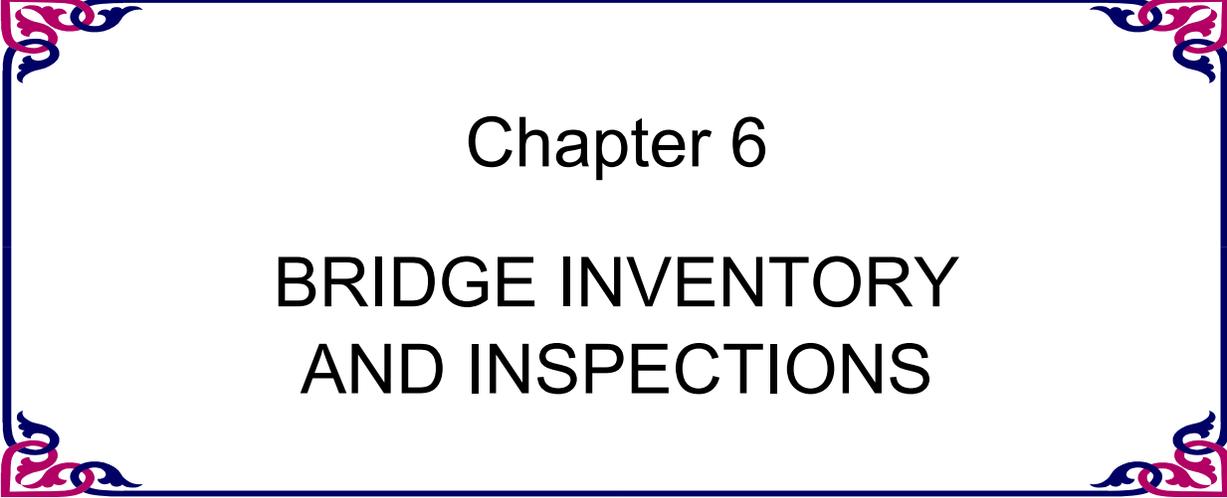
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SMA	State Match Assist
STA	State Transportation Agency (IDOT)
STP	Surface Transportation Program
TACO	Tiered Approach to Corrective Action Objectives
TBP	Township Bridge Program
TS&L	Type, Size, & Location
USC	United States Code

5-12 REFERENCES

1. [Illinois Compiled Statutes](#)
2. Brooks Act, (40 USC 11)
3. Procurement, Management, and Administration of Engineering and Design related Services, (23 CFR 172)
4. [Project Procedure Guide](#), IDOT, June 2009
5. [Highway Jurisdiction Guidelines for Highway and Street Systems](#), IDOT, March 2006.
6. [Manual of Test Procedures for Materials](#), IDOT, February 2014.
7. [Illinois Supplement to the Manual on Uniform Traffic Control Devices \(ILMUTCD\)](#), IDOT, June 2014.
8. [Chapter 7](#) - Railroad Coordination, IDOT, *BDE Manual*
9. [Chapter 8](#) - Consultant Developed and/or Design Projects, IDOT, *BDE Manual*



Chapter 6

BRIDGE INVENTORY
AND INSPECTIONS

BUREAU OF LOCAL ROADS AND STREETS MANUAL

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Chapter 6
BRIDGE INVENTORY AND INSPECTIONS

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Chapter 6

BRIDGE INVENTORY AND INSPECTIONS

6-1 NATIONAL BRIDGE INSPECTION STANDARDS (NBIS)

6-1.01 General

The NBIS is the Federal regulation that establishes the requirements for a bridge inspection organization, inspection procedures, frequency of inspections, qualifications of personnel, and preparation and maintenance of a state bridge inventory. The NBIS applies to all structures defined as bridges carrying a roadway and open to the public. The bridge inspection program resulting from the NBIS is intended to detect structural and functional deficiencies in order to minimize the probability of structural failure and improve bridge traffic safety. The Federal Highway Administration (FHWA) has promulgated regulations to establish the applicable criteria that each state transportation department must meet, see 23 CFR, Part 650, Subpart C.

To properly implement the NBIS program requirements for local public agencies (LPAs) in Illinois, the Department relies on the LPA to perform the NBIS requirements for structures under its jurisdiction. All LPAs with jurisdiction of a structure eligible for inclusion in the National Bridge Inventory (NBI) must designate a Program Manager to ensure compliance with the NBIS and provide guidance and management of their bridge inventory. The designated Program Manager must meet the qualifications as described in Section 3 of the [Structural Services Manual](#), maintained by the Bureau of Bridges and Structures (BBS). Statewide oversight of the LPA bridge inspection program is provided by the Statewide Program Manager in the Bridge Management Unit (BMU) of the BBS.

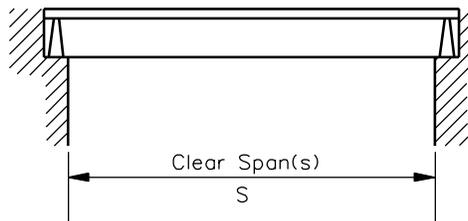
IDOT policies and procedures for Bridge Inspection are located in the BBS' [Structural Services Manual](#).

6-1.02 Definitions

The following definitions apply to the NBIS and its implementation:

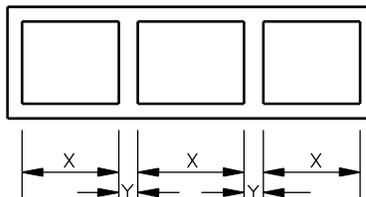
1. Bridge. A structure, including supports, erected over a depression or an obstruction, such as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads, and having an opening, measured along the center of the roadway of more than 20.0 ft (6.1 m) between undercopings of abutments or spring lines of arches, or extreme ends of openings for multiple boxes; it may also include multiple pipes, where the clear distance between openings is less than half of the smaller contiguous opening. See Figure 6-1A for examples of various bridge openings.

Abutment Supported
Bridges



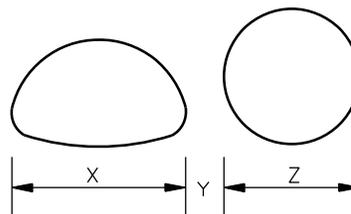
$S \geq 20.0'$ (6.1 m): Bridge

Concrete Box Culvert
at Grade or Under Fill
(Single or Multi-Span)



$X + Y + X \dots \geq 20.0'$ (6.1 m): Bridge
Where $Y < \frac{X}{2}$

Metal Pipe Under Fill
(Single or Multi-Span)



$X + Y + Z \dots \geq 20.0'$ (6.1 m): Bridge
Where $Y < \frac{A}{2}$, where A
is the Smaller of X or Z

**DETERMINATION OF BRIDGE LENGTH FOR
THE PURPOSE OF DEFINITION OF A BRIDGE**

Figure 6-1A

2. National Bridge Inspection Standards (NBIS). The Federal regulations establishing requirements for a bridge inspection organization, for inspection procedures, frequency of inspections, qualifications of personnel, and preparation and maintenance of a state bridge inventory. The NBIS applies to all structures defined as bridges carrying roads open to the public.
3. National Bridge Inventory (NBI). The aggregation of structure inventory and appraisal data collected to fulfill the requirements of the NBIS, which require that each state prepare and maintain an inventory of all bridges subject to the NBIS.
4. NBI Record. Data that has been coded according to the *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges (Guide)* for each structure carrying highway traffic or each inventory route which passes beneath a structure.

-
5. Master Structure Report. The representation of the data recorded and stored for each NBI record in accordance with the *Guide*.
 6. Sufficiency Rating. A numerical value from 0.0 to 100.0 which indicates a bridge's overall sufficiency to remain in service. The rating is calculated from the Structure Inventory and Appraisal (SI&A) data and reflects the following factors:
 - structural adequacy and safety,
 - serviceability and functional obsolescence,
 - essentiality for public use, and
 - any special considerations.

6-2 BRIDGE INVENTORY

6-2.01 National Bridge Inventory (NBI)

The NBI is a national program that requires each state to prepare and maintain an inventory of all bridges on public roads that are subject to the NBIS. The purpose is to maintain a national database of structures and applicable structural analyses data. This information is used by the FHWA to develop reports to submit to Congress on the status of the nation's bridges, and by states in managing their bridge maintenance, rehabilitation, and replacement programs.

6-2.02 Illinois Structure Information System (ISIS)

IDOT maintains a computerized bridge inventory system, designated as the Illinois Structure Information System (ISIS). This is part of the Illinois Highway Information System (IHIS). The ISIS database system contains information required by the NBIS, including inspection data.

The ISIS data is available from the Structure Information Management System (SIMS). LPAs may obtain the database file of local bridges for each county from IDOT's website and use the SIMS with the Microsoft Access database application program.

6-2.03 Inventory Requirements

The bridge inventory must include the following:

- all structures carrying public roads meeting the definition of a bridge, and
- all other structures where an opening length (measured along the centerline of the roadway) of less than or equal to 20.0 ft. (6.1 m) and involving a highway. These may be accepted into the system if prior approval is given by the Central Office of Planning and Programming – Data Collection Unit.

Structure numbers (SN) should be assigned and the inventory should be completed for non-highway, railroad and pedestrian structures over roads open to the public. This establishes the structure in the ISIS for inventorying its location, and vertical and horizontal clearances. NBIS inspections are not required for pedestrian structures. However, regular maintenance inspections are encouraged.

The responsibility for reporting the required information for the ISIS rests with the agency having jurisdiction of the road leading to and from the bridge. If there is no public road on the structure, the reporting responsibility rests with the agency having jurisdiction of the road under the structure.

6-2.04 Structure Number (SN)

Each structure is identified by a 7 digit SN composed of a 3 digit county number and a 4 digit structure sequence number. The county number can be found as Item 3 in the [Structure Information and Procedure \(SIP\) Manual](#). The [SIP Manual](#) also provides additional information on the sequence number. The SN is assigned by the district or the maintaining agency from a block of numbers reserved for each agency. The SN is to be assigned prior to submittal of the

Preliminary Bridge Design and Hydraulic Report (PBDHR) or Type, Size & Location (TS&L) plans, as applicable, and shall be included in the ISIS to avoid possible duplicate use of the SN.

Data for deleted structures is retained in the ISIS and the SN shall never be used again. Similarly, a bridge constructed using any portion of the original substructure may keep its same SN. Completely new bridges erected at the same location on the same or new alignment that does not use any part of the old bridge will be assigned a new SN. Structures moved to a new location should receive a new SN. New structures may be assigned SNs using the next available SN by district scheme. There is no official statewide scheme for the assignment of SNs according to jurisdiction.

Once the maintaining agency and IDOT have agreed on a SN for a bridge, that SN is permanent and will not be changed for any reason even if there is a change in maintenance responsibility. This avoids confusion in record retrieval and retention. To make the bridge numbering system effective in the field, one SN tag should be painted or installed on each end of the bridge.

6-2.05 ISIS Structure Reports

Figure 6-2A presents the Structure Reports necessary to communicate information for entry into ISIS. The forms for the initial recording of inventory, route, and inspection information may be available from the district, copied from the [SIP Manual](#), or printed from the Structure Information Management System ([SIMS - County](#)), which can be downloaded from the IDOT website. Forms for reporting changes and information on existing structures can be obtained directly from [SIMS - County](#) or from the IDOT website. Ensure the most recent [SIMS – County](#) files are downloaded prior to printing these reports.

6-2.06 Sufficiency Rating (SR)

Based on the inventory, traffic, inspection, and load-rating data submitted to ISIS, the Department calculates a SR for each structure. The SR is between 0.0 and 100.0, with the lower numbers implying a higher priority of need for improvement.

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Report	Usage of Report
Inventory/Status Initial Report (R105-I) (SIMS)	Reporting inventory and bridge status information to ISIS on new-to-system bridges.
Inventory Turnaround Report (S105) (SIMS)	Reporting revisions of inventory data to ISIS. The inspector should have this form or Forms S114 and S111 at each NBIS inspection.
Inspector's Inventory Report (S114) (SIMS)	Form S114 is for reporting revisions of inventory data to ISIS. The inspector should have this form or Form S105 and Form S111 at each NBIS inspection.
Key Route/Construction Initial Report (R111-I) (SIMS)	Reporting route information to ISIS on new-to-system bridges.
Key Route Turnaround Report (S111) (SIMS)	Reporting revisions of key route data to ISIS. The inspector should have this form and Form S114 or S105 at each NBIS inspection.
Master Structure Report (S107) (SIMS)	Reports most information contained in ISIS for each bridge. This form is not for reporting revisions to the System. The inspector should have this form at each NBIS inspection.
Routine Bridge Inspection Report (BBS-BIR)	The BBS-BIR form is used for recording specific inspection notes and ratings for each bridge. The BBS-BIR is used for a single inspection and contains current ratings information. The inspector should have this form at each NBIS inspection, and the signed original copy must be in the bridge file kept by the owner of the bridge.
Fracture Critical Inspection Form (BBS-BIR-FC1)	Form BBS-BIR-FC1 is used for recording results of Fracture Critical (FC) inspections. The inspector should have this form at each FC inspection.
Fracture Critical Member Inventory Form (BBS-BIR-FC2)	Form BBS-BIR-FC2 is used to record the FC Type, number of spans, and number of members in each FC bridge. The inspector should consult this form before each FC inspection, and the signed original must be in the bridge file kept by the owner of the bridge.
Underwater Bridge Inspection Report (BBS-BIR-UW1)	Form BBS-BIR-UW1 is used for recording results of Underwater (UW) inspections. The inspector should have this form at each UW inspection.
Special Inspection Report (BBS-SI-1)	Form BBS-SI-1 is used to record the Special Inspection Type Code and Condition Status for all bridges requiring a Special Inspection. The inspector should consult this form before each Special Inspection, and the signed original must be in the bridge file kept by the owner of the bridge.
Scour Critical Evaluation Coding Report (BBS SCE)	Form BBS SCE is used for reporting coding recommendations for Scour Critical Evaluations (ISIS Item 113).
Scour Critical Bridge Plan of Action (BBS 2680)	Form BBS 2680 is used to record actions to be taken to monitor scour critical or scour susceptible bridges during and after major storm events. The inspector should consult this form before each Routine Inspection and when a major storm event occurs. The form should be updated to reflect current field conditions and the signed original must be in the bridge file kept by the owner of the bridge.
Bridge Posting / Closure Review (BBS PCR)	Form BBS PCR is used for recording results of each Bridge Posting / Closure review inspection. The inspector should have this form at each review.
Bridge File Checklist (BBS BFC)	Form BBS BFC is used to document the contents of each official Bridge File and the location of required information that may be stored separately or electronically. The inspector should consult this form before each inspection, and the original copy must be in the bridge file kept by the owner of the bridge.

Note: All forms listed are available from [SIMS - County](#) or from the [IDOT website](#). BBS and BIR forms may be found on the [IDOT website](#).

STRUCTURE REPORTS

Figure 6-2A

6-2.07 Inventory Updates

IDOT is required to maintain and report on the accurate operational status of all bridges in the NBI. New bridges or any conditions that require revision of existing structure information must be reported to the district promptly. The district must include the revision in ISIS within 90 days after the change in status for LPA structures. The 90 days start when the structure is opened or reopened to unrestricted traffic or when other events occur that result in changes to inventory or inspection data for a structure.

Refer to the [SIP Manual](#) Item 41 for appropriate Bridge Status codes. NBIS requirements state that changes in Bridge Status must be entered in ISIS within 90 days of that change. When a LPA bridge is load posted (ISIS Codes 2-6), under staged construction (ISIS Code 7), closed for construction (ISIS Code A), or closed but anticipated to be rehabilitated or replaced within 5 years (ISIS Code B), the owner should report that change in Bridge Status to the district.

Structures with Bridge Status B for more than 5 years will be considered permanently closed and the Bridge Status will be changed to E or may be deleted. When structures are coded with Bridge Status 5 or 6 (Temporary Measures) for more than 5 years, the temporary measures become permanent for the structure. Condition Ratings, Load Ratings, and Bridge Status will be based on these measures. In addition, all inventory information should be updated as necessary.

6-3 BRIDGE INSPECTIONS

The bridge owner (LPA) must have a systematic strategy for conducting field inspections and reporting the findings. The inspection team must be led by a qualified Team Leader. The bridge inspection report should accurately and clearly record all findings and should include photographs of the overall structure and of any significant defects.

Per the NBIS, the owner of a bridge should have an individual bridge file for each structure. Counties may hold files on behalf of townships or other LPAs for which they provide services. In addition, the LPA, as the owner of the structure, must have a systematic means of entering, storing, and retrieving all bridge inspection data. The file should contain a full history of the structure.

A Bridge File Checklist (Form [BBS BFC](#)) must be maintained with each Bridge File. This form may be found on the [IDOT website](#) or by contacting the appropriate district office.

6-3.01 LPA Responsibility

6-3.01(a) Publicly Owned Structures

In order to satisfy the requirements of the NBIS, the LPA is responsible for inspections of all structures on roads open to public travel that meet the definition of a bridge, see Section 3.1.2 in the [Structural Services Manual](#) for facilities under its jurisdictional responsibility. In addition, all closed structures are required to be inspected for proper closure by the LPA.

Though not required by the NBIS, for structures under their jurisdiction and responsibility that do not meet the definition of a bridge or are not carrying highway traffic, LPAs are strongly encouraged to perform regular inspections to ensure public safety.

The responsible LPA may perform the inspection with qualified in-house personnel or retain the services of a qualified inspector proficient in the performance of NBIS inspections. See Section 3.9.2 in the [Structural Services Manual](#) for Personnel Qualifications.

6-3.01(b) Privately Owned Structures

Privately owned structures, and those owned by government agencies that are not highway agencies, carrying public roadways, are subject to inspection and inclusion in ISIS; see Section 6-2.02. Therefore, it is the responsibility of the owners of these structures to have timely inspections performed according to the provisions of the NBIS. The BBS BMU and the Local Bridge Unit (LBU) will work with the owner to:

- ensure the owner is aware when the NBI inspection is due, and
- obtain copies of the inspection forms to keep on file and for submission to the district for inclusion in ISIS.

In general, a LPA has a responsibility to post and warn the public of any hazards on a public highway carried by a structure. When it becomes apparent that the private owner (e.g., railroad, drainage or sanitary district, developer) of a bridge carrying a public highway will not or cannot

perform the safety inspections required by the NBIS, the LPA having jurisdiction over the public highway leading to the bridge is responsible for performing the necessary inspection. If the private owner also has jurisdiction of the road leading to the bridge (e.g., private business that allows customers to use the road), the LPA may need to consider closing the public road leading to the private road until an inspection is performed and the bridge is considered safe. The NBIS requirements are not directly applicable to privately owned structures, but owners are strongly encouraged to follow the requirements of the NBIS.

6-3.02 Reporting Requirements

This Section discusses the process for entering field inspection results into the ISIS. See Figure 6-2A for a list of inspection report forms.

6-3.02(a) New Structure, or Initial Inspection of Old Structure not in ISIS

The following applies:

1. Complete the Inventory / Status Initial Report (R105-I) and the Key Route / Construction Initial Report (R111-I) and submit copies to the district. If a bridge has been replaced, then also indicate in the submittal the SN of the replaced structure so the replaced bridge can be marked for deletion.
2. Complete the Bridge Inspection Report (Form [BBS-BIR](#)). The signed original of Form [BBS-BIR](#) is retained in the individual bridge file kept by the owner of the bridge. The Bridge Inspection Report (Form [BBS-BIR](#)) should be completed and a copy submitted to the district.
3. The Scour Critical Evaluation Coding Report ([BBS SCE](#)), if applicable, must be filled out and submitted at the same time as the other two initial reports if it has not been submitted previously.
4. The LPA should submit all reports within 90 days of opening the bridge to traffic to allow the district proper time to enter the data within the required timeframe.

6-3.02(b) Re-inspection of Structures on File in ISIS

The following applies:

1. Complete the Bridge Inspection Report (Form [BBS-BIR](#)).
2. Submit copies of Reports [BBS-BIR](#) and S105, and S114 if required, to the district. The LPA should submit the inspection report within 90 days of the inspection to allow the district proper time to enter the data within the required time frame.

6-3.02(c) Reconstruction of an Existing Structure

Any reconstruction, rehabilitation, or major repair of an existing bridge currently in ISIS should be recorded in the ISIS within 90 days of reopening the bridge to unrestricted traffic. Work that changes the inventory data of a bridge open to traffic must also be recorded within 90 days of the completion of the work. A bridge reconstructed using the same abutments or piers may

keep the same SN so long as the geometry, span lengths, etc. have not significantly changed.
The following applies:

1. Complete Form [BBS-BIR](#).
2. Revise and submit copies of Reports [BBS-BIR](#) and S105, and S114 if required, as described in Section 6-3.02(b).

6-4 LOAD RATING AND POSTING

6-4.01 Requirements

All bridges must be load rated to determine their load-carrying capacity. This includes the Inventory Rating Factor, Operating Rating Factor, and the ratings for the Illinois Legal Loads as defined in the *Illinois Vehicle Code* ([625 ILCS 5/15-111](#)). These ratings provide an indication of the bridge's capacity to safely resist the loads it is likely to be subjected to. This information assists in the determination of necessary load posting, the issuance of special overload permits, and the scheduling for rehabilitation or replacement. These ratings must be performed by IDOT or receive IDOT's concurrence, in accordance with [625 ILCS 5/15-317\(b\)](#).

According to IDOT's load rating policy, as described in Section 3.3.9 of the [Structural Services Manual](#), re-evaluation of the load-carrying capacity must be performed when significant deterioration in structurally critical areas has occurred since the last rating. Such deterioration is typically indicated when the ISIS Superstructure (Item 59), Substructure (Item 60), or Culvert (Item 62) is reduced to a "4" or less, or when the Condition Rating of Deck (Item 58) falls to "3" or less.

In addition, load rating is performed at a maximum 10-year interval for bridges meeting any of the following criteria:

- a Condition Rating of "4" or less for Items 59, 60, or 62;
- a Condition Rating of "3" or less for Item 58; or

Load rating of bridges not meeting the above criteria, although not specifically required, may be requested by the LPA.

6-4.02 Responsibilities

All bridges must be rated for load capacity by IDOT, or by a qualified Illinois Licensed Structural Engineer with IDOT's concurrence. Generally, existing structures do not need to be load rated unless they have deteriorated, have been repaired or modified, have a modification to the wearing surface or meet the requirements in Section 6-4.01.

6-4.02(a) Load Rating by IDOT

IDOT will rate bridges at the request of the LPA or upon its own initiative. A request for rating should state any unusual or notable conditions. The LPA should provide a copy of the "as-built" construction plans or, if plans are not available, a dimensioned sketch of the bridge and its significant structural members. Representative photographs showing the overall condition and specific problem areas should also be included.

Rating requests may be made in writing through the district using Form [BLR 06510](#). A representative of the BBS will schedule a field investigation of each structure to determine actual conditions of the bridge which affect the load-carrying capacity.

6-4.02(b) Load Rating by Others

Structure ratings performed by others must receive the concurrence of IDOT (BBS). A summary report for all bridges rated should detail the procedures, findings, inventory and operating ratings, and posting recommendations based on a field inspection and analysis performed by an Illinois Licensed Structural Engineer in accordance with provisions of the current AASHTO *Manual for Bridge Evaluation (MBE)*. The structural engineer's seal must be affixed to the Structure Load Rating Summary (Form [BBS 2795](#)) along with computations and analysis model. Excerpts from detailed inspection reports or other similar submittals will not be accepted.

6-4.02(c) Reporting

The LPA should submit the summary report, original Form [BBS 2795](#) and other attachments to the district for forwarding to the BBS. The LPA should accept the consultant's findings prior to submittal of the report.

6-4.03 Bridge Closure and Weight Limit Posting

When a structure cannot carry legal loads, as defined in the Illinois Vehicle Code [625 ILCS 5/15-317](#), IDOT is required to ensure suitable signs are erected and maintained to inform the public of the maximum weight limit. The agency having jurisdiction over the roadway is responsible for the posting of signs, regardless of structure ownership or maintenance responsibility.

When IDOT determines a structure carrying traffic on a public road is not capable of carrying the legal loads as defined in [625 ILCS 5/15-111](#), it will inform the LPA. Upon notification from IDOT of a required load posting, the LPA shall erect signs as soon as possible and notify IDOT within 30 days that signs are in place, or within 14 days for closures.

Per [625 ILCS 5/15-317](#), the load posting signs must match the load posting requirements determined by the Department. Posting at a lower or higher level is not permitted. Likewise, a single posting level is not permitted when a combination posting level is required. The LBU should be contacted for re-evaluation if a combination posting level is required but the LPA believes a single posting level would be more appropriate for the structure location. See Figure 6-4A for bridge weight limit posting traffic control.

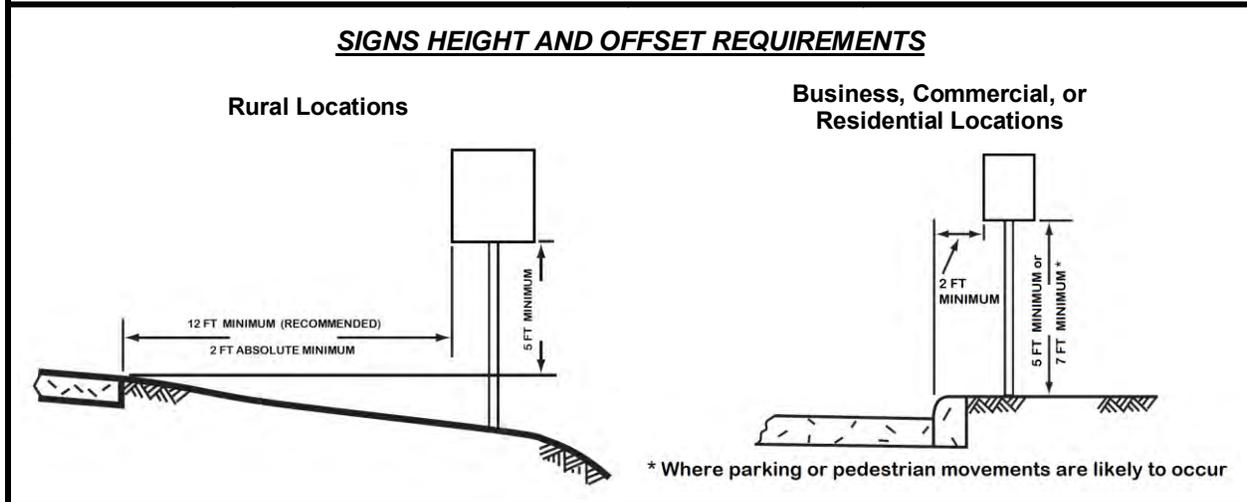
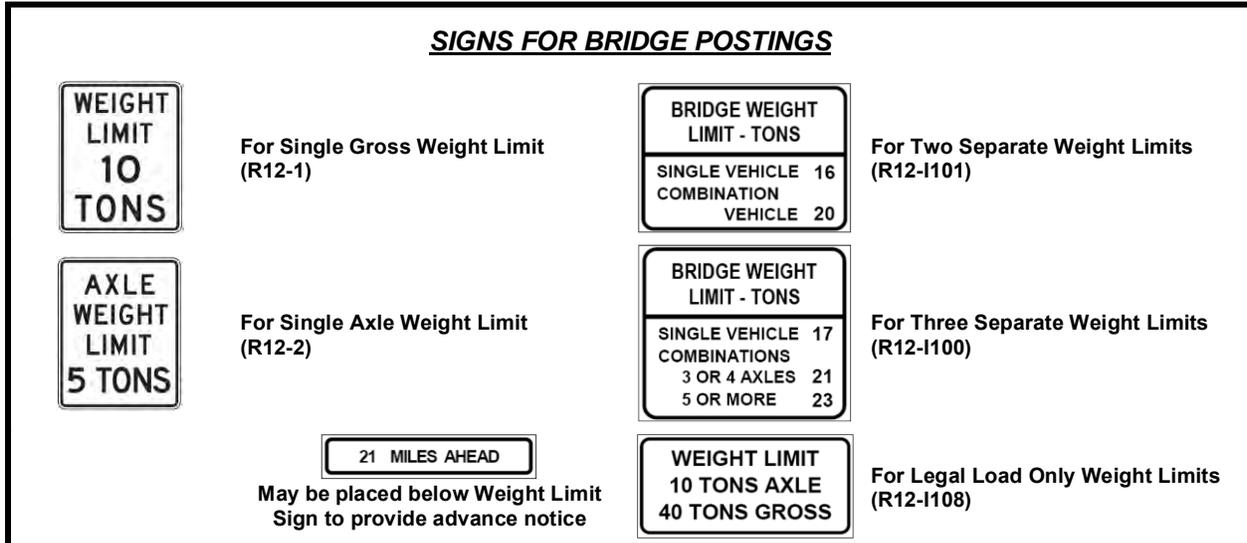
When a structure is to be closed, the LPA should immediately erect barricades that will prohibit traffic access to the structure. Those barricades are to remain in place until permanent closure measures can be installed. See Figure 6-4B for the proper permanent bridge closure traffic control. Additional information may also be found in the [Illinois Supplement to the Manual of Uniform Traffic Control Devices \(IL MUTCD\)](#).

6-4.04 Bridge Closure and Weight Limit Posting Review

In accordance with the Illinois Vehicle Code, [625 ILCS 5/15-317](#), the districts annually monitor local bridges that are listed in the ISIS as requiring load postings or closure. The district will

notify the appropriate LPA when a bridge is not properly posted or closed by sending a letter (see Figure 6-4C for example) with a copy of the Bridge Posting / Closure Review (Form BBS PCR) by certified mail.

The LPA shall correct any signing in accordance with the [ILMUTCD](#) or other deficiencies in a timely manner and notify the district within 30 days (see Figure 6-4D for example). All notifications to the district will include a signed copy of the BBS PCR form with photographs, preferably digital, certifying the deficiency at the bridge has been corrected. If the LPA is unable to complete the required corrections within 30 calendar days, they must provide the district with an estimated compliance date with justification. Failure of a LPA to comply may result in the withholding of Motor Fuel Tax (MFT) allotments and the district not approving current MFT expenditures, or other actions determined by the Department.



- SIGNS HEIGHT AND OFFSET REQUIREMENTS**
- 'Single Weight Limit' signs shall be located immediately in advance of the bridge.
 - 'Multiple Weight Limit' signs shall be located within 500 feet in advance of the bridge.
 - Additional weight limit signs may be installed in advance of the restriction with an 'XX MILES AHEAD' plaque to provide advance notice. Advanced signs should be installed near junctions where a driver could choose an alternate route with a minimum of inconvenience.
 - 'Legal Load Only' signs shall be located immediately in advance of the bridge.

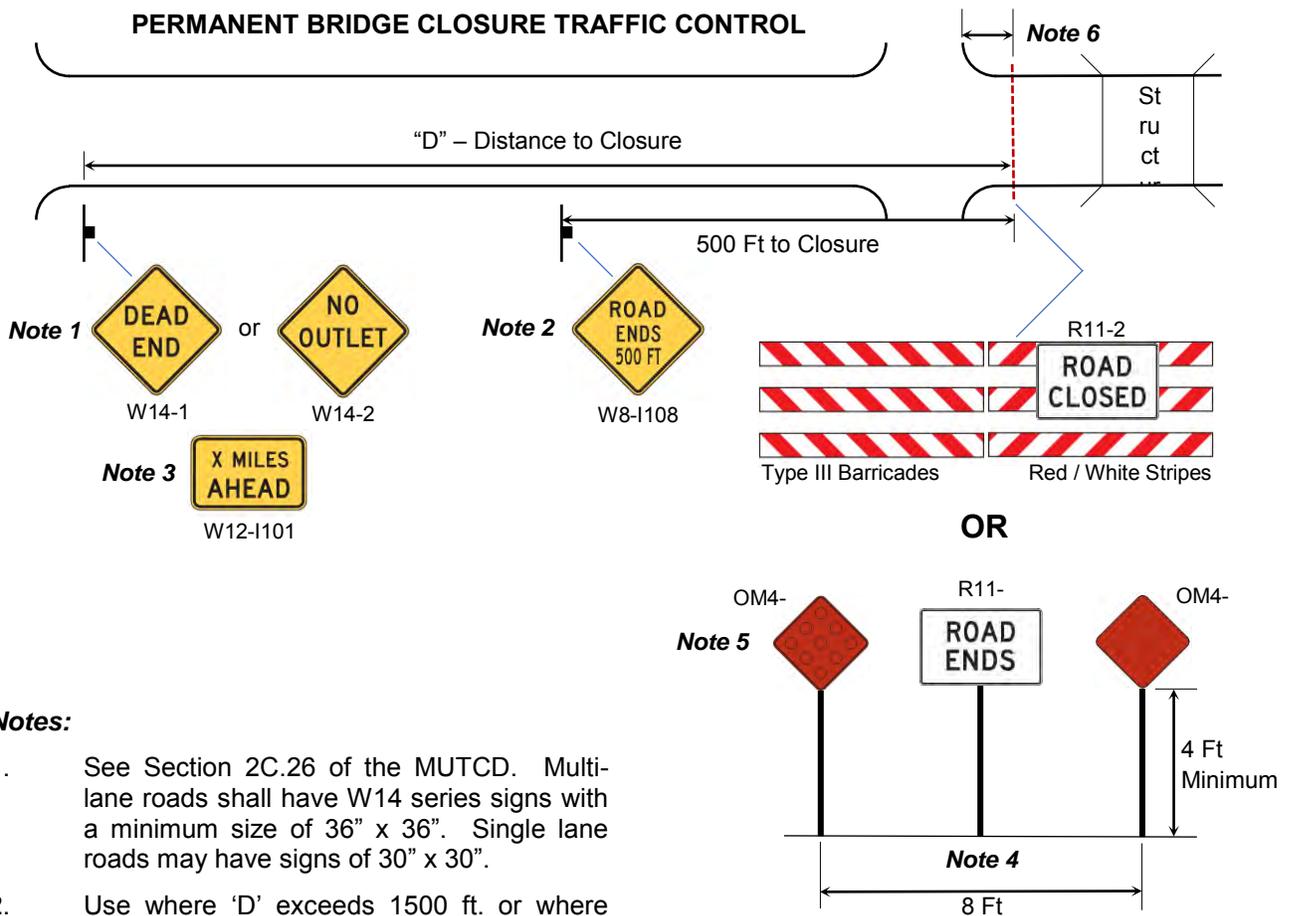
BRIDGE POSTING TRAFFIC CONTROL

Figure 6-4A

**BUREAU OF LOCAL ROADS & STREETS
BRIDGE INVENTORY AND INSPECTIONS**

June 2018

6-4-5



Notes:

1. See Section 2C.26 of the MUTCD. Multi-lane roads shall have W14 series signs with a minimum size of 36" x 36". Single lane roads may have signs of 30" x 30".
2. Use where 'D' exceeds 1500 ft. or where sight distance to the closure is less than 500 ft.
3. Where the point of closure is over 1 mile from the last cross road, an "X MILES AHEAD" plaque (W12-1101) may be used.
4. Type III Barricades with a "ROAD CLOSED" sign (R11-2) or a "ROAD ENDS" sign (R11-1100) with red object markers (OM4-1 or OM4-3) shall be used at the point of closure. Guardrail may be used in conjunction with barricades or "ROAD ENDS" sign (R11-1100). If used, barricades shall be retro-reflectorized red/white and permanently installed into the pavement. Any barriers used shall extend beyond the edge of shoulder. If practical, old pavement should be removed beyond the closure point or covered with dirt/rocks to minimize the illusion of the road continuing. Barricades or "ROAD ENDS" sign (R11-1100) should be installed at least 100 ft. In advance of broken pavement or dirt/rocks.
5. Object markers (OM4-1 or OM4-3) used in conjunction with a "ROAD ENDS" sign (R11-1100) shall be red and conform with Section 2C.66 of the MUTCD.
6. If a cross road or entrance is located near the road closure, the closure devices shall be outside the clear zone of the cross road or entrance.
7. If the bridge is under active construction, traffic control shall be in accordance with Part 6 of the MUTCD.

PERMANENT BRIDGE CLOSURE TRAFFIC CONTROL

Figure 6-4B

BUREAU OF LOCAL ROADS & STREETS
BRIDGE INVENTORY AND INSPECTIONS

6-4-6

June 2018

[Date]

Certified Mail No.:

[LPA Contact Information]

RE: Bridge Posting & Closure

Dear _____:

In accordance with the *Illinois Vehicle Code* ([625 ILCS 5/15-317](#)), an inspection of all structures within your jurisdiction that are load posted or closed was recently conducted by this office. This inspection was done to ensure that all load posted structures are properly signed and closed structures are properly signed and barricaded. The following deficiencies of structures under your jurisdiction were noted during this inspection:

<u>Structure Number</u>	<u>Structure Status</u>	<u>Deficiency</u>	<u>Corrective Action to be Taken</u>
-------------------------	-------------------------	-------------------	--------------------------------------

Please correct the deficiencies in a timely manner and notify this office in writing by completing and returning the attached Notice of Compliance form with digital photos within 30 calendar days from the date of this letter. If you are unable to complete the required corrections within the 30 calendar days, please provide this office with an estimated compliance date. Do not return the attached Notice of Compliance until the deficiencies have been corrected.

All signage must be in accordance with the [Illinois Supplement to the Manual of Uniform Traffic Control Devices \(IL MUTCD\)](#). The [ILMUTCD](#) may be accessed using the IDOT website. When performing your regular maintenance procedures during warmer weather, please ensure that all signing is clearly visible and not blocked by the growth of foliage.

If you have any questions regarding this issue, please contact **[Name]** at **[Contact Information]**.

Sincerely,

[Regional Engineer]

By: **[Local Roads and Streets Engineer]**

SAMPLE DISTRICT POSTING AND CLOSURE LETTER

Figure 6-4C

HARD COPIES UNCONTROLLED

[Date]

[Regional Engineer Information]

Attn: Local Roads and Streets

[District Contact Information]

RE: NOTICE OF COMPLIANCE

I have completed the required corrections for the local posting / closure related discrepancies. Attached are photos of the corrections.

Structure

Number

Date Correction Completed

Local Public Agency's Signature

Title

County

Township / Municipality

SAMPLE POSTING AND CLOSURE COMPLIANCE LETTER

Figure 6-4D

6-5 ACRONYMS

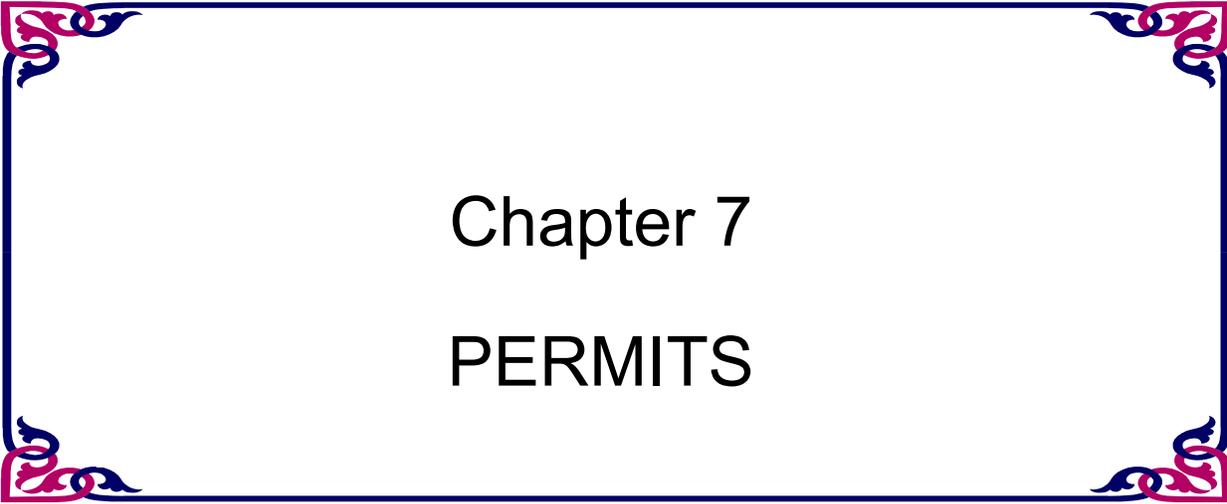
This is a summary of the acronyms used within this chapter.

AASHTO	American Association of State Highway and Transportation Officials
BBS	Bureau of Bridges & Structures
BFC	Bridge File Checklist
BIR	Bridge Inspection Report
BMU	Bridge Management Unit
CFR	Code of Federal Regulations
FC	Fracture Critical
FHWA	Federal Highway Administration
Guide	Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges
IDOT	Illinois Department of Transportation
IHS	Illinois Highway Information System
<i>ILMUTCD</i>	<u>Illinois Supplement to the Manual of Uniform Traffic Control Devices</u>
ILCS	Illinois Compiled Statutes
ISIS	Illinois Structure Information System
LBU	Local Bridge Unit
LPA	Local Public Agency
MBE	Manual for Bridge Evaluation
MFT	Motor Fuel Tax
NBI	National Bridge Inventory
NBIS	National Bridge Inspection Standards
PBDHR	Preliminary Bridge Design and Hydraulic Report
PCR	Posting/Closure Review
POA	Plan of Action
SI&A	Structure Inventory and Appraisal
SCE	Scour Critical Evaluation
SIMS	Structure Information Management System
SIP	Structure Information and Procedure
SN	Structure Number
SR	Sufficiency Rating
TS&L	Type, Size & Location
UW	Underwater

6-6 REFERENCES

For information on the inventory, inspections, appraisals, etc. of structures both bridges and culverts review the applicable publications listed below:

1. 23 CFR - Part 650 - Subpart C
2. [Structural Services Manual](#), IDOT
3. *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges*, FHWA
4. *Illinois Highway Information System – [Structure Information and Procedure Manual](#)*, IDOT
5. [625 ILCS 5/15](#) et al, *Illinois Vehicle Code*
6. *Manual for Bridge Evaluation*, AASHTO
7. [Illinois Supplement to the Manual of Traffic Control Devices](#), IDOT



Chapter 7
PERMITS

BUREAU OF LOCAL ROADS AND STREETS MANUAL

Chapter 7
PERMITS

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Chapter 7

PERMITS

7-1 GENERAL

Many activities performed by local public agencies (LPAs) affect the environment, navigation, public land, or private land. Depending upon the nature of the impact, the activity may require the LPA to obtain a permit or certification. Unless otherwise noted, the LPA coordinates with the applicable Federal or State agencies to process the permit application. Some of these permits/certifications are obtained during the planning phase of project development, and others are obtained during the design or construction phase. Any necessary permit authorizations/certifications should be obtained before commencement of work requiring the permit/certification. Personnel involved in project development should be aware of the requirements for these permits/certifications to ensure that necessary authorizations and clearances are obtained in a timely manner to allow the work requiring the permit/certification to proceed as scheduled. The permit authorization/certification should be obtained as close as practical to the start date for the work to optimize the time frame available for accomplishing the work before the authorization expires. LPAs must carefully monitor expiration dates for permit authorizations to ensure that any necessary extension or renewal request is processed in a timely manner. The need to receive one or more permits or approvals can significantly affect the project schedule.

Chapter 7 briefly documents information related to the permits/certifications that may be required for a project. Figure 7-1A identifies the address for each agency from whom a permit or certification may be required. Figure 7-1B identifies the regulatory jurisdictional boundaries for the USACE within the State of Illinois.

A joint application form (NCR Form 426) that has been developed by the United States Army Corp of Engineers (USACE), Illinois Environmental Protection Agency (IEPA), and Illinois Department of Natural Resources Office of Water Resources (OWR), which is used to apply for Section 10 and Section 404 permits from the USACE and for obtaining the related Section 401 Water Quality Certification from the IEPA. The form is also used for obtaining permits from the OWR for Construction in Floodways of Rivers, Lakes, and Streams and for work affecting public waters. The current version of the joint application form is available on the websites for the Chicago, Rock Island (lead Corps District for Illinois) and St. Louis Corps Districts. The LPAs should contact the USACE, IEPA, or OWR to obtain the current version of the joint application form. The form is also available on the [IDNR website](#).

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Federal

US Army Corps of Engineers

US Army Corps of Engineers
Chicago District
231 South LaSalle Street – Suite 1500
Chicago, Illinois 60604
(312) 846-5530

US Army Corps of Engineers
Rock Island District
Clock Tower Building
P.O. Box 2004
Rock Island, Illinois 61204-2004
(309) 794-5057

US Army Corps of Engineers
St. Louis District
1222 Spruce Street
St. Louis, Missouri 63103-2833
(314) 331-8575

US Army Corps of Engineers
Louisville District
Indianapolis Regulatory Office
8902 Otis Avenue – Suite S106B
Indianapolis, IN 46216
(317) 543-9424

US Army Corps of Engineers
Louisville District
Newburgh Regulatory Office
6855 State Road 66
P. O. Box 489
Newburgh, IN 47630-0489
(812) 853-5631

US Army Corps of Engineers
Memphis District
167 North Main Street
B-202
Memphis, Tennessee 38103
(901) 544-3471

US Coast Guard

Commander
Attn: Western Rivers Bridge Branch
Eighth Coast Guard District
1222 Spruce Street – Suite 2.102D
St. Louis, Missouri 63103-2832
(314) 269-2378

Commander
Attn: Bridge Branch
Ninth Coast Guard District
1240 East Ninth Street
Cleveland, Ohio 44199-2060
(216) 902-6087

State

Illinois Environmental Protection Agency

Illinois Environmental Protection Agency
Bureau of Water
Permit Section
1021 North Grand East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217) 782- 3397

Illinois Environmental Protection Agency
Bureau of Air
Permit Section
1021 North Grand East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217) 782-2113

IDNR Office of Water Resources

(For Lake Michigan)

Illinois Department of Natural Resources
Office of Water Resources
Lake Michigan Management Section
Michael A. Bilandic Building
160 North LaSalle Street – Suite S-703
Chicago, Illinois 60601
(312) 793-5947

(For Cook, Lake, McHenry, DuPage, Kane, & Will Counties)

Illinois Department of Natural Resources
Office of Water Resources – Region 2 Office
2050 West Stearns Road
Bartlett, Illinois 60103
(847) 608-3116

(For the remainder of the State)

Illinois Department of Natural Resources
Office of Water Resources
One Natural Resources Way
Springfield, Illinois 62702-1271
(217) 785-3334

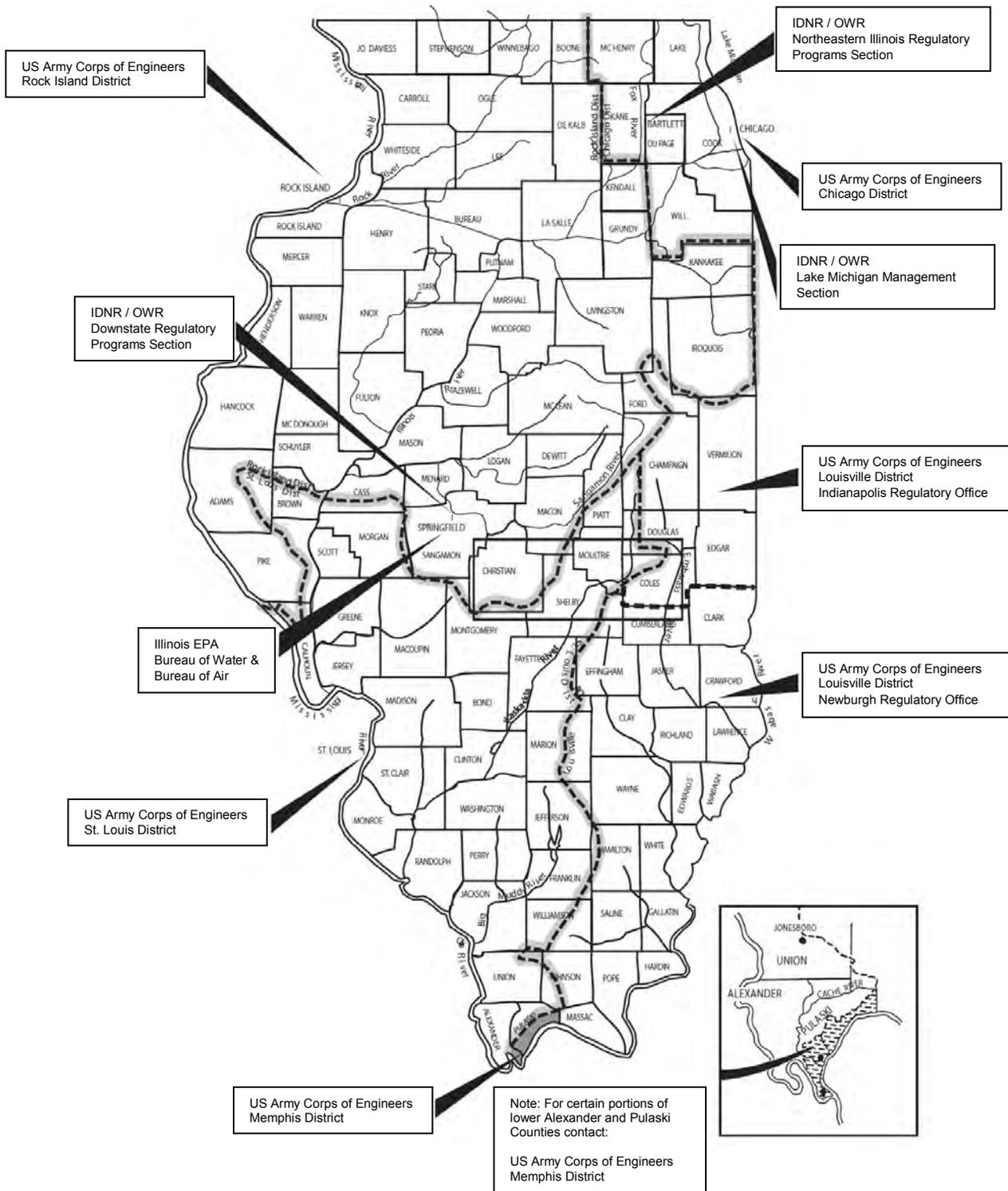
PERMIT AGENCY OFFICES

Figure 7-1A

**BUREAU OF LOCAL ROADS & STREETS
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REGULATORY JURISDICTIONAL BOUNDARIES

Figure 7-1B

7-2 IDNR OFFICE OF WATER RESOURCES PERMITS**7-2.01 Permit Programs**

Construction activities in and along the rivers, lakes, and streams of the State, including Lake Michigan, in and along public bodies of water, and for the construction and maintenance of dams may require coordination and/or permits administered by OWR, pursuant to the *Rivers, Lakes, and Streams Act*, [615 ILCS 5](#). LPA improvement projects would most likely involve the following three IDNR regulatory permit programs.

- Part 3700 – Construction in Floodways of Rivers, Lakes, and Streams Permit. The permit requirements are applicable to all rivers, lakes, and streams under the jurisdiction of OWR, except those in the counties of Cook, Will, DuPage, Kane, Lake, and McHenry for which floodway limits have been defined pursuant to 17 *Illinois Administrative Code* 3708.
- Part 3704 – Regulation of Public Waters Permit. The permit requirements are applicable to those lakes, rivers, streams, and waterways that are considered public waters, as listed in 17 *Illinois Administrative Code*, Part 3704, Appendix A.
- Part 3708 – Floodway Construction in Northeastern Illinois Permit. The purpose of this permit is to regulate construction and backfill in the regulatory floodway of rivers, lakes, and streams of Cook, DuPage, Lake, McHenry, and Will Counties, excluding the City of Chicago. A permit is required for construction, including replacement structures, roadway widening, etc., within the designated area listed above.

More detailed information may be obtained from the IDNR website. The IDNR “Sustainability Act” ([Public Act 97-1136](#)) became law in December 2012 and provides new revenue sources and reduces dependency on General Revenue funding. Among other provisions, this new act added language to the Rivers, Lakes and Streams Act ([615 ILCS 5/35](#)) that allows IDNR to collect a fee per application for permits issued under the Rivers, Lakes and Streams Act to help defray a portion of the ordinary and contingent expenses of the IDNR.

7-2.01(a) Part 3700 – Construction in Floodways of Rivers, Lakes, and Streams Permit

Legal Reference: This permit is authorized by [615 ILCS 5/23](#), 29a, 30 and 35; Implementing Rules are in 17 *Illinois Administrative Code*, Part 3700.

Purpose of Permit: To protect the rights, safety, and welfare of private and public landowners by the regulation of floodway development.

Applicability: The permit requirements are applicable to all rivers, lakes, and streams under the jurisdiction of the OWR, except those in the counties of Cook, Will, DuPage, Kane, Lake, and McHenry for which floodway limits have been defined pursuant to 17 *Illinois Administrative Code* 3708. A permit is required for construction in the floodway of streams serving a tributary area of one square mile (640 acres) or more in an urban area or in the floodway of a stream serving a tributary area of 10 square miles (6,400 acres) or more in a rural area.

Permit Criteria for Bridges and Culverts Crossings:

1. **New Bridges and Culverts.** The following applies to new bridges and culverts that would not result in flood damages or potential flood damages outside the project right-of-way due to increases in flood heights or velocities. Absent contrary evidence, this standard will be considered met if, for the worst-case analysis, the application shows that:
 - (a) any water surface profile increase would be contained within the channel banks (or within existing vertical extensions of the channel banks such as within the design protection grade of existing levees or floodwalls) or flood easements; or
 - (b) in urban areas, the water surface profile increase would not exceed 0.5 ft (150 mm) at the structure, nor 0.1 ft (30 mm) at a point 1,000 ft (300 m) upstream of the structure; or
 - (c) in rural areas, the water surface profile increase would not exceed 1.0 ft (300 mm) at the structure, nor 0.5 ft (150 mm) at a point 1,000 ft (300 m) upstream of the structure; and
 - (d) any increase in average channel velocity would not be beyond the scour velocity of the predominant soil type of the channel; or
 - (e) increased scour, erosion, and sedimentation would be prevented by the use of riprap or other design measures.
2. **Bridge and Culvert Crossing Reconstruction.** A bridge or culvert crossing reconstruction project that meets the following provisions will be permissible. A reconstruction project that does not meet these provisions must comply with the general standards for new bridges and culverts described above.
 - (a) For any flood event up to and including the 1%-annual-chance event, reconstructed crossing shall be no more restrictive to normal and flood flows than the existing bridge or culvert crossing; and
 - (b) Documentation must be provided that the existing crossing has not caused demonstrable flood damage. In the case of public projects, certification by a Regional Engineer of the IDOT Office of Highways Project Implementation, a county engineer (if an Illinois Licensed Professional Engineer), or a municipal engineer (if an Illinois Licensed Professional Engineer) that the existing crossing has not caused demonstrable flood damage will be adequate documentation.

7-2.01(b) Part 3704 – Regulation of Public Waters Permit

Legal Reference: This permit is authorized by [615 ILCS 5](#); Implementing Rules are in 17 *Illinois Administrative Code*, Part 3704.

Purpose: To protect the public's interest, rights, safety, and welfare in the State's public bodies of water by preventing construction that would:

- obstruct or interfere with the navigability of any public body of water;
- encroach on any public body of water; or

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- impair the rights, interests, or uses of the public in any public body of water or in the natural resources thereof.

Applicability: The permit requirements are applicable to those lakes, rivers, streams, and waterways that are considered public waters, as listed in 17 *Illinois Administrative Code*, Part 3704, Appendix A.

Permit Standards: The following apply to the Public Waters Permit:

1. **Navigability.** No activity may result in an obstruction to, or interference with, the navigability of any public body of water.
2. **Bank/Shoreline Instability.** No activity may result in bank or shoreline instability on other properties.
3. **Encroachment.** If it is determined that an activity would result in a long-term or permanent encroachment on a public body of water or impairment of any rights, interests, or uses of the public, it must be demonstrated that:
 - the project has been designed and will be constructed and operated in a way that will minimize and mitigate to the fullest practicable extent its encroachment on the body of water and its impairment of the rights, interests, and uses of the public; and
 - there will be a public benefit resulting from the activity that would offset the encroachment and/or impairment.

7-2.01(c) Part 3708 – Floodway Construction in Northeastern Illinois Permit

Legal Reference: This permit is authorized by [615 ILCS 5/18g](#) and 35; Implementing Rules are in 17 *Illinois Administrative Code*, Part 3708.

Purpose: The purpose of this permit is to regulate construction and backfill in the regulatory floodway of rivers, lakes, and streams of Cook, DuPage, Lake, McHenry, and Will Counties, excluding the City of Chicago, so that periodic inundation will not:

- pose a danger to the general health and welfare of the user;
- require the expenditure of public funds;
- require the provision of public resources or disaster relief services; and
- result singularly or cumulatively in greater flood damages or potential flood damages due to increases in flood stage or velocities or loss of flood storage.

Applicability: A permit is required for construction, including replacement structures, roadway widening, etc., within the designated area listed above. To receive a permit for work in the regulatory floodway, the proposed construction shall be an appropriate use of the regulatory floodway (see Part 3708 for appropriate uses), and the proposed construction shall not reduce the regulatory floodway storage or conveyance and shall not increase regulatory floodway velocities.

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Permit Criteria for Bridge, Culvert, and Roadway Approaches:

1. Bridges and Culverts. The construction of an appropriate use below the 100-year frequency flood elevation will be considered permissible provided the proposed project meets the following criteria and is so stated in writing with supporting plans, calculations and data by an Illinois Licensed Professional Engineer:
 - (a) In the case of the construction of a new bridge or culvert crossing and roadway approach, the proposed structure shall not result in an increase of upstream flood stages greater than 0.1 ft (32 mm) when compared to existing conditions for all flood events up to and including the 100-year frequency event; or the upstream flood stage increases will be contained within the channel banks (or within existing vertical extensions of the channel banks) such as within the design protection grade of existing levees or flood walls or within recorded flood easements; or a flood control project is built to mitigate the increased backwater due to the structure.
 - (b) In the case of bridge and culvert reconstruction or modification, the bridge or culvert and roadway approach reconstruction or modification shall be constructed with no more than 0.1 ft increase in backwater over the existing flood profile for all flood frequencies up to and including the 100-year event, if the existing structure is not a source of flood damage. The proposed construction shall meet the following criteria:
 - 1) The proposed structure, including approach roads, does not result in an increase in upstream stages for normal and flood flows when compared to the existing structure.
 - 2) On publicly navigated waterways, the proposed structure is not an obstruction to navigation.
 - 3) The determination as to whether the existing structure is a source of flood damage shall be made according to the following method:
 - a. Determine the increase in upstream flood profile due to the existing bridge or culvert by calculation or from the flood study used to delineate the regulatory floodway for all reported flood profiles up to and including the 100-year flood.
 - b. Determine if there are any buildings or structures located in the 100-year flood plain upstream of the existing bridge or culvert that may be subjected to flooding. The upstream flood plain shall be checked for the length of stream required for the backwater impacts due to the existing bridge or culvert to be reduced to 0.1 ft or less.
 - c. Collect the low opening elevations or lowest damageable elevations of the upstream buildings and structures as identified in subsection shown above. Determine if any buildings or structures are subject to inundation by the 100-year frequency flood event.

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- (c) The compensatory storage shall be provided for any regulatory floodway storage lost due to the proposed work from the volume of fill or structures placed and the impact of any related flood control projects. Artificially created storage lost due to a reduction in head loss behind a bridge shall not be required to be replaced. The compensatory regulatory floodway storage must be placed between the proposed normal water elevation and the proposed 100-year flood elevation. All regulatory floodway storage lost below the existing 10-year flood elevation must be replaced below the proposed 10-year flood elevation. All regulatory floodway storage lost above the existing 10-year flood elevation must be replaced above the proposed 10-year flood elevation. If the compensatory storage will not be placed at the location of the proposed construction, the applicant's engineer must demonstrate to the Department through a determination of flood discharges and water surface elevations that the compensatory storage is hydraulically equivalent.
- (d) When excavation is proposed in the design of the bridge and culvert openings, including the modifications to and replacement of existing bridge and culvert structures, or to compensate for lost conveyance for other appropriate uses, transition sections must be provided for the excavation. The following expansion and contraction ratios shall be used unless an applicant's engineer can prove to the Department through engineering calculations and model tests that more abrupt transitions may be used with the same efficiency:
- 1) When water is flowing from a narrow section to a wider section, the water should be assumed to expand no faster than at a rate of 1 ft horizontal for every 4 ft of the flooded stream's length;
 - 2) When water is flowing from a wide section to a narrow section, the water should be assumed to contract no faster than at a rate of 1 ft horizontal for every 1 ft of the flooded stream's length; and
 - 3) When expanding or contracting flows in a vertical direction, a minimum of 1 ft vertical transition for every 10 ft of stream length shall be used.
- (e) If the 100-year regulatory floodway elevation at the site of the proposed construction is affected by backwater from a downstream receiving stream with a larger drainage area, the proposed construction shall be shown to meet the requirements of this section for the 100-year frequency flood elevations of the regulatory floodway conditions and conditions with the receiving stream at normal water elevations. However, for bridge and culvert construction or reconstruction, a smaller bridge or culvert may be built if it can be demonstrated to the Department that the proposed structure would meet the requirements of this section for the 100-year frequency flood elevation of the regulatory floodway flood study profile and would not be a source of flood damage as determined according to the method described previously to any existing upstream building or structure when analyzed as follows:

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The proposed bridge or culvert shall be analyzed for a 100-year flood frequency flow on the tributary stream and for all tailwater elevations on the receiving stream between and including the normal water elevation and the 10-year flood frequency elevation.

- (f) If an applicant learns from the Department, local government or a private owner that a downstream restrictive bridge or culvert is scheduled to be removed, reconstructed, modified, or a public flood control project is scheduled to be built within the next five years, the proposed construction shall be analyzed and shown to meet the requirements of this Section for both the existing conditions and the expected flood profile conditions when the bridge, culvert or flood control project is built.
- (g) If the appropriate use would result in a change in the regulatory floodway location or the 100-year frequency flood elevation, the applicant shall submit to the Department and to FEMA all the information, calculations and documents necessary to be issued a conditional regulatory floodway map revision and receive from the Department a conditional approval of the regulatory floodway change before a permit is issued. However, the final regulatory floodway map will not be changed by the Department until as-built plans are submitted and accepted by FEMA and the Department. In the case of non-government projects, the municipality in incorporated areas and the county in unincorporated areas must concur with the proposed conditional regulatory floodway map revision before Department approval can be given.
- (h) All engineering analyses shall be performed by or under the supervision of an Illinois Licensed Professional Engineer, except in the case of a federal project.

7-2.02 Types of Permits

Generally, OWR issues an Individual Permit to applicants to demonstrate compliance with the rules for construction within a floodway. OWR has issued statewide and regional permits for specific activities which have insignificant impact on those factors under the jurisdiction of OWR. After the issuance of a statewide/regional permit, no application or further authorization will be required by OWR for activities meeting the terms and conditions of the statewide/regional permit. OWR may also issue General permits for more expeditious and less costly permit applications. Individual applications must still be submitted but authorizations will be granted for activities meeting all the terms and conditions of the general permit without notice or interagency coordination.

If a LPA project requires an Individual Permit coordination shall be with the OWR. Approval of the preliminary bridge design will be contingent on the hydraulics being approved by the OWR. If changes are required to the proposed structure, re-submittal to the LBU is required. For additional guidance on PBDHR submittal requirements, see [Chapter 10](#).

7-2.02(a) Statewide Permits

Figure 7-2A provides a list of all active OWR Statewide Permits (SWP).

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Permit Number	Permit Title
SWP 2	Construction of Bridge and Culvert Crossings of Streams in Rural Areas
SWP 3	Authorizing Mooring Facilities Used Exclusively for Barge Fleeting Purposes
SWP 4	Aerial Utility Crossings
SWP 5	Minor Boat Docks
SWP 6	Minor, Non-obstructive Floodway Construction Activities
SWP 7	Outfalls
SWP 8	Underground Pipeline and Utility Crossings
SWP 9	Minor Shoreline, Stream Bank, and Channel Protection Activities
SWP 10	Accessory Structures and Additions to Existing Residential Buildings
SWP 11	Minor Maintenance Dredging Activities
SWP 12	Bridge and Culvert Replacement Structures and Bridge Widening
SWP 13	Temporary Construction Activities
SWP 14	Special Uses of Public Waters

ACTIVE OWR STATEWIDE PERMITS**Figure 7-2A**

The following discusses the criteria for the Statewide Permits typically used for improvement projects by LPAs:

Statewide Permit No. 2 ([SWP 2](#)) – Construction of Bridge and Culvert Crossings of Streams in Rural Areas. SWP 2 applies to the construction of new and replacement bridges over streams in rural areas with drainage areas 10 mi² or greater when it is determined that the structure will not cause significant increases in potential flood damage. Rural areas are areas where residential, commercial, or industrial development does not exist and is not expected to occur within a 10-year period. If the area is unclear, the OWR shall be consulted for determination on whether the location is Rural or Urban. This decision should be documented.

SWP 2 does not apply to:

- 1) the areas in Lake, McHenry, Cook, DuPage, Kane, and Will Counties for which regulatory floodways have been designated pursuant to 17 *Illinois Administrative Code*, Part 3708
- 2) the public waters of the State (see the Department's Part 3704 "Regulation of Public Waters" rules for a listing of the public waters), and

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- 3) replacement of any bridge or culvert that has been the source of demonstrable flood damage.

SWP 2 only approves the hydraulic design of qualifying bridges; additional approvals may be required. The PBDHR must be submitted through the district to the LBU for applicable structures. To be authorized by SWP 2, bridge and culvert structures must meet the following conditions:

Special Conditions of the Statewide Permit No. 2

1. For a new culvert or bridge crossing:
 - (a) The crossing shall be designed such that it will not result in an increase in water surface profile elevation more than 1.0 ft (300 mm) over the natural condition for any frequency flow up to and including the 100-year frequency flood; and
 - (b) The crossing shall be designed such that it will not result in an increase in water surface profile elevation more than 0.5 ft (150 mm) over the natural condition at a point 1,000 ft (300 m) upstream of the proposed structure (as determined by the horizontal projection of the maximum created head and the slope of the hydraulic grade line) for any frequency flood up to and including the 100-year frequency flood; and
 - (c) There are no buildings or structures in the area impacted by the increases in water surface profile.
2. For a replacement culvert or bridge crossing:
 - (a) The crossing shall be designed so that there will be no increase in backwater over the existing conditions, or
 - (b) The crossing shall be designed so that it complies with the water surface profile increases listed in Special Condition 1; and
 - (c) An Illinois Licensed Professional Engineer shall determine and document that the existing structure has not been the cause of demonstrable flood damage. Such documentation shall include, at a minimum, confirmation that:
 - 1) No buildings or structures have been impacted by the backwater induced by the existing crossing; and
 - 2) There is no record of complaints of flood damages associated with the existing crossing.
3. The proposed bridge or culvert crossing, whether new or replacement, must not involve the straightening, enlargement or relocation of the existing channel of the river or stream. The excavation of the channel and/or overbank necessary for the effective hydraulic performance of the culvert or bridge or removal of debris from the river or stream is not considered straightening, enlargement or relocation. Any excavation of the overbank incorporated into the design of the bridge or culvert crossing to meet the terms of Special Condition 1 or 2, must include appropriate vertical and horizontal transitions. Furthermore, the bottom elevation of the overbank excavation must not be below one-

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half the channel depth of the stream. This depth shall be calculated at an existing cross-section of the stream within the general vicinity of the culvert or bridge which has been unaffected by man-made obstructions.

- 4. The design must be certified by an Illinois Licensed Professional Engineer to have been designed by standard hydrologic and hydraulic engineering methods and to be in compliance with the terms and conditions of this Permit and the applicable rules of the Department; and
- 5. The design must be certified by a second Illinois Licensed Professional Engineer to have been reviewed and found to be in compliance with the terms and conditions of this Permit.
- 6. The permittee shall maintain, for each project authorized by this permit, the records necessary to document compliance with the above conditions.

Certification Statements – SWP 2

To satisfy the requirements of SWP 2, for a **new bridge or a replacement** bridge or culvert crossings, the PBDHR that is submitted for the project must contain certification statements as noted above. The PBDHR is to be submitted through the district to the LBU; see [Section 10-2](#). The certification statements should contain, at a minimum, the information provided in the following samples:

I hereby certify that the waterway opening for the proposed structure has been designed by standard hydrologic and hydraulic engineering methods and is in compliance with the terms and conditions of Statewide Permit No. 2 and the applicable rules of the Department.	
_____	_____
(Signature of an Illinois Licensed Professional Engineer)	(Date)
PE Seal (with date of expiration)	

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I hereby certify that I have reviewed the design for the waterway opening of the proposed structure and I have found it to be in compliance with the terms and conditions of Statewide Permit No. 2 and the applicable rules of the Department.

(Signature of an Illinois Licensed Professional Engineer)

(Date)

PE Seal (with date of expiration)

For a **replacement** bridge or culvert crossing, the PBDHR that is submitted for the project must contain an **additional** certification statement. The certification statement should contain, at a minimum, the information provided as following:

I hereby certify that the existing structure has not been the cause of demonstrable flood damage and that:

- a) no buildings or structures have been impacted by the backwater induced by the existing structure; and
- b) there is no record of complaints of flood damage associated with the existing structure.

(Signature of an Illinois Licensed Professional Engineer)

(Date)

PE Seal (with date of expiration)

The required certifications must be included with the PBDHR. Based on review of the PBDHR, the LBU will concur that the conditions of SWP 2 have been met.

Statewide Permit No. 6 (SWP 6) – Minor Non-Obstructive Floodway Construction. SWP 6 authorizes the construction of minor floodway activities that are determined to have an insignificant impact on the factors under the jurisdiction of OWR. This permit does not apply to the areas in Lake, McHenry, Cook, DuPage, Kane, and Will Counties for which regulatory floodways have been designated pursuant to 17 *Illinois Administrative Code*, Part 3708. Some of the activities not involving fill or positive change in grade include the construction of light poles, sign posts, and similar structures and the construction of sidewalks and driveways built at grade. Other minor construction activities, including those involving fill or positive change in grade, may be authorized by this permit based on a determination by OWR after their review of submitted plans. Additional information is available on the IDNR website.

Statewide Permit No. 7 (SWP 7) – Outfalls. SWP 7 authorizes all outfall structures and drainage ditch outlets meeting the conditions of the permit, except those on Lake Michigan and

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those in Lake, McHenry, Cook, DuPage, Kane, and Will Counties for which regulatory floodways have been designated pursuant to 17 *Illinois Administrative Code*, Part 3708. Additional information is available on the IDNR website.

Statewide Permit No. 9 (SWP 9) – Minor Shoreline, Stream Bank, and Channel Protection Activities. SWP 9 authorizes minor protection activities for shorelines, stream banks, and channels experiencing active erosion, except those in Lake, McHenry, Cook, DuPage, Kane, and Will Counties for which regulatory floodways have been designated pursuant to 17 *Illinois Administrative Code*, Part 3708. The length protected must not exceed, either singularly or cumulatively, 1,000 ft (300 m). In public waters, only the placement of protection materials on an eroded bank is authorized by SWP 9. Additional information is available on the IDNR website.

Statewide Permit No. 11 (SWP 11) – Minor Maintenance Dredging Activities. SWP 11 authorizes minor dredging activities except for those in Lake, McHenry, Cook, DuPage, Kane, and Will Counties for which regulatory floodways have been designated pursuant to 17 *Illinois Administrative Code*, Part 3708. The affected length must not exceed, either singularly or cumulatively, 1,000 ft (300 m). Additional information is available on the IDNR website.

Statewide Permit No.12 (SWP 12) – Bridge and Culvert Replacement Structures and Bridge Widening. SWP 12 authorizes the replacement of bridge and culvert structures and the widening of specified existing bridges on rivers, lakes, and streams under IDNR's jurisdiction draining 10 mi² (26 km²) or more in rural areas and 1 mi² (2.59 km²) or more in urban areas. SWP 12 does not apply to the State's public bodies of water, nor those in Lake, McHenry, Cook, DuPage, Kane, and Will Counties for which regulatory floodways have been designated pursuant to 17 *Illinois Administrative Code*, Part 3708. A list of Illinois "public bodies of water" can be viewed at the IDNR website.

For a project to be authorized by SWP 12, bridge and culvert structures must meet the following conditions:

Special Conditions of the Statewide Permit No. 12

1. An Illinois Licensed Professional Engineer shall determine and document that the existing structure has not been the cause of demonstrable flood damage. Such documentation shall include, at a minimum, confirmation that:
 - a) no buildings or structures have been impacted by the backwater induced by the existing structure, and
 - b) there is no record of complaints of flood damages associated with the existing structure.
2. An Illinois Licensed Professional Engineer shall determine that the new structure will provide the same or greater effective waterway opening as the existing structure. For bridge widening projects, the existing piers and the proposed pier extensions must be in line with the direction of the approaching flow upstream of the bridge.

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3. The project does not include any appreciable raising of the roadway approaches. This condition does not apply if all points on the approaches exist at an elevation equal to or higher than the 100-year frequency flood headwater elevation as determined by a Federal Emergency Management Agency flood insurance study, or a study completed or approved by IDNR/OWR.
4. The project shall not involve the straightening, enlargement, or relocation of the existing channel of the river or stream, except as permitted by IDNR Statewide Permit No. 9, (Minor Shoreline, Channel, and Stream Bank Protection Activities) or by Statewide Permit No. 11, (Minor Maintenance Dredging Activities).
5. The permittee shall maintain records of projects authorized by this permit necessary to document compliance with the above conditions.

The certification statements should contain, at a minimum, the information provided in the following samples:

I hereby certify that the existing structure has not been the cause of demonstrable flood damage and that:

- a) no buildings or structures have been impacted by the backwater induced by the existing structure; and
- b) there is no record of complaints of flood damage associated with the existing structure.

(Signature of an Illinois Licensed Professional Engineer)

(Date)

PE Seal (with date of expiration)

I hereby certify that I have determined that the new structure will provide an effective waterway opening equal to or greater than that provided by the existing structure.

(Signature of an Illinois Licensed Professional Engineer)

(Date)

PE Seal (with date of expiration)

The required determination and documentation, along with the certifications, should be submitted with the PBDHR through the district to the LBU; see [Section 10-2](#).

Based on review of the PBDHR, the LBU will concur that the conditions of SWP 12 have been met.

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Statewide Permit No. 13 (SWP 13) – Temporary Construction Activities. SWP 13 applies to temporary construction activities in floodways. SWP 13 does not apply to the State's public bodies of water and those in Lake, McHenry, Cook, DuPage, Kane, and Will Counties for which regulatory floodways have been designated pursuant to 17 *Illinois Administrative Code*, Part 3708. Additional information is available on the IDNR website.

7-2.02(b) Regional Permits

Regional Permits are permits authorizing specific types of projects meeting certain criteria within regulatory floodways of Cook, DuPage, Kane, Lake, McHenry, and Will Counties in Northeastern Illinois without coordination with OWR.

The following describes the Regional Permits and their requirements:

1. Regional Permit 1 – Authorizing Bridge and Culvert Reconstruction and Modification Projects That Are Not a Source of Flood Damage. IDOT's District 1 administers Regional Permit 1. IDOT operates, without coordination with OWR, under the Memorandum of Understanding between the IDOT and IDNR.

Bridge and culvert reconstruction and modifications that are certified by the Regional Engineer as meeting the following criteria are considered authorized by OWR under Regional Permit 1:

- (a) Flow Restriction. The proposed structure, including the approach roads, is no more restrictive to normal and flood flow than the existing structure.
- (b) Channel Modification. No channel modification is proposed other than that required for transitions by the rules for Floodway Construction in Northeastern Illinois (17 *Illinois Administrative Code*, Part 3708).
- (c) Navigable Waterways. On publicly navigated waterways, the proposed work is not an obstruction to navigation.
- (d) Headwater Increase. The maximum headwater increase due to the proposed modification is no greater than 0.1 ft (30 mm) increase in backwater over the existing flood profile for all flood frequencies up to and including the 100-year event.
- (e) Flood Damage. The existing crossing is not a source of flood damage. To show the proposed structure is not a source of flood damage, the IDOT Regional Engineer must adhere to the following procedure:
 - Determine the head loss due to the existing bridge or culvert by calculation, or from the flood study used to delineate the regulatory floodway for all reported flood profiles up to and including the 100-year flood.
 - Determine if there are any buildings or structures located in the 100-year flood plain upstream of the existing bridge or culvert that may be subjected to flooding. The upstream flood plain should be checked for

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the length of stream required for the backwater impacts due to the existing bridge or culvert to be reduced to 0.1 ft (30 mm) or less.

- Collect the low-opening elevations or lowest damageable elevations of the upstream buildings and structures. Determine if any buildings or structures are subject to flood damage.

If the existing structure is determined to be a source of flood damage to buildings or structures in the upstream flood plain, Regional Permit 1 does not authorize the proposed structure.

- (f) Compensatory Storage. Effective compensatory storage will be provided for any additional loss of floodway storage due to the proposed work. This means that if flood storage will be lost below the existing 10-year flood elevation, it must be replaced below the 10-year flood elevation and, if flood storage is lost above the existing 10-year flood elevation, it is replaced above the proposed 10-year flood elevation. All effective compensatory storage must be placed above the normal water elevation and below the 100-year elevation.

Compensatory storage for up to 200 yd³ (150 m³) of fill material may be placed at a location outside of the project reach without demonstrating hydraulic equivalence and without applying for a floodway map change.

Relief from the compensatory storage requirement may be granted with OWR concurrence when extreme hardship is demonstrated, and an engineering analysis shows that no increase in flood stage will result. Relief will not be granted for compensatory storage greater than 200 yd³ (150 m³).

- (g) Transition Sections. Transition sections must be used in the calculation and design of effective bridge and culvert openings and in the design and construction of effective excavations. Use the following expansion and contraction ratios:

- when water is flowing from a narrow section to a wider section, the water should be assumed to expand no faster than at a rate of 1 ft (300 mm) horizontal for every 4 ft (1.2 m) of the flood stream's length;
- when water is flowing from a wide section to a narrow section, the water should be assumed to contract no faster than at a rate of 1 ft (300 mm) horizontal for every 1 ft (300 mm) of the flooded stream's length; and
- when expanding or contracting flows in a vertical direction, use a minimum of 1 ft (300 mm) vertical transition for every 10 ft (3 m) of stream length.

- (h) Downstream Backwater. If the 100-year floodway elevation at the site of the proposed construction is impacted by backwater from a downstream receiving stream with a larger drainage area, document that it meets the requirements of 17 *Illinois Administrative Code*, Part 3708, for the flood study profile conditions and conditions with the receiving stream at normal water elevations. However, for bridge and culvert construction or reconstruction, a smaller bridge or culvert

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may be built if it can be demonstrated that the proposed structure would meet the requirements for the flood study profile and would not be a source of flood damage to any existing upstream building or structures when analyzed as follows:

- Analyze for a 100-year flood frequency flow on the tributary stream for all tailwater elevations on the receiving stream between and including the normal water elevation and the 10-year flood frequency elevation.
- If, within the next 5 years, a downstream restrictive bridge or culvert is scheduled to be removed, reconstructed, modified, or a government sponsored regional flood control project is scheduled to be built, analyze and document the proposed construction to ensure that it meets the preceding criteria for both the existing conditions and the expected flood profile conditions when the bridge, culvert, or flood control project is built.
- If the bridge or culvert reconstruction or modification would result in a change in the regulatory floodway location or the 100-year frequency flood elevation, submit to the OWR and to the Federal Emergency Management Agency all the information, calculations, and documents necessary to revise the floodway map. The Office of Water Resources Management will issue a conditional approval of the floodway change before authorization is granted.
- All engineering analyses must be performed by or under the supervision of an Illinois Licensed Professional Engineer.

A permit summary form (form [D1_PD0024](#)) has been prepared to aid in the design and review of floodway projects and to ensure that designed projects can be permitted according to the rules of the Regional Permit. The summary form identifies the key permit conditions that must be addressed and serves as a check sheet for the reviewer. The Illinois Licensed Professional Engineer who performed or supervised the hydraulic design in accordance with the permit rules must sign the form. This form must be completed by the LPA and included with the submittal to District 1 of the PBDHR (see [Chapter 10](#)) for all projects utilizing Regional Permit 1.

2. Regional Permit 2 – Authorizing Bridge and Culvert Modification. IDOT District 1 administers Regional Permit 2. IDOT operates, without coordination with OWR, under the Memorandum of Understanding between IDOT and IDNR. Bridge and culvert modifications that are certified by the Regional Engineer as meeting the following criteria are considered authorized by OWR under Regional Permit 2:
 - (a) Culvert Length/Bridge Width. The total amount of proposed culvert lengthening or bridge widening does not exceed 12 ft (3.6 m).
 - (b) Flow Restriction. The proposed modification, including the approach roadway, is no more restrictive to normal and flood flows than the existing structure.

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- (c) Channel Modification. No channel modification is proposed other than that required for transitions under the rules for “Floodway Construction in Northeastern Illinois” (17 *Illinois Administrative Code*, Part 3708).
- (d) Navigable Waterway. On publicly navigated waterways, the proposed modification is not an obstruction to navigation.
- (e) Compensatory Storage. Effective compensatory storage will be provided for any additional loss of floodway storage due to the proposed work. This means, for example, that if flood storage is lost below the existing 10-year flood elevation, it must be replaced below the proposed 10-year flood elevation and if flood storage is lost above the existing 10-year flood elevation, it must be replaced above the proposed 10-year flood elevation. All effective compensatory storage must be placed above the normal water elevation and below the 100-year flood elevation.

Compensatory storage for up to 200 yd³ (150 m³) of fill material may be placed at a location outside of the project reach without demonstrating hydraulic equivalence and without applying for a floodway map change.

Relief from the compensatory storage requirement may be granted with the OWR Management concurrence when extreme hardship is demonstrated, and an engineering analysis shows that no increase in flood stage will result. Relief will not be granted for compensatory storage greater than 200 yd³ (150 m³).

A permit summary form (form [D1 PD0024](#)) must be completed by the LPA and submitted to District 1 with the PBDHR (see [Chapter 10](#)), if applicable, for all projects utilizing Regional Permit 2.

3. Regional Permit No. 3 – Authorizing Construction of Minor Projects in Northeastern Illinois Floodways. Regional Permit 3 applies to the construction of certain minor projects within floodways in Northeastern Illinois including the following project types:
 - storm sewer outfalls and outlet channels,
 - sidewalks, and
 - shoreline and streambank protection.

Each of these types of projects must meet specified criteria like the criteria in SWP’s 6, 7, and 9 to be permitted under Regional Permit 3. See the IDNR website for additional information on Regional Permit 3.

7-2.02(c) General Permits

General Permits are like Statewide Permits but require an application submittal to OWR. They cover specific type of projects and are limited in scope.

7-2.02(d) Individual Permits

Applicability: If an OWR Construction Permit is needed, and the project is not covered by a Statewide, Regional, or General Permit, an Individual Permit is required from OWR. It is suggested that OWR be consulted about rural/urban determinations. Individual permits to construct drainage structures and channel changes must be secured from the OWR for:

- structures that drain an area 10 mi² or greater in a rural area, or
- structures that drain an area 1 mi² or greater in an urban area, or
- channel changes affecting a drainage area of 10 mi² or more in a rural area and 1 mi² in an urban area; or
- projects affecting public waterways (see 17 *Illinois Administrative Code*, Part 3704, Appendix A for a list of these public waterways).

Permit Information Needs: The Joint Application Form (NCR Form 426), with appropriate supporting data, is used as the application for an Individual Permit. Supporting data includes:

- hydraulic report (use PBDHR when required; see [Section 10-2](#));
- hydraulic analysis data files (electronic);
- waterway sketch
- floodplain cross sections;
- road profiles; and
- channel change sketch, if applicable, (see Figure 7-2B for a sample channel change sketch). See Section 5-700 in the IDOT [Drainage Manual](#) for guidance on channel modification.

For replacement structures with no appreciable raising of grade, the LPA may use a certification statement signed by the county engineer or municipal engineer in place of the hydraulic analysis data. The county engineer or municipal engineer must be an Illinois Licensed Professional Engineer. This certification statement should be like the certification statement for SWP 12 (see Section 7-2.02). The statement should state that the existing structure has not been the cause of demonstrable flood damage and that the proposed replacement structure will not increase flood damage potential. When making this certification statement, the engineer is acknowledging that the design risk assessment process as described in the IDOT [Drainage Manual](#) has been performed.

If a LPA project requires an Individual Permit coordination shall be with the OWR. Approval of the preliminary bridge design will be contingent on the hydraulics being approved by the OWR. If changes are required to the proposed structure, re-submittal to the LBU is required. For additional guidance on PBDHR submittal requirements, see [Chapter 10](#).

7-2.02(e) Maintenance/Rehabilitation Exceptions

The following activities are exempted from an OWR Floodway Construction Permit:

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1. Maintenance and repair of existing bridge and culvert structures, including dredging to restore the waterway opening to the original design cross section, and superstructure replacement which would not reduce the waterway opening below the 1% annual chance of exceedance (100-year frequency) water surface elevation. (Maintenance does not include increasing the height of an existing roadway). (Note: although exempt from this Part, superstructure replacement involving replacing the girders of bridges over public bodies of water will require authorization under 17 *Illinois Administrative Code* 3704 Regulation of Public Waters);
2. Widening of bridge decks which would not reduce the bridge waterway opening below the 1% annual chance of exceedance (100-year frequency) water surface elevation nor involve the horizontal extension of piers;
3. Culvert extensions of up to 100% of the original length, but not exceeding 40 ft in length, provided the extension involves no change in alignment or reduction in size from the original culvert;
4. Removal of structures provided the materials would be removed from the floodway or placed in a way which would not obstruct normal or flood flows;

Projects calling for the total removal of an existing superstructure and the construction of a new superstructure on the existing substructure units, and culvert extensions as noted above, require hydraulic submittals. The hydraulic submittals shall include the existing and proposed design and 100-year hydraulic openings and elevations and shall be sufficient to evaluate the impact of scour on the existing substructure to remain (for bridges). The supporting data should be included, and a certification statement included that the existing structure has not been the cause of “demonstrable flood damage”. Use a certification statement like that provided for Statewide Permit 12 provided in Section 7-2.02(a).

7-2.02(f) No Construction Permit required

For projects not requiring an OWR construction permit, LPAs should continue to submit all PBDHR to the district for projects that require IDOT approval prior to preparation of design plans (see [Section 10-2](#)). Coordination with the OWR is not required. OWR construction permits are not required for rural structures with a drainage area of less than 10 square miles or for urban structures with a drainage area of less than one square mile. IDOT will review and approve the PBDHR for such projects.

The certification statements included with PBDHR submitted to IDOT should reference the IDOT [Drainage Manual](#) as the publication providing the policies and procedures for determining hydraulic adequacy.

Hydraulic Certification statements should contain, at a minimum, the information provided in the following sample certification statements:

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1. Drainage Areas Not Requiring a Permit:

I hereby certify that the waterway opening for the proposed structure has been designed using hydrologic and hydraulic engineering methods in accordance with the policies and procedures presented in the *Drainage Manual* or the Illinois Department of Transportation.

(Signature of an Illinois Licensed Professional Engineer)

(Date)

PE Seal (with date of expiration)

2. Rehabilitation Projects Not Requiring a Permit:

The PBDHR information submitted to the LBU for superstructure replacement projects should contain a certification statement that the existing structure has not been the cause of “demonstrable flood damage” (similar to the certification statement for Statewide Permit No. 12).

If the certification statement for flood damage cannot be provided by the county engineer, a complete hydrologic and hydraulic analysis is required to verify the hydraulic adequacy of the existing waterway opening and the following certification statement should be included with the hydraulic report:

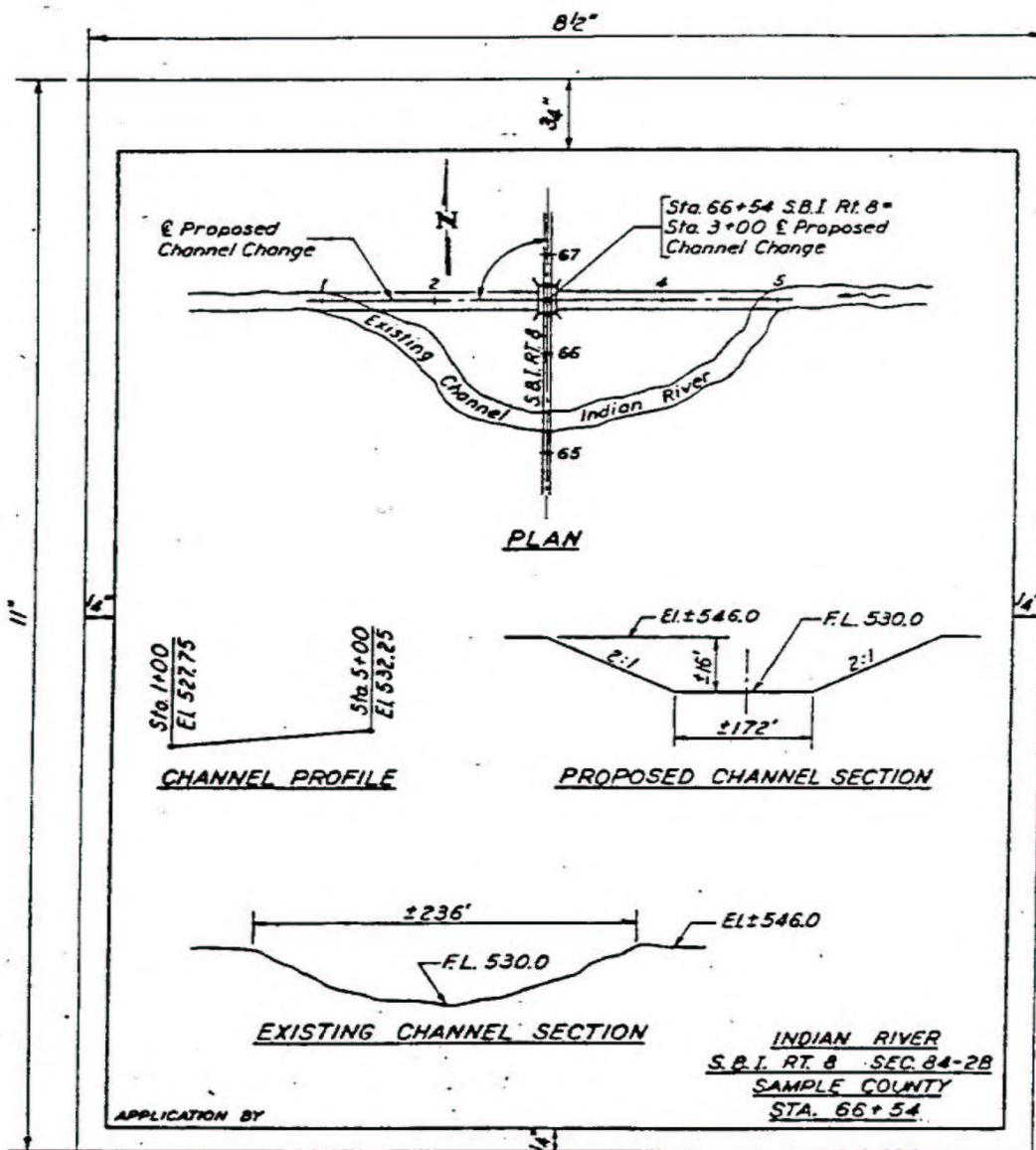
I hereby certify that the waterway opening for the existing/proposed structure has been analyzed and evaluated using hydrologic and hydraulic engineering methods in accordance with the policies and procedures presented in the *Drainage Manual* of the Illinois Department of Transportation.

(Signature of an Illinois Licensed Professional Engineer)

(Date)

PE Seal (with date of expiration)

When making this certification, the engineer is acknowledging that the “design risk assessment process” has been performed as described in Section 1-303.01 of the IDOT [Drainage Manual](#).



Note: This sketch is applicable when the following major channel changes occur:

1. The new channel is 250 ft (75 m) or longer.
2. The abandoned portion of the old channel is 750 ft (225 m) or longer.
3. The channel change at a bridge results in a stream alignment that would cause bank erosion because of a short radius bend.
4. The stream change is unusual and needs special attention.

SAMPLE CHANNEL CHANGE SKETCH

Figure 7-2B

7-3 IEPA PERMITS**7-3.01 Permit for Burning of Landscape Waste****7-3.01(a) Background**

Legal Reference: [415 ILCS 5/9\(c\)](#), 10, and 27; Implementing rules in 35 *Illinois Administrative Code* Part 237.

Responsible Agency: Illinois Environmental Protection Agency (IEPA) and the Illinois Pollution Control Board.

Purpose: To ensure that open burning if necessary, will be conducted in a time, place, and manner as to minimize the emission of air contaminants, and will have no serious detrimental effect upon adjacent properties or the occupants thereof.

No person shall cause or allow the open burning of refuse, conduct any salvage operation by open burning, or cause or allow the burning of any refuse in any chamber not specifically designed for the purpose and approved by the IEPA; except that the Illinois Pollution Control Board may adopt regulations permitting open burning of refuse in certain cases.

Applicability: For the burning of landscape waste in any area of the State, if open burning is conducted with the aid of an air curtain destructor or comparable device to reduce emissions substantially and does not occur within 1,000 ft (300 m) of any residential or other populated area.

7-3.01(b) General Permit

Permit Name: General Permit for Open Burning of Landscape Waste Generated by Land Clearing Activities Necessitated by Road Construction Projects Included in the "Annual Program" and "Service Bulletins" of IDOT.

Applicability: This General Permit can be used for any LPA project constructed with Federal funds or let by the State.

Permit Information Needs: A completed Notice of Open Burn form must be sent to the IEPA Air Permit Section not less than 7 working days prior to each open burn. The Notice of Open Burn form must provide the following information:

- name and address of the contractor proposing the open burn;
- the site location of the proposed open burn including address, county, township, sketch of the immediate vicinity of the proposed open burn site, and a printed map of the general area showing the site and nearby features marked, with distances to the features (e.g., structures, residences, populated areas, roadways, airports, lakes, waterways, hospitals, nursing homes, schools);
- schedule of the open burning activity including estimated duration and dates;

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- estimated quantity of material to be burned;
- IDOT construction contract number; and
- authorized signature of person responsible for the open burn activity.

7-3.01(c) Individual Permit

Applicability: The open burning of landscape waste on local-let projects not constructed with Federal funds will require an Individual Permit from the IEPA Bureau of Air. It will normally be the responsibility of the contractor to apply for this permit.

Permit Information Needs: A completed application must be sent to the IEPA Bureau of Air. See the IEPA website for the current open burning guidance and application forms required. The application must provide the following information:

- name and address of the contractor proposing the open burn;
- the site location of the proposed open burn including address, county, township, sketch of the immediate vicinity of the proposed open burn site, and a printed map of the general area showing the site and nearby features marked, with distances to the features (e.g., structures, residences, populated areas, roadways, airports, lakes, waterways, hospitals, nursing homes, schools);
- schedule of the open burning activity including estimated duration and dates;
- exact quantity and type of material to be burned;
- project identification;
- exact nature and exact quantities of air contaminant emissions;
- methods or actions that will be taken to reduce the emission of air contaminants;
- reasons why burning is necessary to the public interest; and
- authorized signature of person responsible for the open burn activity.

7-3.02 General Storm Water NPDES Permit for Construction Site Activities

See Section 7-4.01 for information on the General Storm Water NPDES Permit for construction activities issued by IEPA.

7-3.03 Section 401 Water Quality Certification

See Section 7-4.03 for a discussion of Section 401 Water Quality Certification issued by IEPA and required by the *Clean Water Act* for Federal authorization by the USACE under Section 404.

7-3.04 Permit Fees

Applicants for certain IEPA permits and certifications require the payment of a fee. These include NPDES Permits and Water Quality Certifications. Permit fees do not apply to the State

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or any department or agency of the State, nor to any school district; however, this exemption from permit fees does not apply to LPAs even though they may receive some assistance from the State.

Permit fees must be included with all permit applications. Permit holders should be aware that failure to pay fees could result in a referral to the Attorney General's Office and potential penalties, pursuant to Statute. For additional information on permit fees, see the IEPA website.

7-4 FEDERAL PERMITS / CERTIFICATIONS

LPAs are responsible for obtaining several Federal permits or certifications when required on individual projects. This Section briefly discusses the identification, applicability, and information needs of each permit or certification. The Federal permits are:

1. Section 402 NPDES Permit for Storm Water Discharge. This permit is administered by the IEPA and applies to projects that will involve clearing, grading, and excavation activities that result in the disturbance of one acre or more of total land area.
2. Section 404 Permit for the Discharge of Dredged or Fill Material. This permit is obtained from the USACE for the discharge of dredge or fill material into waters of the United States, including wetlands.
3. Section 401 Water Quality Certification. This certification is obtained from the IEPA and is required in conjunction with a Section 404 permit (i.e., the IEPA must either approve or waive the water quality certification as a condition for issuance of an individual Section 404 permit or for use of a nationwide or regional Section 404 permit).
4. Section 9 Permit for the Construction of Bridges in Navigable Waters. This permit is obtained from the US Coast Guard (USCG) for construction of bridges in navigable waters of the United States.
5. Section 10 Permit for Structures and Work in Navigable Waters. This permit is obtained from the USACE for structures or work (other than bridges and causeways) affecting the navigable water of the United States.

7-4.01 National Pollutant Discharge Elimination System (NPDES) Permits

Permit Name: General NPDES Permit No. ILR10 – General NPDES Permit for Storm Water Discharges from Construction Site Activities. A copy is available on the IEPA website.

Legal Reference: Section 402 of the *Federal Water Pollution Control Act* (1972), as amended by the *Clean Water Act* (1977 & 1987): 33 USC 1251-1376, DOT Order 5660.1A; 23 CFR 650, Subpart B; 40 CFR 121-125, 129-131, 133, 135-136.

Responsible Agency: United States Environmental Protection Agency through the IEPA.

Purpose: To restore and maintain the chemical, physical, and biological integrity of the nation's waters through prevention, reduction, and elimination of pollution.

Applicability: Required for construction activities involving clearing, grading, and excavation activities that disturb 1 acre or more of land area.

Permit Authorization: For storm water discharges from construction sites to be authorized under this General Permit, a Notice of Intent (NOI) must be submitted to IEPA at least 30 days prior to the commencement of construction:

Notice of Intent (NOI): The NOI requires the following information:

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- mailing address and location of construction site or, if not available, latitude and longitude of the approximate center of the site;
- the owner's name, address, telephone number, and status as Federal, State, private, public, or other entity;
- the name, address, and telephone number of the general contractor that has been identified at the time of the NOI submittal;
- the name of the receiving water or, if the discharge is through a municipal separate storm sewer, the name of the municipal operator of the storm sewer, and the ultimate receiving water;
- the number of any NPDES permit for any discharge, including non-storm water discharges, from the site that is currently authorized by an NPDES permit;
- a yes or no indication of whether the owner or operator has existing quantitative data that describes the concentration of pollutants in storm water discharges;
- a brief description of the project;
- estimated timetable for major activities;
- estimate of the number of acres of the site on which soil will be disturbed; and
- a certification that a Storm Water Pollution Prevention Plan (SWPPP) has been or will be prepared for the facility prior to the start of construction.

The NOI form is available on the IEPA website.

Notice of Termination (NOT): Submit a NOT to the IEPA after construction activities are complete. The NOT indicates that the site has been finally stabilized using permanent stabilization methods and that all storm water discharges from the construction site are eliminated. The NOT must include the following information:

- mailing address and location of construction site or, if not available, latitude and longitude of the approximate center of the site;
- the owner's name, address, telephone number, and status as Federal, State, private, public, or other entity;
- the name, address, and telephone number of the general contractor; and
- a certification that all storm water discharges associated with construction has been eliminated.

The NOT form is available on the IEPA website.

Storm Water Pollution Prevention Plan (SWPPP): A SWPPP must be developed for each construction site covered by this permit and completed prior to the start of construction. The SWPPP should include a site description (e.g., map, nature of construction activity, area disturbed), erosion and sediment controls, storm water management plan, maintenance of site, inspection schedule, reports, and identification of the contractors/sub-contractors. Unless

otherwise specified in the IEPA's *Illinois Urban Manual*, the SWPPP must be designed for a 24-hour rainfall event for a 25-year storm frequency. It is required that the SWPPP be kept on site during construction activities.

7-4.02 Section 404 Permits – Dredged or Filled Material

7-4.02(a) General

Section 404 permits, issued by the USACE are required for activities that involve the discharge of dredged or fill material into waters of the United States, including wetlands. An FHWA publication (FHWA-RE-88-028) titled *Applying the Section 404 Permit Process to Federal-aid Highway Projects* provides useful information for improving interagency coordination. In addition, the publication helps integrate the *National Environmental Policy Act* (NEPA) and the Section 404 requirements.

Legal Reference: Section 404 of the *Federal Water Pollution Control Act* (1972), as amended by the *Clean Water Act* (1977 & 1987): 33 USC 1251-1376, DOT Order 5660.1A; 23 CFR 650, Subpart B; 33 CFR 209, 320-323, 325, 328, 330; 40 CFR 121-125, 129-131, 135-136, and 230-231.

Purpose: To restore and maintain the chemical, physical, and biological integrity of the Nation's waters through prevention, reduction, and elimination of pollution.

Applicability: Permit required for any discharge of dredged or fill material into waters of the United States, including wetlands.

7-4.02(b) General Permits

Certain discharges into waters of the United States may be authorized by a USACE General Permit. A General Permit covers certain activities that the USACE has identified as being substantially similar in nature and causing only minimal individual and cumulative environmental impacts. These activities may be authorized on a nationwide basis or may cover activities in a limited geographic (regional) area. The information needs, applicability provisions, processing procedures, and conditions applicable to Regional and Nationwide Permits vary according to the specific permit involved. Some USACE districts require submittal of essentially the same information for Nationwide or Regional Permits as for Individual Permits. For actions that would involve discharges covered by more than one Nationwide or Regional Permit, the permit that is the least burdensome procedurally should be used.

The USACE Chicago District has issued a Regional Permit (RP) Program to replace the Nationwide Permit (NWP) Program. The NWPs typically expire every five years. The following is a discussion of the NWP and RP most commonly used for highway projects in Illinois:

NWP 3 – Maintenance.

- (a) The repair, rehabilitation, or replacement of a previously authorized, currently serviceable, structure or fill provided that the structure or fill is not to be put to uses

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differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification.

- (b) NWP 3 also authorizes the removal of accumulated sediments and debris in the vicinity of and within existing structures and the placement of new or additional riprap to protect the structure.
- (c) NWP 3 also authorizes temporary structures, fills, and work necessary to conduct the maintenance activity.

NWP 7 – Outfall Structures and Associated Intake Structures. Activities related to the construction or modification of outfall structures and associated intake structures, where the effluent from the outfall is authorized, conditionally authorized, or specifically exempted by, or that are otherwise in compliance with regulations issued under the National Pollutant Discharge Elimination System Program.

NWP 13 – Bank Stabilization. Bank stabilization activities necessary for erosion prevention, provided the activity meets all the following criteria:

- (a) No material is placed more than the minimum needed for erosion protection;
- (b) The activity is no more than 500 ft in length along the bank, unless this criterion is waived in writing by the district engineer;
- (c) The activity will not exceed an average of one cubic yard per running foot placed along the bank below the plane of the ordinary high-water mark or the high tide line, unless this criterion is waived in writing by the district engineer;
- (d) The activity does not involve discharges of dredged or fill material into special aquatic sites, unless this criterion is waived in writing by the district engineer;
- (e) No material is of the type, or is placed in any location, or in any manner, to impair surface water flow into or out of any water of the United States;
- (f) No material is placed in a manner that will be eroded by normal or expected high flows; and,
- (g) The activity is not a stream channelization activity.

NWP 14 – Linear Transportation Projects. Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States., provided the discharge does not cause the loss of greater than 0.5 acre of waters of the United States. For NWP 14, which addresses linear transportation crossings, the description of the project provided to USACE should include information on temporary stream crossings, work pads, temporary bypass channels, cofferdams, etc., that will be involved in the construction work, to the extent that this information is known or can be anticipated at the time of the permit submittal. To the extent that this information adequately covers the temporary work features that the contractor ultimately proposes, it will eliminate the need for having the contractor obtain a separate permit authorization for the temporary work and will avoid the associated potential for delays in project implementation.

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NWP 23 – Approved Categorical Exclusion. Federally funded projects that are classified as categorical exclusions may be eligible for authorization under NWP 23. The Federal Highway Administration (FHWA) and the USACE have an agreement for processing NWP 23.

Categorical Exclusion (CE) projects that will not involve more than minor water quality impacts and are such that the applicable permit conditions can be met, are potentially eligible for processing under the CE Nationwide Permit. Such projects should be discussed at district coordination meetings and approval should be requested from FHWA for use of NWP 23. Form [BLR 19100](#) or [BLR 22210](#) should be used to document this authorization.

If the FHWA grants approval for use of NWP 23, the appropriate USACE district should be provided with:

- documentation of the FHWA's approval;
- a sketch and brief description of the work requiring a 404 Permit;
- an indication of the type and approximate quantity of fill involved; and
- a copy of the biological information received in response to the environmental survey request for the action.

If the USACE district does not provide notification that it intends to seek assertion of the USACE Division Engineer's discretionary authority to require an Individual Permit for the action within 20 calendar days from the date it receives the above information, the project may proceed under NPW 23.

NWP 25 – Structural Discharges. Discharges of material such as concrete, sand, rock, etc., into tightly sealed forms or cells where the material will be used as a structural member for standard pile supported structures, such as bridges, including the excavation of bottom material from within the form.

NWP 33 – Temporary Construction Access and Dewatering. Temporary structures, work, and discharges, including cofferdams, necessary for construction activities or access fills or dewatering of construction sites, provided that the associated primary activity is authorized by the USACE or the USCG. It should be recognized that time will be required to obtain separate permit authorization for the additional temporary work items.

Chicago RP3 – Transportation Projects. RP3 authorizes the construction of transportation projects that affect waters of the United States not to exceed 0.25 acres for a single crossing with a cumulative impact not to exceed 1.0 acres for a transportation project involving multiple crossings. Temporary construction activities are not authorized by RP3.

Chicago RP4 – Minor Discharges and Minor Dredging. RP4 authorizes the discharge of up to 25 yd³ of dredged or fill material, including the discharge of materials such as concrete, sand, rock or stone into tightly sealed cells, where such cells will be used as a structural member for a pile-supported structure,

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Chicago RP7 – Temporary Construction Activities. RP7 authorizes temporary structures and discharges necessary for construction activities, access fills, and dewatering of construction sites.

Chicago RP9 – Maintenance. RP9 authorizes:

- (a) Repair or rehabilitation of any previously authorized, currently serviceable, structure or fill, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification.
- (b) Maintenance of existing flood control facilities, retention/detention basins, and channels that were constructed by the USACE and transferred to a local sponsor for operation and maintenance.

Chicago RP10 – Bank Stabilization. RP10 authorizes bank stabilization activities in all waters of the U.S., except Lake Michigan, subject to the following, which shall be addressed in writing and submitted with the notification:

- (a) Projects that involve the use of vegetative and biotechnical practices will be processed under Category I and are not subject to length restrictions.
- (b) Projects that involve the use of structural bank stabilization practices, such as riprap, gabions, lunker boxes, steel sheet piling, or fabric-formed concrete will be processed under Category I and shall not exceed a total length of 500 ft.

Chicago RP12 – Bridge Scour Protection. RP12 authorizes the construction and installation of protective armoring at existing bridge foundations, abutments, and/or bridge piers of Scour Critical bridges.

Other Nationwide and Regional Permits. A complete listing of USACE nationwide and regional permits is available on the website for the appropriate USACE District Office.

These permits are subject to certain notification procedures and restrictions and must meet the NWP general conditions and any applicable special conditions. This information is available on the appropriate USACE District Office website. The use of any of these permits requires Section 401 Water Quality Certification from IEPA. See Section 7-4.03 for a discussion of the certification process.

For work covered by NWP or RP, the LPA must notify the appropriate USACE District Office via letter in advance of undertaking the action. When the permit has specific requirements for notification, the notification must conform to the stipulated requirements. For use of permits that are not subject to specific notification requirements, the notification must be provided via a letter or other correspondence to the appropriate USACE District Office informing them of the action and indicating the proposed permit category.

A statement concerning the use of any applicable Nationwide or Regional Permit should be included in the contract proposal. The special provisions must include applicable Section 404 Permit requirements identifying the contractor's responsibilities and the conditions applicable to

the project. The contractor should clearly be made responsible for securing permits for construction activities not included in the specific permit documents.

7-4.02(c) Individual Permits

If an activity involves the discharge of dredged or filled material into waters of the United States and is not covered by a Nationwide or Regional Permit, an individual Section 404 Permit will be required. Each application for an Individual Section 404 Permit must be submitted to the appropriate USACE District Office. The joint application form (NCR Form 426) should be used for the application. A copy of the application should also be sent to the IEPA for Section 401 Water Quality Certification. This is discussed in Section 7-4.03.

Permit Information Needs: The list below indicates the typical items of information required for a Section 404 Permit:

- Name and address of permit applicant.
- Complete, detailed description of the proposed activity, its purpose, intended use, and drainage area of the watershed to the downstream limit of the project. The description should include information on temporary stream crossings, work pads, temporary bypass channels, cofferdams, etc., that will be involved in the construction work requiring a Section 404 Permit. For dredging and fill activities, describe the location, type, composition, and quantity of material to be dredged/filled, method of dredging/filling, and method of transportation to disposal/fill site. Also, describe the disposal/fill site by including the location, quantity of material it will hold, composition of receiving soil, and method of containment. Identify any practical alternatives that would fulfill the objectives of the proposed project and explain why the final proposal was selected.
- Location of the proposed activity, including legal description.
- If applicable, name, address, and title of authorized agent.
- Names, addresses, and telephone numbers of all adjoining and potentially affected property owners, including the property involved with the permit action, if different from the applicant.
- Date activity is proposed to commence.
- Estimated time of construction.
- Indication of whether any portion of the activity for which authorization is sought is complete.
- List of all approvals or certifications required by other Federal, Interstate, State, or LPAs for any structures, construction, discharges, deposits, or other activities described in the application.
- Indication of whether any agency has denied approval for the activity described in the application or for any activity directly related to the activity described.
- Engineering details (e.g., limit of fill activity, amount of fill, area taken, linear feet [meters] of disturbance, erosion control plan, disposal of waste material).

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- Copy of Environmental Impact Study (EIS) or Environmental Assessment (EA), if prepared, describing environmental impacts (e.g., soils, water quality, groundwater, wetlands, fish, wildlife, floodplains). If EIS or EA not prepared, copy of Wetland Determination Report, Wetland Impact Evaluation form, and Natural Resource Review Tool (NRRT) report or Ecological Compliance Assessment Tool (EcoCAT) report.
- Copy of the mitigation plan.
- Project drawings (8½ inches x 11 inches), including a vicinity map, plan view of the project and a cross section view of the project.
- Environmental signoffs.
- Some USACE districts may require additional items of information such as photographs of the project site, quantity calculations for fill activities, and documentation of coordination with Soil and Water Conservation Districts regarding proposed erosion and sediment control measures.

7-4.03 Section 401 Water Quality Certification

Responsible Agency: Illinois Environmental Protection Agency (IEPA).

Legal Reference: Section 401 of the *Federal Water Pollution Control Act* (1972), as amended by the *Clean Water Act* (1977 & 1987): 33 USC 1251-1376, DOT Order 5660.1A; 23 CFR 650, Subpart B; 33 CFR 209, 320-323, 325, 328, 329; 40 CFR 121-125, 129-131, 133, 135-136, and 230-231.

Purpose: To restore and maintain the chemical, physical, and biological integrity of the Nation's waters through prevention, reduction, and elimination of pollution.

Applicability: State certification is required in conjunction with the authorization by USACE of any activity that may result in any discharge into waters of the United States requiring a Section 404 Permit. Water Quality Certification is also required for Section 9 Permits.

Processing: The IEPA has issued Section 401 water quality certification for certain Nationwide Permits subject to general conditions. For certain other Nationwide Permits and for Regional Permits, water quality certification has been issued subject to general and regional conditions. Section 401 water quality certification was denied for the other Nationwide Permits. For a listing of 401 water quality certifications and denials see the Rock Island District USACE website.

For projects requiring an individual Section 404 Permit or a Nationwide Permit for which generic water quality certification was denied or the conditions required by the generic certification cannot be met, individual certification must be requested from the IEPA. The joint application form (NCR Form 426) along with the IEPA application fee should be sent to the IEPA. The USACE will not issue an individual Section 404 Permit until certification is received. Any Nationwide Permit authorization is subject to obtaining certification from the IEPA.

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7-4.04 Section 9 – Coast Guard Bridge Permit

This permit is for the construction of bridges or causeways over navigable waters of the United States required by Section 9 of the *Rivers and Harbors Act of 1899*. Permits for the construction of dams and dikes required by Section 9 are under the authority of the USACE.

Responsible Agency: United States Coast Guard (USCG).

Legal Reference: Section 9 of the *Rivers and Harbors Act of 1899*; 33 USC 401, et seq, as amended and supplemented; 23 CFR part 650, Subpart H; and 33 CFR 114-115.

Purpose: To ensure that there will be no interference to navigation on the navigable waterways of the United States.

Applicability: A permit is required for the construction, modification, replacement, or removal of bridges or causeways over a navigable waterway, except for the following:

1. A permit is not required for any bridge or causeway over waters which are not subject to the ebb and flow of the tide and which are not used and are not susceptible to use in their natural condition or by reasonable improvement to transport interstate or foreign commerce, whether or not such waters were used or were susceptible to use, at some previous time, to transport commerce (historic use).
2. Removal of an existing bridge without replacing it with another bridge also does not require a permit.
3. Repairs to a bridge which do not alter the clearances, type of structure, or any integral part of the substructure or superstructure or navigation conditions, but which consist only in the replacement of worn or obsolete parts may be made as routine maintenance without a formal permit action from the U.S. Coast Guard.

Permit Information Needs: The permit application can be in a letter form. See [Section 28-2](#) of the *Bureau of Design and Environment (BDE) Manual* or the USCG website for a discussion of the required information.

7-4.05 Section 10 – Structures and Work in Navigable Waters**7-4.05(a) General**

Section 10 Permits are required for structures (excluding dikes, dams, bridges, or causeways) and other work in or affecting the navigable capacity of the water body (i.e., course, location, condition). Section 10 Permits are obtained simultaneously with Section 404 Permits (i.e., share a joint application) and are normally valid for one year with possibility for extension.

Responsible Agency: United States Army Corps of Engineers (USACE).

Legal Reference: Section 10 of the *Rivers and Harbors Act of 1899*; 33 USC 403, et seq, as amended and supplemented; 23 CFR part 650, Subpart H; 33 CFR 320, 322, 323, 325, 326, 327, 329, and 330.

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Purpose: To protect and preserve the navigable waterways of the United States against any obstruction to navigation.

Applicability: Permit required for structures (other than bridges or causeways) or certain types of work in or affecting a navigable waterway. Examples of work include dredging, channelization, filling, and construction of pier protection cells.

7-4.05(b) General Permits

Some work in navigable water requiring a Section 10 Permit may be authorized by a General, Nationwide, or Regional Permit. Examples of Section 10 Nationwide Permits are NWP 7, 13, 23, 27, and 33. Details of these NWP's are in Section 7-4.02.

7-4.05(c) Individual Permits

If the work in navigable waters does not qualify for a General Permit, an application for an Individual Permit must be submitted to the appropriate USACE Regional Engineer. The joint application (NCR Form 426) should be used. Information like what is required for a Section 404 Permit should be provided to the USACE.

7-5 SPECIAL WASTE PERMITS

When a special waste is known to exist within the limits of a LPA improvement as determined by the results of a preliminary site investigation (PSI), then the exposure and disposal of that substance is regulated by state law. See [Section 20-12](#) for discussion of special waste and special waste studies. When applicable, it may be necessary to obtain the following permits for the proposed scope of work:

Supplemental Waste Stream Permit. This permit is applicable to all projects that will involve the disposal of a special waste. The permit application is prepared by the disposal facility on behalf of the environmental firm handling special waste disposal working for the prime construction contractor. This permit will allow the disposal facility to accept generated special waste.

Resource Conservation and Recovery Act (RCRA) Permit. This permit is applicable to all projects in which the contractor will conduct remediation activities that require the storage of hazardous waste for more than 90 days. This permit will be prepared by the environmental firm working for the prime construction contractor. This permit's purpose is to apply the appropriate conditions and restrictions for the operation of hazardous waste storage, hazardous waste treatment, or hazardous waste disposal.

Underground Storage Tank (UST) Permit. This permit is applicable to all projects in which the contractor is required to remove an underground storage tank. (Note: Permits for removing an UST can only be obtained by licensed UST removal contractors). This permit is necessary to ensure that tank removal meets acceptable closure standards.

For permit application requirements see [Section 28-3](#) of the *BDE Manual*,

or contact the IEPA:

Illinois Environmental Protection Agency
Bureau of Land
Permit Section
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217) 524-3300

or contact the OSFM:

Office of the State Fire Marshall
State Fire Marshall
1035 Stevenson Drive
Springfield, Illinois 62703
(217) 785-0969

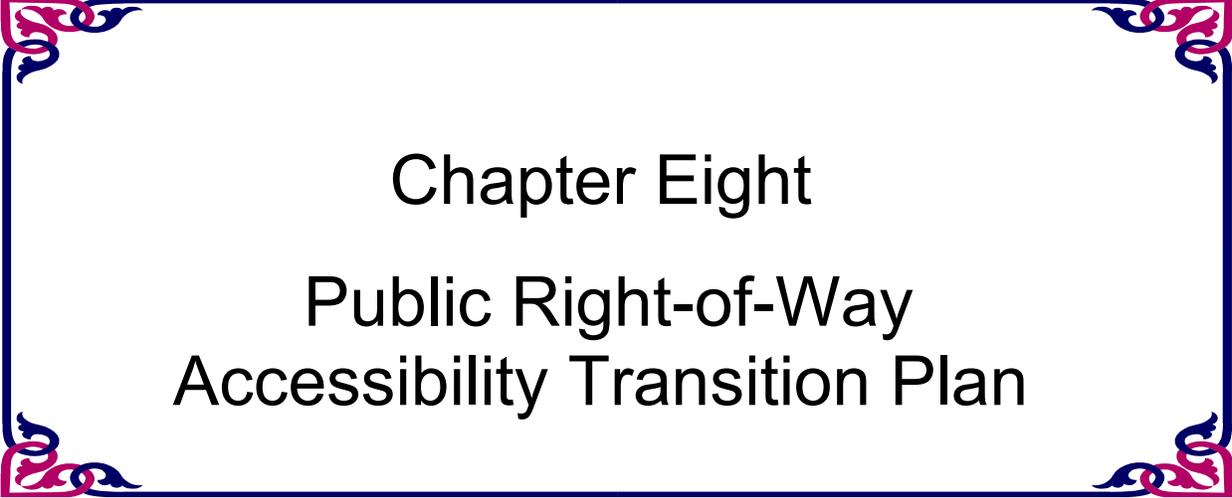
7-6 ACRONYMS

This is a summary of the acronyms used within this chapter.

BDE	Bureau of Design and Environment
BLRS	Bureau of Local Roads and Streets
CE	Categorical Exclusion
CFR	Code of Federal Regulations
EA	Environmental Assessment
EcoCAT	Ecological Compliance Assessment Tool
EIS	Environmental Impact Study
FHWA	Federal Highway Administration
IDNR	Illinois Department of Natural Resources
IDOT	Illinois Department of Transportation
IEPA	Illinois Environmental Protection Agency
<i>ILCS</i>	<i>Illinois Compiled Statutes</i>
LBU	Local Bridge Unit in the Bureau of Bridges and Structures
LPA	Local Public Agency
<i>NEPA</i>	<i>National Environmental Protection Act</i>
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollution Discharge Elimination System
NRRT	Natural Resource Review Tool
NWP	Nationwide Permit
OSFM	Office of the State Fire Marshall
OWR	IDNR Office of Water Resources
PBDHR	Preliminary Bridge Design and Hydraulic Report
RCRA	Resource Conservation and Recovery Act
RP	Regional Permit
SWP	Statewide Permit
SWPPP	Storm Water Pollution Prevention Plan
USACE	United States Army Corp of Engineers
USC	United States Code
USCG	United States Coast Guard
UST	Underground Storage Tank

7-7 REFERENCES

1. *Federal Water Pollution Control Act of 1972*
2. *Clean Water Act*
3. *National Environmental Policy Act (NEPA)*
4. *Section 9 of the Rivers and Harbors Act of 1899*
5. [Illinois Compiled Statutes](#)
6. IDNR “Sustainability Act” ([Public Act 97-1136](#))
7. *17 Illinois Administrative Code, Part 3700*
8. *17 Illinois Administrative Code, Part 3704*
9. *17 Illinois Administrative Code, Part 3704, Appendix A*
10. *17 Illinois Administrative Code 3708*
11. *35 Illinois Administrative Code Part 237*
12. *Applying the Section 404 Permit Process to Federal-aid Highway Projects, FHWA*
13. *Illinois Urban Manual, IEPA*
14. [Chapter 10](#) “Project Development”, *BLRS Manual*, IDOT
15. [Chapter 20](#) “Special Environmental Studies”, *BLRS Manual*, IDOT
16. [Chapter 28](#) “Environmental Permits/Certifications”, *BDE Manual*, IDOT
17. [IDOT Drainage Manual](#), BBS, IDOT



Chapter Eight
Public Right-of-Way
Accessibility Transition Plan

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PUBLIC RIGHT-OF-WAY ACCESSIBILITY TRANSITION PLAN

8-1 PUBLIC RIGHT-OF-WAY ACCESSIBILITY TRANSITION PLAN

The Americans with Disabilities Act (ADA) is a civil rights statute that protects qualified individuals with disabilities from discrimination on the basis of disability. Title II of the ADA prohibits discrimination in all services, programs, and activities provided to persons with disabilities by State and local governments, including public transportation. The ADA applies to all facilities built before and after 1990. Local public agencies (LPA) are required to perform self-evaluations of their current facilities, relative to the accessibility requirements of the ADA. LPAs are required to correct any deficiencies identified through the self-evaluation. Only LPAs with more than 50 employees (including both full and part-time employees) are required to have a public right-of-way (PROW) accessibility transition plan detailing how and the deficiencies will be corrected is recommended. However, a public right-of-way (PROW) accessibility transition plan is recommended for all LPAs.

8-1.01 Self-Evaluation

8-1.01(a) General

A site must contain at least one pedestrian access route within the boundary of the site from public transportation stops, accessible parking, accessible passenger loading zones, and public streets or sidewalks, to the pedestrian access route for the building they serve. However, LPAs are not required to install pedestrian facilities on the PROW as a requirement under the ADA. Once a pedestrian facility is constructed, the LPA shall provide an accessible pedestrian access route within the pedestrian facility. On sidewalks, a pedestrian access route should not alternate between one side of a highway and the other unless caused by temporary pedestrian re-routing due to construction of sidewalks and/or curbs and gutters.

8-1.01(b) Inventory

LPAs shall conduct an inventory of existing pedestrian facilities owned, maintained, or operated by the LPA. Inventory approaches are on-ground surveys, windshield surveys, aerial photo studies, or drawing reviews. Inventories are eligible for Federal, State, and MFT funding (See Section 4-3.06).

8-1.01(c) Barrier Identification

Barriers on pedestrian access routes should be identified in the self-evaluation. This also may require coordinating with local disability organizations and the public. When prioritizing the corrective actions, consider the following:

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- location of pedestrian generators, particularly those in high-priority areas that would be likely serve individuals with disabilities (e.g., medical facilities, high-rise buildings, housing for the elderly, nursing homes, libraries, and commercial or government buildings),
- location of existing pedestrian access routes,
- location of existing utilities, signs, poles, or other features (e.g., steps) that would need to be removed to provide full accessibility,
- existing ground contours that would affect the longitudinal and transverse slope of sidewalks and ramps,
- location of marked crosswalks, and
- presence of drainage features (e.g., inlets, manholes).

Figure 8-1A provides some possible barriers for facilities on the public rights-of-way.

Issue	Possible Barriers
Sidewalk and Pathway Clear Width	Narrow, Obstructions (see below), Protruding Objects
Sidewalk and Pathway Cross Slope	Steepness, Irregularity, Variability, Warping, Settlement
Landings Along Sidewalks and Pathways	Less Than 4 feet by 4 feet
Sidewalk and Pathway Grade	Steepness, Angle Points
Materials and Finishes	Deterioration of Surfaces, Deterioration of Markings, Appropriateness of Material (ex. Cobblestones)
Gratings	Grating Type, Grate Opening Orientation
Discontinuities	Missing Sections, Gaps, Drops, Steps
Detectable Warning System	Missing, Inappropriate Materials, Inadequate Size, Wrong Location
Obstructions	Signs, Mail Boxes, Fire Hydrants, Benches, Telephones, Traffic Signal Poles, Traffic Signal Controller Boxes, Newspaper Boxes, Drainage Structures, Trees, Grates, Pole Mounted Objects, Standing Water, Snow or Ice
Traffic Signal Systems	Lack of Provision for the Visually Impaired such as APS, Inadequate Time Allowed, Inoperable Buttons, Inaccessible Buttons
Curb Ramp	Missing, Doesn't Fall within Marked Crosswalk, Doesn't Conform to Guidelines
Curb Ramp Flares	Missing Where Required, Too Steep

PUBLIC RIGHTS-OF-WAY FACILITIES POTENTIAL ACCESSIBILITY BARRIERS

Figure 8-1A

8-1.02 Public Right-of-way Accessibility Transition Plan Components

8-1.02(a) Designate ADA Coordinator

LPAs must designate at least one responsible employee to coordinate ADA compliance for public rights-of-way (PROW). This may be the ADA Coordinator required by 55 ILCS 5/5-1131, 60 ILCS 1/85-60, or 65 ILCS 5/1-1-12, or may be an employee within the highway department. This position must be familiar with the LPAs operation, be properly trained in ADA PROW requirements, and be able to effectively communicate with governmental agencies, advocacy groups, and the public.

8-1.02(b) Public Notice

LPAs must provide the public an opportunity to provide input on the PROW accessibility transition plan prior to adoption. The target audience should include public transit users and disability advocacy groups as well as the general public. LPAs should determine the most effective way to provide notice. If notice is provided via a website, the website must in itself be accessible.

8-1.02(c) Grievance Procedure

LPAs must adopt and publish procedures for resolving grievances arising under Title II of the ADA. The procedures are intended to set out a system for resolving complaints of disability discrimination in a prompt and fair manner. The grievance procedure provides an opportunity to resolve a local issue at the local level. However, the use of LPAs grievance procedure is not a prerequisite to filing a complaint with either a federal agency or a court.

8-1.02(d) Design Standards, Specifications, and Details

LPAs must adopt technical guidelines that comply with ADA Standards. LPAs may adopt nationally accepted technical guidelines (i.e. PROWAG) or develop their own. LPAs may use Section 41-6 of the BLRS Manual to meet this requirement.

8-1.02(e) Self-Evaluation

LPAs shall include the self-evaluation as part of the PROW accessibility transition plan.

8-1.02(f) Schedule and Budget for Improvements

LPAs must include a schedule of improvements to upgrade accessibility annually in accordance with the PROW accessibility transition plan. Upgrades may be performed as individual projects or as part of regularly scheduled maintenance or construction projects. Any alteration of existing facilities or construction of new facilities must comply with ADA. Federal, State, and Motor Fuels Tax funds may be used to comply with ADA.

Generally, priority should be given to transportation facilities, public places, and places of employment. Other factors to consider when prioritizing improvements may include:

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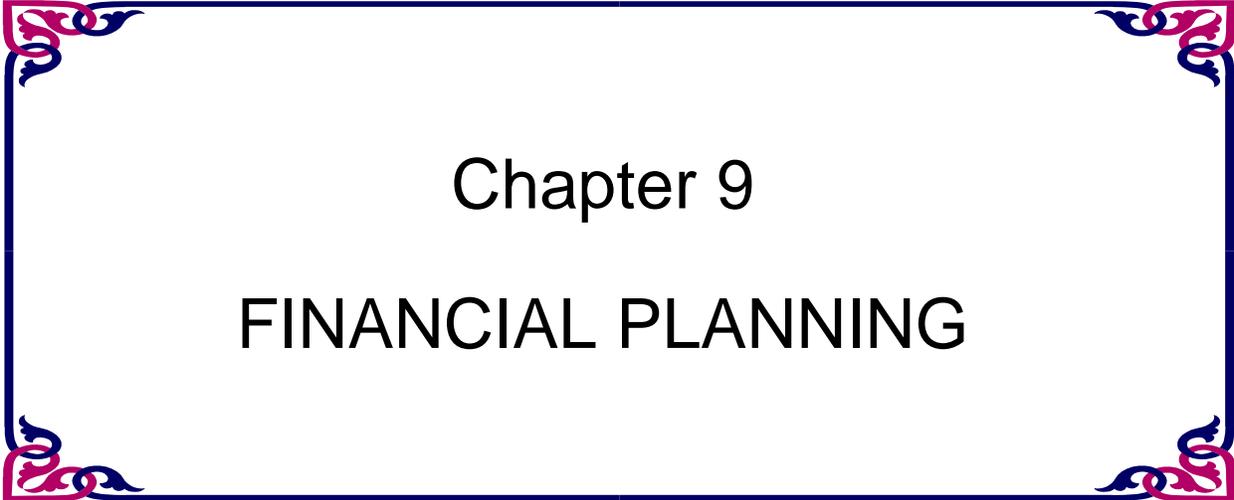
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- Severity of non-compliance,
- Citizen requests or complaints regarding inaccessible locations,
- Pedestrian level of service,
- Population density,
- Presence of a disabled population, and/or
- Cost

8-1.02(g) Monitor Progress

In order to be effective, the PROW accessibility transition plan needs to be utilized in planning and funding decisions. LPAs must update the PROW accessibility transition plan regularly to reflect changes in real world conditions and to address any possible new areas of noncompliance. Regular updates to the plan will also result in monitoring compliance and the effectiveness of priorities set in the plan itself.



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Chapter 9

FINANCIAL PLANNING – MFT and State Funds

[Chapter 4](#) discusses the sources of funding available to the local public agencies (LPAs) within Illinois for transportation projects. Chapter 9 discusses the necessary local financial planning for the various non-Federal sources of funding (i.e., Motor Fuel Tax (MFT), Township Bridge Program (TBP), and other State funded programs).

9-1 MFT FINANCING

9-1.01 Unobligated Balance

The Illinois Department of Transportation (IDOT) maintains an account balance, known as the unobligated balance, for the MFT account of each county, road district, and municipality. These are MFT funds that have been allotted to the LPA, but for which IDOT has not authorized expenditure. The unobligated balance is increased when:

- the monthly allotments are distributed;
- projects are completed, and unexpended funds are credited from an obligated account;
- interest earned on MFT funds is credited to the unobligated account; or
- the LPA deposits other funds into the MFT account (e.g., State funds for special local programs, jurisdictional transfers, etc.).

MFT funds are obligated and subtracted from the unobligated balance by authorization of the IDOT Regional Engineer when a project has reached a stage in which a LPA has a financial obligation (e.g., an approved engineering agreement or construction contract). The LPA may review their monthly statement that lists all transactions that affect this unobligated balance on [IDOT's website for MFT Monthly Distribution](#).

9-1.02 Monthly Allotment

Checks for the LPA MFT allotments are sent each month to the municipal treasurer for the municipal allotments and to the county treasurer for the county and road district allotments. Rather than receiving a monthly check, the LPA may request that the State Treasurer invest the money directly as part of the Treasurer's Investment Pool. LPAs can also have their warrants directly deposited into a local bank. Arrangements for this can be made by contacting the Office of the Comptroller, Electronic Commerce Division.

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The LPA may review their monthly letter informing the LPA of the amount of its monthly MFT allotment on [IDOT's website for MFT Monthly Distribution](#). This letter also contains a list of all transactions affecting its MFT account during the preceding month. Transactions affecting the LPA's MFT account will be one of three types: Authorization to Expend Funds (Section 9-1.07(a)), Credit to Unobligated Balance (Section 9-1.08(g)), or Payments to State (Section 9-1.08(h)).

9-1.03 Appropriation of MFT Funds

9-1.03(a) General

Counties and municipalities initiate an MFT project by passing an ordinance or resolution (Forms [BLR 09110](#) or [BLR 14220](#) for counties and municipalities) establishing the scope of a project and appropriating MFT funds for the project. A road district accomplishes the same objective by submitting Form [BLR 09120](#) "Statement of Proposed Road Improvement", Form [BLR 14221](#) "Estimate of Maintenance Cost/Maintenance Expenditure Statement", or Form [BLR 09150](#) "Request for Expenditure".

When a LPA submits a resolution for approval for an improvement or maintenance program, IDOT will evaluate the LPA's current unobligated balance plus anticipated allotments during the life of the project or maintenance period to determine whether adequate funding is available before approving the resolution.

A separate MFT appropriation resolution will not be required, provided that the LPA budget ordinance contains the necessary project information required by the resolution and identifies that MFT funds will be used as discussed in Section 9-1.03(c).

When a LPA appropriates MFT funds for a project, the appropriation should cover, as practical, all anticipated costs. This may exceed their current unobligated balance, because authorizations are not made at the appropriation stage. Prior to advertisement for letting, the LPA must ensure sufficient funds are available, including its current unobligated balance plus anticipated MFT allotments through the estimated completion date, to cover the total cost of the contract. If estimated MFT revenues are not adequate to cover this cost, other sources of financing will be required. This is accomplished using other local funds to pay a portion of the direct costs in conjunction with MFT funds, or a loan may be made to the MFT fund, the principal to be repaid to the source of the loan.

9-1.03(b) Resolutions Procedures

The procedures to be followed when projects are constructed under IDOT approval and inspection can be found in [605 ILCS 5/5-403](#), [5/6-701.1](#), and [5/7-203](#). The first action in the initiation of a project by a county or municipality is normally the adoption of an ordinance or resolution declaring the intent and appropriating funds. Form [BLR 09110](#) “Resolution for Improvement Resolution” is the resolution form provided by IDOT. If a bond issue or special assessment will finance a project, a Resolution of Intent as indicated in Form [BLR 09112](#) “Local Agency Resolution of Intent MFT / General Obligation Bond” or the Form [BLR 09113](#) “Municipal Resolution of Intent for Special Assessment”, as appropriate, must be the first action. IDOT also provides Form [BLR 09120](#) “Statement of Proposed Road Improvement”, which addresses the improvement of the road district road involving the expenditure of funds requiring IDOT approval.

9-1.03(c) Resolution Contents (Counties and Municipalities)

The following applies:

1. Section Designation. See [Section 2-4](#) for Section Designation criteria.
2. Location. Provide a description of the project’s beginning and ending points in the resolution or Road Improvement Statement. With each copy, submit a map showing the proposed improvement location.
3. Proposed Project Description. Include a description of the project in general terms. Avoid specifying a span length, type of bridge, and a thickness or type of bituminous surface because they are subject to change during the design stage. This eliminates the need for an amending resolution when the plans provide for a different type of improvement than documented in the original resolution. Municipalities are required to include the length and width of the proposed improvement in the resolution.
4. Type of Construction. Indicate whether the project will be constructed by contract or by day labor.
5. Financial Commitment. State the amount of MFT funds appropriated by the governing body and MFT funds committed to the project. If the project is partially funded with other funds, include a statement committing the other funds with or in the resolution.
6. Certification. County and municipal resolutions must be attested to and sealed by the county or municipal clerk.

9-1.03(d) Statement of Proposed Road Improvement (Road Districts)

Form [BLR 09120](#) “Statement of Proposed Road Improvement” for a road district project must state the amount of MFT funds committed by the highway commissioner for the project. If the road district project is partially funded with other funds, the Statement of Proposed Road Improvement must also state the source and amount of other funds committed to the project. The highway commissioner and the county engineer must sign Form [BLR 09120](#).

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When the records are available in the road district establishing one LPA as having jurisdiction and responsibility for the maintenance of boundary line roads, the signatures of the adjoining road district highway commissioners and adjoining county engineers, in the case of county line road district roads, will not be required.

9-1.04 Anticipating Unallotted MFT Funds

9-1.04(a) General

Unless IDOT is advised to the contrary, it will finance all LPA MFT projects on a cash basis. If sufficient MFT funds are not available, IDOT will require assurance from the LPA that funds will be available from other sources to pay all bills within 90 days of the estimated completion of the project.

9-1.04(b) Counties and Municipalities

A county or a municipality may borrow funds from other sources to complete an MFT improvement. The loan may be repaid from future MFT allotments provided that no charges are made for interest by a county (payment of interest charges is permissible for municipalities). The anticipation of MFT allotments should not cover an excessive period. It is generally not advisable to commit future allotments for more than two years beyond the estimated completion date. In special circumstances, the district, in consultation with the Central Bureau of Local Roads and Streets (CBLRS), may authorize repayment periods exceeding two years. If a county or a municipality proposes to borrow local funds and later requests reimbursement with MFT funds, it must state its intent by formal resolution of the governing board or council; see Section 9-1.03. IDOT must approve the proposed payback time and repayment schedule.

MFT funds may be used to reimburse the loan, including interest (municipalities only), provided that MFT funds are not anticipated for an excessive period. An “excessive period of time” is defined as a period that exceeds the incumbent administration’s term of office. The LPA should have some reserve funds to accommodate routine maintenance and unforeseen emergencies to its transportation system.

9-1.04(c) Road Districts

The county must pay the costs incurred in the construction of road district MFT projects from the MFT account. A road district is not allowed to pay these costs directly from its road and bridge fund or other local funds and later be reimbursed with MFT funds.

A road district may, however, deposit local funds into the county treasury to pay project costs with the intention of later requesting reimbursement with MFT funds. Reimbursement requires prior IDOT approval of the arrangement. MFT policy and procedures must be used in the design and construction of the project.

9-1.05 MFT Reimbursement for Bond Issues

The information concerning a LPA's use of bonds (e.g., General Obligation Bonds (GOB), MFT Fund Bonds) to finance highway improvements has been relocated to [Section 15-3](#).

9-1.06 Special Assessment Procedures

The information of when a municipality proposes to finance a project by special assessment and later requests MFT funds to retire the indebtedness has been relocated to [Section 15-4](#).

9-1.07 Expenditures

IDOT approval of an appropriating resolution or Statement of Proposed Road Improvement does not authorize the LPA to begin disbursing MFT funds for the project. The LPA will be authorized to disburse MFT funds at various stages throughout a project.

9-1.07(a) Authorization to Expend Funds

At the request of the LPA (e.g., when a project has reached a stage where the LPA must disburse MFT funds and the required documents have been submitted and approved/concurred by IDOT), IDOT will authorize an expenditure of MFT funds. The actual authorization is an IDOT accounting procedure where the funds authorized are deducted from the LPA's unobligated balance and committed to the specific project as obligated funds. Each authorization transaction is printed on the LPA's monthly allotment notification letter; see Section 9-1.02.

A list of accounts to which MFT funds are authorized by the District BLRS are provided in Figure 9-1A.

Several of a project's required authorization steps are accomplished automatically in the District BLRS while others must be initiated by the LPA.

9-1.07(b) Automatic Authorization

IDOT will automatically authorize the following items upon approval of the appropriate paperwork up to the amount appropriated by resolution:

1. Funds for Contracts. When IDOT approves the executed contract for construction, the awarded value of the contract is authorized. When IDOT approves a Request for Approval of Change in Plans (Form [BLR 13210](#)) the amount of the adjusted/final contract is authorized, provided sufficient appropriation by the LPA has been passed.
2. State Contracts with LPA Participation (MFT). When IDOT executes a State contract, the LPA participation utilizing MFT funds, the funds will be authorized for the amount shown in the State-Local Agreement for MFT eligible scope of work and /or items.

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3. Day Labor Costs. Maintenance operations are authorized when IDOT approves the LPA's resolution, see [Section 14-2](#). For maintenance operations required to seek competitive sealed bids (see [Section 12-1](#)), contract maintenance, or construction additional documents may be required including plans, specifications, estimates, and/or material proposals prior to actual expenditure of funds.
4. Maintenance Engineering. When IDOT approves the LPA's resolution maintenance engineering is authorized, see [Section 14-1](#) for additional information.
5. Obligation Retirement. Retirement of obligations will be authorized for expenditure upon approval of the appropriate obligation retirement resolution. See Sections 9-1.05 for GOB/MFT Bonds and Section 9-1.06 for Special Assessments.
6. Railroad and Utility Work. When a railroad and/or utility company, in accordance with an agreement, performs work, the expenditure of MFT funds will be authorized upon receipt and approval by the LPA of the company's bill and detailed statement of expenses. Amounts authorized will be sufficient to permit payments to be made according to the terms of the agreement. The LPA shall submit a copy of their approval to IDOT upon the LPA's approval.

Counties	Municipalities	Road Districts
Contract Construction	Contract Construction	Contract Construction
Day Labor Construction	Day Labor Construction	Day Labor Construction
Engineering	Engineering	Engineering
Right-of-Way ¹	Right-of-Way ¹	Right-of-Way ¹
Obligation Retirement	Municipal Indebtedness	Obligation Retirement
Maintenance	Maintenance	Maintenance
Maintenance Engineering	Maintenance Engineering	Maintenance Engineering
County's Contribution to Illinois Municipal Retirement Fund or to Social Security	Municipality's Contribution to Illinois Municipal Retirement Fund or to Social Security	Road District's Contribution to Illinois Municipal Retirement Fund or to Social Security
Salary and Expenses of County Engineer	Engineering Investigations	
Engineering Investigations	Interest	
Maintenance Garage	Obligation Retirement	

Notes

1. Itemize and detail requests for Expenditure of MFT Funds (Form [BLR 09150](#)) for right-of-way expenditure(s) on the reverse side of Form [BLR 09150](#).

AUTHORIZED MFT ACCOUNTS

Figure 9-1A

9-1.07(c) Requests for Authorization

When it is necessary to disburse MFT funds for any other purpose, the LPA must submit Form [BLR 09150](#) "Request for Expenditure" to IDOT. Indicate the amount and purpose of the request. It should be accompanied by appropriate documentation (e.g., engineering bills, invoices for joint participation). Upon receipt of a properly documented request for expenditure, IDOT will authorize the necessary funds, up to the maximum amount that has been appropriated.

The expenditure of MFT funds for letting advertising costs will be authorized as an engineering charge.

A regularly appointed or elected municipal official must sign requests for expenditure of MFT funds for municipal MFT work. This official may be the clerk, board president, mayor, or a regularly appointed engineer whose office is established by ordinance and who is appointed to the office in an official manner. Requests for expenditure of MFT funds signed by anyone else cannot be accepted.

9-1.07(d) Salary and Expenses

[Section 4-3](#) describes the use of MFT funds for salaries and other fringe benefits. The following procedures apply when MFT funds are used for these expenditures:

1. Wages or Salaries. For employees of a LPA who may be paid from the MFT fund, the method of payment may be one of the following:
 - Where the compensation is on an hourly, daily, or monthly basis, the LPA may pay the employee directly from the MFT fund for the particular section or maintenance operation on which the work is done.
 - Where the compensation is on an hourly, daily, or monthly basis, the LPA may pay the employee from the fund for which the employee is regularly paid. This fund may then be reimbursed from the MFT fund for the section or maintenance operation on which the work was performed for the amount paid to the employee for the time spent on the MFT section or maintenance operation.

Under the first method of payment, the LPA will make payments in the same manner as other payments on the section or maintenance operation are made.

Under the second method, the LPA must maintain complete records of the dates and time for the employees who are engaged on MFT work and the section or maintenance operation. Reimbursements from MFT will be made promptly and periodically, preferably each month.

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Payments from MFT funds to other funds for reimbursement are made in the same manner as any other payment (e.g., a claim showing the date, section or maintenance operation, the class of labor, the rate of pay must be filed, and a warrant drawn against the MFT fund in favor of the fund which is being reimbursed). It is not necessary that individual claims for each employee be filed, but a separate claim must be filed for each section or maintenance operation and, if it is desired, all employees working on that section or maintenance operation during the period covered by the claim may be shown on one claim and reimbursement made by one warrant.

2. Holidays, Vacation, and Sick Leave. Whenever an MFT payroll is made by the LPA, a payment may also be made to the county highway tax fund or other fund involved for a definite percentage of the payroll cost as a payment for the benefits involved. Calculate the percentage by dividing the cost of the benefits in previous years by the total payroll cost. Determine this percentage from records over a period of three or more consecutive years and compute the percentage to the nearest whole number. No payment will be made until the District BLRS has approved the established percentage.
3. Health, Hospitalization, and Life Insurance. Payment of a prorated portion of Health, Hospitalization, and Life Insurance premiums may be made with MFT funds for costs incurred on MFT maintenance and construction projects.

The prorated portion shall be determined in the same manner provided for "Holidays, Vacation, and Sick Leave".

4. Worker's Compensation Insurance Premiums. The LPA may make pro-rata payments from their MFT account directly to the insurance company for these premiums, or they may use MFT funds to reimburse another fund from which the premiums were paid.
5. Retirement and Social Security. Requests for expenditure of MFT funds for the LPA's contributions to these two accounts will be honored based on actual amounts owed or will be honored in advance, provided that the amount requested is substantiated by an accompanying estimate statement. In the estimate statement, show which sections will be built, what maintenance operation will be performed, and what salaries (e.g., the county engineer) will be paid with MFT funds. Also show in the statement, in connection with the municipal retirement fund, the percentage of contribution as determined by the retirement board for the period covered by the request for funds. If the LPA has levied a tax for payment of either or both accounts, the MFT account must be reimbursed as the taxes are collected. The amount of the reimbursement shall be shown on the statement accompanying the request for expenditure of MFT funds for the next period.

The expenditure of MFT funds will be authorized to the LPA for one account entitled "(LPA's name) Contribution to Illinois Municipal Retirement Fund or to Social Security." The expenditure of MFT funds will not be authorized to each section and to maintenance separately. Keep this account separate from other accounts. Payments from this account to the employees' retirement and/or social security fund should be made periodically. The claim against the account, payable to the retirement or social security fund, should identify the payrolls that are covered by the claim.

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It is not necessary for the LPA to report the amount of its contribution in connection with final papers for construction sections or expenditure statements for maintenance. Instead, the LPA should prepare a statement of receipts and expenditures for submission with the request for expenditure of MFT funds for the next period.

It is not necessary for LPA to appropriate funds, by resolution, covering MFT expenditures for retirement and social security contributions.

9-1.08 Reimbursement of Funds to MFT Accounts

9-1.08(a) General

When MFT funds are expended for construction or maintenance related work and then reimbursed by property owners, corporate fund, State or federal funds, or any other source, the reimbursement is credited to the MFT section account from which the payment was made. Likewise, any payment not eligible for MFT participation will be reimbursed to the MFT account.

Final acceptance of construction projects will be withheld until the final reimbursement has been made or until other arrangements have been approved. In special cases (e.g., where the reimbursement will be made over a long period of time), the CBLRS may close out the sections upon approval. In these cases, the subsequent reimbursements are credited to the MFT unobligated balance, with a description of the purpose of the reimbursements.

9-1.08(b) Off-Street Parking Revenues

Municipalities may use MFT funds for off-street parking facilities in accordance with [605 ILCS 5/7-202.17](#).

The LPA must assign a section number to track this revenue. The following procedures will apply:

1. **Separate Accounts**. When a LPA chooses to maintain accounts for each parking facility constructed, close the construction section and determine the final MFT participation. To account for revenues, establish new MFT sections as in the following example:

Account for revenue reimbursements for a parking lot built as Section 02-00076-00-PK as using Section 79-R0076-00-PK. The original MFT participation for the project will be entered into the database as “the amount appropriated.” The receipts will be credited to the unobligated account annually, and the total accumulation of these credits will be maintained in the far-right column on Form [BLR 15106s](#). Once the amount appropriated has been achieved, the section will be closed.
2. **Single Account**. When the LPA has several revenue-generating parking facilities and maintains only one parking revenue account, close the original construction section(s) and determine the total MFT participation of all projects. To account for revenues, establish a new section number as (year of 1st reimbursement)–R0000-00-PK. Enter the total participation of all sections in the database as the amount appropriated. If additional parking projects are built, add the MFT participation to the appropriation amount. Treat annual credits for parking receipts as those in separate accounts.

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3. Maintenance. Generated revenues are to be used first to maintain the parking area before MFT funds are used for maintenance.
4. Surplus Revenues. Surplus revenues not needed for maintenance may be used to acquire land and construct additional off-street parking areas.

Return surplus revenues not needed for maintenance or construction of additional parking areas to the LPA's MFT account until the amount of MFT funds originally paid out have been refunded. When the total amount reimbursed is equal to the MFT funds used for construction, all other surplus revenues become the property of the LPA.

5. Compliance Review. Ensure the LPA's parking revenue account is made available to IDOT for compliance review purposes.

9-1.08(c) Crediting Reimbursement for a Specific Section

The following will apply:

1. Active or Open Sections. The authorization or reimbursement is credited to the section account as identified in the compliance review.
2. Closed Sections (in MFT Database). If the section is closed, it will be reopened to include the disbursement or receipt, as indicated by the compliance review, including comments (e.g. source and purpose). Final paperwork shall be corrected. Once this action is completed, the section must be closed again.
3. Closed Sections Purged from MFT Database. If the section is closed and purged from the database, the disbursement or receipt of funds is entered as category "other" and in the memo area the original section designation is entered. The source and purpose shall be identified of the reimbursement.

9-1.08(d) Crediting Reimbursement Not Identified by a Section

Any other reimbursement that cannot be assigned to an existing section must be entered as category type "other" and identified with an explanation in the memo field. The source and purpose of the reimbursement plus the compliance review report number shall be identified.

9-1.08(e) Crediting Earned Interest

Any earned interest (and only earned interest) on the LPA's fund must be accounted for in the compliance review under a section titled "Interest" with a line designated for each year's interest. Each annual total of earned interest will be credited as category "interest" in the MFT database and in the memo field the compliance review report number shall be identified along with year in which the interest was earned. See [Section 15-1](#) for additional information.

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9-1.08(f) Income from Property Purchased with MFT Funds

Any revenues from the rental of property purchased with MFT funds are credited to the MFT fund account. If right-of-way is purchased with MFT funds, which then becomes unnecessary and is later sold, credit the revenue received to the MFT fund account up to the original purchase price.

9-1.08(g) Credit to Unobligated Balance

When a project has been completed and all bills have been paid, it is possible that all funds authorized for a specific purpose were not required. When IDOT approves Form [BLR 13510](#) for the project, these unexpended funds are transferred from the project's obligated account and returned (credited) to the LPA's unobligated balance. The same is true for when IDOT approves Form [BLR 14221](#) (as a Maintenance Expenditure Statement) for maintenance. This credit is accomplished automatically by IDOT and will appear on the LPA's monthly allotment notification letter.

9-1.08(h) Payments to State

IDOT has established procedure whereby regular payments on a debt owed to the State by a LPA may be deducted directly from the LPA's monthly MFT allotments upon request by the LPA. The CBLRS, in cooperation with the District BLRSs, will determine these arrangements.

9-2 STATE FUNDS FINANCING

9-2.01 Township Bridge Program (TBP) Funding

9-2.01(a) Annual Allotment

Each year IDOT apportions \$15 million to the counties to be used by the road districts for the construction of bridges. See [Section 4-2](#) for additional information. For rehabilitation of bridges contact the District BLRS for guidance on eligibility. The District BLRS will set up a Contract Obligation Document (COD) for each county's allotment.

9-2.01(b) Annual Program

Each county is required to submit an annual program detailing the projects that are proposed for funding through TBP. Submit the annual program to the District BLRS on or before September 1 each year. Projects in the annual program must be listed in order of priority. Complete Form [BLR 09210](#) and submit it to the District BLRS.

9-2.01(c) Obligation of Funds

TBP funds apportioned to the counties are not automatically paid to the county treasurer when the allotments are distributed. The funds are held in the State treasury until they are obligated for payment to the county treasurer. TBP funds are considered obligated upon award of the contract by the county, signed engineering agreement, or acquisition of right-of-way, and have been approved by the District BLRS. These funds, once in the county treasurer's account, cannot be expended until the necessary payment estimates have been processed. Payout will be accomplished by the submittal of an invoice (Form C-13) by the District BLRS to the District Administration – Financial Services with a copy to CBLRS. Any funds apportioned to a county that are not obligated within 48 months of the date when the apportionment is made will revert to the Road Fund ([605 ILCS 5/6-906](#)) and will be distributed through the TBP Lapse Pool Program.

9-2.01(d) TBP Account Balance

Each county must maintain an account that will identify TBP funds separately from all other funds. Because the funds are paid to the county prior to the actual need, the county must maintain these funds in an account. If the TBP funds are invested prior to being disbursed, any interest earned will be used as TBP funds and applied to already approved TBP projects. Interest earned on any TBP money belongs to the TBP fund and cannot be considered as part of the local match. Funds released from a project by change order may be applied to overruns in current projects or future TBP projects.

When TBP funds are expended for construction-related work and then reimbursed by property owners, corporate fund, State or Federal funds, or any other source, the reimbursement is credited to the TBP account for the section from which the payment was made. Likewise, any expenditure not eligible for TBP participation will be reimbursed to the TBP account.

9-2.01(e) Anticipation of Allotments

With the approval of the District BLRS, a road district may finance a project from other sources and pledge their future TBP allotments toward repayment of the indebtedness. Any project financed in such a manner must be constructed using the same procedures as if TBP funds were paid directly for construction. The following applies:

1. Bonded Indebtedness. A road district may issue bonds to construct a bridge selected in accordance with [605 ILCS 5/6-510](#). For bond issuing financing, see Section 9-1.05. Future allotments of the road district's TBP funds may be pledged toward repayment of the bond issue ([605 ILCS 5/6-903](#)).
2. Resolution of Indebtedness. In cooperation with the county, a road district may use any other source of county or road district funds available to finance a project. The county board may pass a resolution (Form [BLR 09215](#)) declaring indebtedness to the county, which will be repaid with future allotments of the road district's TBP funds.

9-2.01(f) Suspension of Allocation

If any county, after having been provided reasonable notice by IDOT, fails to expend funds in a satisfactory manner, IDOT will not authorize further payments to the county until it corrects its unsatisfactory use of funds.

9-2.01(g) Contract Additions and Deletions

Payout for the net amount of the contract additions on each of the county's projects will be scheduled upon approval by IDOT and debited to the county's allotment. If the combination of additions and deletions for the entire project extends the obligation beyond the currently available funds, the overrun amount may be paid from the following year's allocation ([605 ILCS 5/6-903](#)). Funds released from a project by change order may be applied to current projects or used for future projects. These released funds must be covered by approved contracts before the next date when funds are subject to lapse.

9-2.01(h) Use of TBP Funds

[Section 4-2](#) provides details on the eligible uses of TBP funds.

9-2.02 TBP Lapse Pool

Funds allocated to the counties under TBP will lapse or revert to the Road Fund if they are not obligated within four years of the allotment. IDOT has established an administrative program for these types of funds where road districts having special needs may use them. This program is referred to as the TBP Lapse Pool.

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Lapse Pool funding will contribute a maximum of 80% of the construction and construction engineering costs. At the time a project is selected, the maximum allocation of funds is established. Any cost increases more than the maximum amount established are the responsibility of the LPA. Cost decreases resulting in balances in Lapse Pool funds must be returned to IDOT for deposit in the Lapse Pool Fund.

Available funds in the Lapse Pool are limited and therefore are not redistributed through the allotment process. To redistribute and use the funds completely, IDOT has established the following criteria for the selection of Lapse Pool projects:

- When sufficient funds become available to warrant a solicitation of TBP Lapse Pool projects, the department will contact the county engineers for candidate projects.
- The county engineer is required to provide written justification for the project to the District BLRS.
- All bridges constructed with Lapse Pool funds are selected by the CBLRS from a list of projects submitted by the District BLRSs.
- The regular MFT engineering criteria, procedures and policies must be followed.
- A State/LPA Joint Agreement is required for each project; see [Section 5-3](#). The agreement will designate the method of payment to the county.

9-2.03 Grade Crossing Protection Fund (GCPF)

The types of projects eligible for funding under the GCPF are discussed in [Section 4-2](#). The Illinois Commerce Commission (ICC) is responsible for managing the GCPF. The following procedures are applicable to the GCPF:

1. Application. Application for use of the GCPF should be in the form of a formal petition on behalf of the local highway authority (or any other interested party) to ICC. Application forms are available from ICC. The petition should state the location of the crossing(s) involved, the improvements desired (including the reasons why the improvements are necessary), and that amount of financial assistance requested from the GCPF.
2. Hearing. ICC requires a formal hearing for most, if not all, of the cases involving the GCPF. See [Section 10-5](#) for further discussion.
3. Selection. ICC selects the projects and adds them to their multiyear program. Funding is committed when ICC issues an order for the completion of the work.
4. Implementation. Once ICC approves funding, the development of the project follows the procedures established for regular MFT crossing improvements, except that an ICC order (with a division of cost) is used instead of a formal agreement. Submit all bills to the District BLRS, which will forward them to CBLRS for processing and payment.

9-2.04 Economic Development Program (EDP)

The LPA will apply to the Office of Planning and Programming (OPP) for these funds. Submit the following information with the EDP application:

- name of company, type of product, and total company site investment;
- location (e.g., include a map showing the location of the site) and general description of improvement;
- estimate of the number of primary jobs created or retained;
- anticipated time for the development to occur;
- projected visitors at tourist attraction, if a tourism project;
- letter of commitment from the company to expand or locate;
- engineer's cost estimate of the improvement; and
- extent of the local participation and source of local matching funds.

If IDOT commits to funding, a joint agreement is necessary. The project is developed using MFT policies and procedures. If federal funds are used, the project is developed using federal policy and procedures. EDP funds may be used as part of the LPA's match to the federal funds. Additional information can be found on [IDOT's website](#).

9-2.05 Truck Access Route Program (TARP)

The CBLRS will make an annual solicitation of candidate projects for the upcoming fiscal year. Applicants should include any information pertaining to prior commitments by IDOT, a description of industries or truck generators served, projected growth, and number of trucks using the route. Provide information pertaining to phase construction that completes a truck route or is part of a multistage construction. Geographical diversity is also considered. Once the District BLRS submits potential projects to the CBLRS, the CBLRS will determine a district priority along with justification.

Approved projects will require a joint agreement and a resolution establishing an 80,000 lb (36,000 kg) truck route, see [Section 5-3](#). If the TARP funding is included within a federally funded project, the same joint agreement is used for both funds. TARP projects which include federal funds are developed using federal policy and procedures. TARP funds may be used as part of the LPA's match to the federal funds. Other projects will use MFT policies and procedures. Additional information can be found on [IDOT's website](#).

9-2.06 State Matching Assistance (SMA) Program

Counties wanting to use SMA should include the request in the joint agreement for federally funded projects. IDOT deducts the amount from the county balance as it makes payment on the contract.

A county may use its accumulated SMA funds to defray any part or the entire non-federal portion on any local Federal-aid project regardless of the federal matching percentage. The SMA may be committed as a lump-sum amount or as a percentage of the project cost not to exceed the current available SMA balance for the county.

9-2.07 County Consolidated, Needy Townships, and High Growth Cities

Each year a check is sent to each eligible LPA for deposit in their MFT account. The LPA's unobligated MFT balance is increased to include this amount. These funds are considered MFT funds.

9-2.08 County Engineer's Salary Program

A county may decide to participate in this program at any time. The details of the program are sent out annually in a letter to the Illinois Association of County Engineers (IACE). The county and the State will enter into a six-year agreement for the county engineer's salary program. This agreement will have a termination date of six years or less. The county must pass an annual resolution appropriating county funds for the salary and approving the transfer of the county's Surface Transportation Program (STP) funds to the State. When the resolution is approved and sent to the District BLRS, IDOT will send a check for the State funds to be exchanged for the STP funds and deduct that amount from the county's STP balance. The check must be deposited into the county's MFT account, unless the agreement with IDOT states otherwise.

9-2.09 Present Worth Jurisdictional Transfers

When IDOT transfers a highway to a LPA and includes a present worth for the highway, a funding agreement will be required in addition to Form [BLR 05210](#); see [Section 5-3](#). This funding agreement should designate an effective date for the transfer which matches the date on the Form [BLR 05210](#). If the effective date is a specified number of days after execution of the agreement, the funds will be automatically distributed to the LPA. If the effective date of the transfer is not linked to the date of the agreement execution, the LPA will be responsible to bill IDOT to receive payment. The procedure for the present worth payment should be clearly stated in the agreement. All funds transferred to a LPA as part of a present worth jurisdictional transfer shall be deposited into the LPA's MFT account.

9-2.10 Park Access Program

The LPA will submit applications for the Park Access Program to the Illinois Department of Natural Resources (IDNR). When a project is included in the program, a joint agreement is required. The project is developed using MFT policies and procedures. If federal funds are used, the project is developed using federal policy and procedures. Park Access Program funds may be used as part of the LPA's match to the federal funds.

9-2.11 Noise Abatement Program

The LPA will need to apply to OPP. A joint agreement is required. The project is developed using MFT policies and procedures. If federal funds are used, the project is developed using federal policy and procedures. Noise Abatement Program funds may be used as part of the LPA's match to the federal funds.

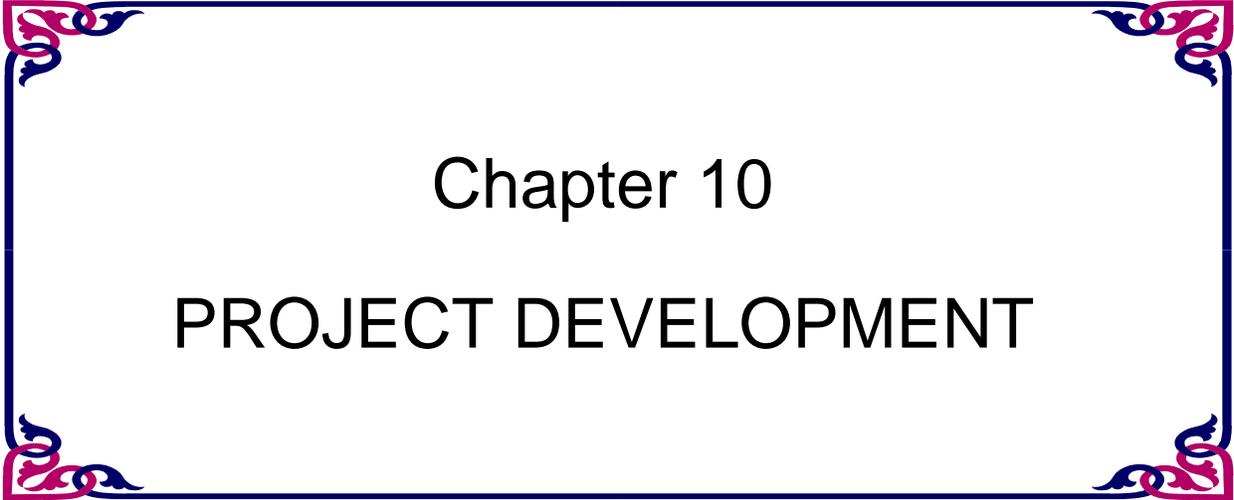
9-3 ACRONYMS

This is a summary of the acronyms used within this chapter.

BLRS	Bureau of Local Roads and Streets
CBLRS	Central Bureau of Local Roads and Streets
COD	Contract Obligation Document
EDP	Economic Development Program
GCPF	Grade Crossing Protection Fund
GOB	General Obligation Bond
IACE	Illinois Association of County Engineers
ICC	Illinois Commerce Commission
IDNR	Illinois Department of Natural Resources
IDOT	Illinois Department of Transportation
ILCS	Illinois Compiled Statutes
LPA	Local Public Agency
MFT	Motor Fuel Tax
OPP	Office of Programming and Planning
SMA	State Match Assistance
STP	Surface Transportation Program
TARP	Truck Access Route Program
TBP	Township Bridge Program

9-4 REFERENCES

1. [Illinois Compiled Statutes](#)
2. [Motor Fuel Tax Funds – Source, Distribution, and Use – Counties, Municipalities, and Road Districts](#), IDOT, July 2012.
3. [Highway Jurisdiction Guidelines for Highway and Street Systems](#), IDOT, March 2006.
4. [Illinois Grade Crossing Protection Fund: Resource Guide](#), IDOT, September 2015.



Chapter 10

PROJECT DEVELOPMENT

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Chapter 10

PROJECT DEVELOPMENT – MFT and State Funds

10-1 ENVIRONMENTAL ISSUES

10-1.01 General

During project development, it is important for the designer to identify, understand, and avoid where possible or practical any of the environmental impacts caused by the project. Environmental surveys and coordination can be a significant portion of project development and project schedules can be affected significantly. This section has a general application to all local public agency (LPA) projects that are not federally funded when addressing environmental impacts. This includes, but is not limited to, environmental documentation, coordination, and general environmental guidance procedures for the types of projects listed below.

For additional information on special environmental surveys and procedures, see [Chapter 20](#).

10-1.01(a) Federal Action

A LPA project, funded with MFT, TBP, State, or local funds may include a federal action. A federal action may occur when an improvement requires approval or permit through a federal agency. The following items are defined as a federal action, when the proposed improvement:

- has been determined to have an adverse effect on historic properties pursuant to Section 106 of the *National Historic Preservation Act*,
- requires the use of properties protected by Section 4(f) of the *Department of Transportation Act* (49 U.S.C. 303) that cannot be documented with an FHWA de minimis determination, or a programmatic Section 4(f) evaluation other than the programmatic evaluation for the use of historic bridges,
- requires the acquisition of lands under the protection of Section 6(f) of the *Land and Water Conservation Act* of 1965, the *Federal Aid in Fish Restoration Act*, the *Federal Aid in Wildlife Restoration Act*, or other unique areas or special lands that were acquired in fee or easement with public-use money and have deed restrictions or covenants on the property,
- requires an individual U.S. Army Corps of Engineers Section 404 permit (the improvement does not meet the conditions for a Nationwide Permit or a General Permit),
- requires an individual Illinois Environmental Protection Agency Section 401 Water Quality Certification (the improvement does not meet the conditions established by ILEPA),

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- requires work encroaching on a regulatory floodway or work adversely affecting the base floodplain (100-year flood) elevations of a water course or lake, pursuant to Executive Order 11988 and 23 CFR §650 subpart A, or
- may affect, and is likely to adversely affect federally listed species, or designated critical habitat, or projects with impacts subject to the conditions of the *Bald and Golden Eagle Protection Act*.

10-1.01(b) Non-Federal Certification / Project Status

Form [BLR 10100](#) is required to be submitted to the District BLRS prior to the advertisement in IDOT's Notice to Contractors Bulletin. The District BLRS will acknowledge receipt of Form [BLR 10100](#). A copy will be placed in the project file except for locally funded projects with no federal action. For these projects, Form [BLR 10100](#) may be used to document environmental review. However, this form will not be required to be submitted to the District BLRS prior to advertisement.

10-1.01(c) Locally Funded Projects with No Federal Action

Locally funded projects not requiring IDOT's review or approval or not requiring federal action are highly encouraged to follow IDOT's policies and procedures as set forth in this chapter. The LPA with jurisdiction within the project limits is still required to fulfill their obligations under state law, and to obtain signoffs from any pertinent local or state agency given oversight of an environmental resource in the project vicinity. A LPA or their consultant may request IDOT's assistance in the project development to conduct environmental surveys and identify impacts to these environmental resources.

If a LPA decides not to seek IDOT's assistance with an environmental survey, the LPA or consultant should clearly label all correspondence to other agencies to clarify that the project is locally funded and will not be processed by IDOT. A copy of the cover letter should be sent to the District BLRS.

10-1.01(d) Locally Funded Projects Requiring IDOT Review / Approval or Require Federal Action

Locally funded projects with items requiring IDOT's review / approval or require federal action must follow IDOT policies and procedures for those items as set forth in this chapter and [Chapter 20](#). All other aspects of the project will follow Section 10-1.01(c).

10-1.01(e) MFT, TBP, and State Funded Projects

LPA projects funded with Motor Fuel Tax (MFT), Township Bridge Program (TBP), or State funds are required to follow IDOT policies and procedures as set forth in this chapter.

10-1.01(f) Federally Funded Projects or Requiring Federal Action

LPA projects funded with federal funds or requiring a federal action are required to follow IDOT policies and procedures as set forth in this chapter and [Chapter 20](#).

10-1.02 Environmental Survey Requests (ESR)

10-1.02(a) General

Environmental Survey Requests (ESR) for cultural, biological, wetland and special waste resources are required for all MFT, TBP, and State funded projects.

See [Section 20-2](#) for Environmental Survey Requests.

10-1.02(b) Ecological Compliance Assessment Tool (EcoCAT)

For locally funded projects without the Illinois Department of Transportation's (IDOT) review and approval, the LPA shall use EcoCAT and pay any fee established by the Illinois Department of Natural Resources (IDNR) to comply with the *Illinois Endangered Species Protection Act* ([520 ILCS 10/11\(b\)](#)), the *Illinois Natural Areas Preservation Act* ([525 ILCS 30/17](#)), and the *Interagency Wetland Policy Act of 1989* ([20 ILCS 830/1 et seq.](#)).

Copies of the consultation termination letter or consultation closed report from EcoCAT shall be submitted to the District BLRS.

10-1.03 Section 6(f) Land Conversion Request

See Section [20-4](#) for Section 6(f) Lands.

10-1.04 OSLAD Land Conversion Request

10-1.04(a) Legal Authority

The Open Space Lands Acquisition and Development (OSLAD) grant program is a State funded grant program authorized by the *Open Space Lands Acquisition and Development Act*, ([525 ILCS 35/1 et seq.](#)). The compliance procedures for the OSLAD grant program are in the *Open Space Lands Acquisition and Development Grant Program*, 17 Illinois Administrative Code (IL Admin Code) 3025.

10-1.04(b) Applicability

Compliance procedures for proposed conversion of OSLAD assisted lands are applicable to all projects proposing conversion regardless of project type or funding source.

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10-1.04(c) Procedures

17 IL Admin Code 3025 incorporates by reference essentially the same compliance procedures as required for the Land and Water Conservation Fund (LAWCON) grant program. However, because the OSLAD grant program is State funded, concurrence of the National Park Service (NPS) is not required for proposed conversion of OSLAD assisted lands. Special procedures are required when lands that have OSLAD grant program funds involved in their purchase or development and will be converted to uses other than public outdoor recreational use. The following procedures apply:

1. Coordination. Early and ongoing coordination with the official having jurisdiction over the OSLAD assisted land and the IDNR should be diligently pursued.
2. Report Requirements. When a project proposes the use of land in which OSLAD funds have been involved in its purchase or development, the Director of IDNR must approve conversion of the land to other than public outdoor recreational use; however, a special report is not required.
3. Conversion Request. Requests to convert OSLAD assisted properties in whole or in part to other than public outdoor recreational uses must be submitted to IDNR in writing. IDNR will approve conversions only upon the substitution of replacement property having equal fair market value and comparable outdoor recreational usefulness, quality, and location. LPAs should submit a request for OSLAD land conversion approval to the IDNR Division of Grant Administration, as applicable. Formal review periods for conversion requests are not specified in the OSLAD regulation.

IDNR regulations do not specify information requirements for conversion requests. However, the information specified in the Section 6(f) requirements to support fair market value and comparable outdoor recreational usefulness, quality, and location should serve as a guide for the items to address in preparing OSLAD conversion requests; see [Section 20-4](#).

10-1.05 Wetland Compliance Procedures

10-1.05(a) Legal Authority

The *Interagency Wetland Policy Act of 1989*, ([20 ILCS 830/1 et seq.](#)) and the *Implementation Procedures for the Interagency Wetland Policy Act*, (17 IL Admin Code 1090) address the State policy for wetlands. IDOT and IDNR have adopted a Wetlands Action Plan to establish compliance with the goals of the *Interagency Wetland Policy Act of 1989* and the *IL Admin Code*. (See [Appendix C](#) of the *Bureau of Design and Environment (BDE) Manual*).

10-1.05(b) Applicability

The *Interagency Wetland Policy Act* and the *IL Admin Code* apply to all State and IDOT pass-through funded projects involving possible wetland impacts.

See [Section 20-8](#) for wetland procedures.

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10-1.06 Historic Preservation Compliance

10-1.06(a) Legal Authority

The following legal authority regulates or influences the policies and procedures for historic preservation compliance documentation:

- *The Illinois Historic Preservation Act* ([20 ILCS 3410/1](#) et seq.),
- *The Illinois State Agency Historic Resources Preservation Act* ([20 ILCS 3420/1](#) et seq.), and
- *The Rules for Review of State Agency Undertakings* (17 IL Admin Code 4180).

10-1.06(b) Applicability

This Section applies to all MFT, TBP, and State funded projects that do not involve federal funds or are not regulated by a federal agency must comply with these *Acts* and the *IL Admin Code*.

If a federal funds are used or a federal action is required, see [Section 20-5](#) for historic preservation compliance.

10-1.06(c) Definitions

The following definitions apply to historic preservation:

1. **Adverse Effect**. The destruction or alteration of all or part of an historic resource; isolation or alteration of the surrounding environment of an historic resource; introduction of visual, audible, or atmospheric elements that are out of character with a historic resource or which alter its setting; neglect or improper utilization of an historic resource that results in its deterioration or destruction; or transfer or sale of an historic resource to any public or private entity without the inclusion of adequate conditions or restrictions regarding preservation, maintenance, or use.
2. **Area of Potential Effects**. The geographic area or areas within which an undertaking may cause changes in the character or use of historic properties, if these properties exist.
3. **Comment**. The written finding by the Director of the effect of a State undertaking on an historic resource.
4. **Committee**. The Historic Preservation Mediation Committee.
5. **Director**. The Director of the Illinois Department of Natural Resources (IDNR) or their designee, who serves as the State Historic Preservation Officer (SHPO).
6. **Historic Resource**. Any property that is either publicly or privately held and which:
 - is listed in the National Register of Historic Places (National Register),

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- has been formally determined by the Director to be eligible for listing in the National Register as defined in 16 U.S.C. 470(f),
 - has been nominated by the Director and the Illinois Historic Sites Advisory Council for listing in the National Register,
 - meets one or more criteria for listing in the National Register, as determined by the Director, or
 - is listed in the Illinois Register of Historic Places.
7. Illinois State Archaeological Survey (ISAS). The entity that conducts all archaeological investigations for IDOT projects, in accordance with an intergovernmental agreement between IDOT and the University of Illinois at Urbana-Champaign.
8. State Historic Preservation Officer (SHPO). The official appointed or designated pursuant to Section 101(b)(1) of the *National Historic Preservation Act* to administer the State historic preservation program or a representative designated to act for the SHPO. The SHPO for Illinois is thru the [State Historic Preservation Office](#) within IDNR.
9. Undertaking. Any project, activity, or program that can result in changes in the character or use of historic properties, if any historic property is located in the area of potential effects. The project, activity, or program must be under the direct or indirect jurisdiction of a State agency or licensed or assisted by a State agency. An undertaking includes, but is not limited to, an action that is:
- directly undertaken by a State agency,
 - supported in whole or in part through State contracts, grants, subsidies, loan guarantees, or any other form of direct funding assistance, or
 - carried out pursuant to a State lease, permit, license, certificate, approval, or other form of entitlement or permission.

10-1.06(d) Development

The following procedures will apply:

1. Resource Identification. As early as practical in the development of a proposed highway project, actions will be initiated by the LPA, in cooperation with the District BLRS and BDE, to identify historic resources within the area that the project may affect. These resources may be identified through a variety of sources (e.g., listings of the National Register properties, eligible properties published by the Keeper of the National Register, local inventories of historic sites, coordination with SHPO or local historical groups, field investigations).

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An agreement, currently in effect with SHPO, allows BDE to issue an “in-house” clearance on historic properties for certain project types without the need for field surveys or project-specific coordination with SHPO. For these projects, the dated “Cleared for Letting” box on the Project Monitoring Application (PMA) Cultural Resources screen constitutes the necessary documentation of compliance with the State historic preservation requirements. For project types not covered by SHPO agreement, compliance must be established in accordance with the paragraphs that follow in this Section.

Structures at the time of construction, which are 50 years or older must be submitted for further review for historic significance. LPAs are encouraged to submit structures 40 years or older at time of design to avoid potential delays.

2. Documentation. Upon completion of the actions for identification of historic resources, BDE will forward documentation of the results to SHPO. The documentation will include a brief description of the proposed project, a map, a description of the project location, current photographs of above ground structures more than 50 years old, and, as appropriate, results of historic surveys and archaeological surveys and testing. The transmittal will indicate that the documentation is being submitted pursuant to the *Illinois State Agency Historic Resources Preservation Act* and Rules for Review of State Agency Undertakings, 17 IL Admin Code 4180.
3. Documentation Review. SHPO will review the documentation submitted and will advise BDE if additional information is needed. In accordance with 17 IL Admin Code 4180.250(d), the project may proceed if SHPO fails to provide a response within 45 calendar days after the date of completed documentation (i.e., sufficient documentation to enable SHPO to apply the National Register eligibility criteria to any historic properties identified in the project area).
4. No Historic Resources Present. If SHPO determines that no historic resources exist within the area of potential effects, it may provide a response to that effect within 30 calendar days of the receipt of complete documentation for the project. Upon receipt of a written response from SHPO indicating that no historic resources exist in the area of potential effects, the LPA will be deemed to have met its compliance responsibilities for the project under the *Illinois State Agency Historic Resources Preservation Act*.
5. Findings on Effect. If SHPO determines that historic resources do exist within the area of potential effects, it may issue one of the following findings: no effect, no adverse effect, no adverse effect with conditions, or adverse effect. SHPO should issue its finding within 30 days of the receipt of complete documentation.
6. No Effect or No Adverse Effect. If SHPO issues a finding that the project will have no effect or no adverse effect on historic resources, upon receipt of the written finding, the LPA will be deemed to have fulfilled its compliance responsibilities for the project under the *Illinois State Agency Historic Resources Preservation Act*.

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7. No Adverse Effect with Conditions. If SHPO issues a no adverse effect finding with conditions, the LPA will be deemed to have fulfilled its compliance responsibilities for the project under the *Illinois State Agency Historic Resources Preservation Act* once it has met the stipulated conditions and has provided written notification to that effect to the District BLRS. The District BLRS will forward the compliance notification to SHPO through the Central BLRS (CBLRS) and BDE.
8. Adverse Effect. If SHPO issues an adverse effect finding, or if the conditions stipulated for a finding of no adverse effect cannot be met, the LPA and IDOT will initiate consultation with SHPO to examine and discuss alternatives to avoid, minimize, or mitigate the identified adverse effects. (If any of the historic resources involved are listed in the Illinois Register of Historic Places, the requirements of the *Illinois Historic Preservation Act* will apply. Any specific actions necessary for compliance with that *Act* will be identified and addressed through the consultation with SHPO.) In addition to the LPA, IDOT, and SHPO, parties to the consultation may include other State agencies, local governments, local not-for-profit groups, and other parties of interest, as agreed to by the LPA, IDOT, and SHPO. As a part of the consultation process, the LPA, IDOT, and SHPO may agree to call a public information meeting to obtain comments concerning the project and its effects on historic resources. If it is agreed that a public information meeting will be held for the project, the LPA must provide notice of the meeting at least 30 calendar days before the scheduled meeting date. The notice will be placed in a newspaper of general circulation in the project area and include the following information:
 - date, time, and place of meeting,
 - purpose of the meeting,
 - description of the project,
 - description of the historic resource involved, and
 - the procedure for offering written or oral testimony.

The LPA will designate an officer to conduct the public meeting and who will be responsible for recording the proceedings and providing a written transcript to SHPO within 7 calendar days after the public meeting. See Section [20-3](#) for Section 4(f) and Section [20-5](#) for Section 106 coordination procedures.

9. Elimination of Adverse Effect. After consideration of the information collected during the consultation process, if the LPA, IDOT, and SHPO agree upon a feasible and prudent alternative that eliminates the adverse effect, SHPO will provide written notification indicating that implementation of the agreed alternative will result in no adverse effect on historic resources. Upon receipt of the written confirmation of the agreed alternative from SHPO, the LPA will be deemed to have met its compliance responsibilities for the project under the *Illinois State Agency Historic Resources Preservation Act*. If the LPA subsequently determines that changes are necessary in the agreed alternative which could result in adverse effects on historic resources, consultation with SHPO must be reopened.

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10. Memorandum of Agreement for Adverse Effect. After consideration of the information collected during the consultation process, if the LPA, IDOT, and SHPO agree on a feasible and prudent alternative that minimizes or mitigates adverse effects, or if they agree that there are no feasible and prudent alternatives to reduce the adverse effects, SHPO will prepare a Memorandum of Agreement (MOA) describing the alternative or stating the finding. IDOT and SHPO will be the principal signatories to MOA. Other consulting parties will have the opportunity to concur with MOA if they are responsible for carrying out any of the terms of the agreement. Upon execution of MOA and fulfillment of its terms, the LPA will be deemed to have met its compliance responsibilities for the project under the *Illinois State Agency Historic Resources Preservation Act*.
11. Failure to Execute MOA. If the LPA, IDOT, and SHPO fail to agree upon the existence of a feasible and prudent alternative and cannot execute the MOA, see [Section 26-5](#) of the *BDE Manual* for guidance.

10-1.07 Threatened and Endangered Species/Natural Areas Review

10-1.07(a) Legal Authority

The *Illinois Natural Areas Preservation Act* ([525 ILCS 30/17](#)), *Illinois Endangered Species Protection Act* ([520 ILCS 10/11\(b\)](#)), and the Consultation Procedures for Assessing Impacts of Agency Actions on Endangered and Threatened Species and Natural Areas (17 IL Admin Code 1075) require consultation with IDNR.

10-1.07(b) Applicability

The above *Acts* and the *Administrative Code* apply to all actions funded, authorized, or performed by the State and LPAs.

See [Section 20-9](#) for Threatened and Endangered Species/Natural Areas Review

10-1.08 Evaluation of Farmland Conversion Impacts

10-1.08(a) Legal Authority

The following legal authority regulates or influences the procedures on farmland conversions:

- *The Farmland Preservation Act* ([505 ILCS 75/1 et seq.](#)), and
- *The Farmland Preservation Act* (8 IL Admin Code 700).

The following documents also influence the procedures on farmland conversions:

- IDOT's Agriculture Land Preservation Policy (see [Appendix A](#) of the *BDE Manual*), and
- Cooperative Working Agreement between the Illinois Department of Agriculture (IDOA) and IDOT regarding Farmland Preservation (see [Appendix A](#) of the *BDE Manual*).

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10-1.08(b) Definitions

The following definitions apply:

1. Agricultural Land or Farmland. All land in farms including cropland, hayland, pastureland, forestland, corrals, gardens, and orchards; land used for farmsteads, buildings, barns, and machinery sheds; adjacent yards or corrals, pens, waste lagoons, feedlots, farmstead or feedlot windbreaks, grain bins, lanes for farm residences and fields, field windbreaks, ponds, commercial feedlots, greenhouses, nurseries, broiler facilities, and farm landing strips.
2. Agricultural Land Conversion. The taking of land directly out of agricultural production or displacing it by another use and not returning it to production.
3. Land Class. One of eight classes of land in the Land Capability Classification System (Handbook 210, issued September 1961, and approved for reprinting January, 1973) as developed by the Natural Resource Conservation Service (NRCS), United States Department of Agriculture. Incorporation by reference does not include any future editions or amendments. The land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. The soils are grouped according to their limitations for field crops, the risk of damage to the soil if they are used for crops, and the way they respond to management.
4. Modern Soil Survey. A document published after 1965 by NRCS containing a description of county's soils, maps showing their distribution, and discussions concerning their behavior and adaptability.

10-1.08(c) Applicability

Coordination with IDOA is required for highway and bridge projects funded in whole or in part with MFT, TBP, State funds and Federal-aid projects, and which require additional right-of-way, unless any of the following apply:

- The project is located within the boundaries of an incorporated municipality,
- The project is nonlinear (e.g., bridge or intersection improvements) and requires acquisition of no more than 10 acres (4 hectares) of land. When the areas of right-of-way for the project approaches the 10 acres (4 hectare) threshold for coordination and the project will likely involve additional acquisition for borrow or mitigation, the project should be coordinated with IDOA. Anticipated sites for borrow and mitigation should be indicated if known, or
- The project is linear; requires acquisition of no more than 3 acres of land per project mile (0.75 ha per project kilometer), (area acquisition divided by project length); and does not involve alternative alignment(s) in which the right-of-way diverges from, and is not contiguous to, the existing right-of-way. When the amount of right-of-way for the project approaches the threshold for coordination and the project will likely involve additional acquisition for borrow or mitigation, the project should be coordinated with IDOA.

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If individual coordination is not needed because of the above exemptions, appropriate documentation should be including in the project file. In addition, the following statement should be included in the project report or environmental documentation:

“The impact of this project on farmland conversion has been evaluated in accordance with the September 4, 1984 letter from the U.S. Soil Conservation Service (SCS). Since the project will convert less than three acres per mile and the conversion will not result in more than minor impacts, further coordination with SCS will not be necessary.”

10-1.08(d) Procedures

The following procedures will apply:

1. General. IDOA is especially interested in projects that consider more than one alignment, each of which has different agricultural impacts and different amounts of farmland conversion. Projects with multiple alignments can be as localized as those developed to eliminate offset intersections or as widespread as those for a new freeway connecting distant cities. In all cases, however, only that information which is likely to influence a choice among alternatives should be gathered and considered. For 3R/spot improvements with multiple alignments, soils information should be included when modern soil surveys are available. If modern soil surveys are not available, the remaining coordination information should be forwarded to IDOA. If it is determined that soils information is necessary, IDOA will normally acquire this information.

Where a proposed project will convert farmland to non-farm use, consider measures that could mitigate the scope and impacts of the conversion. In cases where coordination with IDOA is required, this coordination will assist in the identification and evaluation of possible mitigation measures. In all other instances, the LPA should ensure that measures to minimize farmland conversion impacts are appropriately identified and considered.

The LPA will send the project information to the IDOA for review should be addressed as follows:

Illinois Department of Agriculture
Bureau of Land and Water Resources
PO Box 19281
State Fairgrounds
Springfield, IL 62794-9281

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When IDOA has completed its review, it will respond in writing to the agency that submitted the information. Early and complete submittals will generally result in a timely response. Should IDOA response contain substantive comments or raise controversial issues, these comments and issues should be addressed to the extent that the information is available, and a response forwarded expeditiously to IDOA. Remaining comments should then be addressed as soon as the necessary information becomes available. Additional follow-up coordination may be required to determine if mutually satisfactory solutions exist prior to assuming an IDOT position at a hearing or in draft and final environmental documents.

The discussions below identify specific procedures for projects involving new construction or reconstruction, and for 3R projects. If coordination with IDOA is necessary and it is unclear whether the project is 3R or reconstruction, the information required for a 3R project should be provided to IDOA as early in project development as practical. When offered an early opportunity to review project information, IDOA can make an initial determination of its degree of interest and request follow-up information, if appropriate, without delaying the project unduly.

2. New Construction or Reconstruction Projects. When coordination with IDOA is required, the timing of the coordination and the information provided is important. When new construction or reconstruction is involved, it is appropriate, shortly after the location study has been initiated, to notify IDOA that a project is being studied and that more detailed information will follow as it is developed. On major projects, it is desirable to maintain contact with IDOA so that potential problems can be identified early to minimize any delays.

On new construction and reconstruction projects, provide IDOA with the description, purpose, and scope of each proposed project together with the following information for each alternative:

- the location, including proposed right-of-way lines if the scale permits, on all the following maps:
 - a general county highway map,
 - a plat map, and
 - a modern soil survey map (if available).
- total land area in acres (hectares) required for additional right-of-way, including frontage and access roads,
- the number of acres (hectares) of each USDA Land Capability Classification (Land Classes I - VIII) and Soil Type (including index number) proposed for acquisition, if applicable,
- identification of all soil types occurring within the proposed right-of-way and the number of acres (hectares) of each soil type, if applicable. Note: Land Class and soil type are obtainable from a county's modern soil survey which may be obtained from a local NRCS field office,

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- indication of each alternative's conformance with the appropriate zoning ordinance and comprehensive land-use plan (i.e., regional, county, city) regulating the project area, if applicable,
 - identification of the following impacts that may be associated with the implementation of the project, as applicable:
 - number of farm units and owners affected,
 - number of farm parcels severed,
 - number of farm unit operations severed,
 - number of landlocked parcels created,
 - miles (kilometers) of adverse travel created for each affected farm unit,
 - effects of the proposal upon existing farm drainage systems (surface and subsurface),
 - acres (hectares) of farmland required for borrow and location of the borrow site (depicted on a soil survey and plat map), if available, and
 - erosion control techniques to be used on the disturbed area during and after project construction,
 - a brief discussion of all measures included to mitigate any adverse impacts identified above, and
 - indication that farmland conversion has been minimized and other appropriate mitigation included for the selected alternative consistent with the operational and safety requirements applicable to the project.
3. 3R Projects. When coordination is necessary, and the proposed improvement primarily involves 3R work on existing alignment, it is appropriate, shortly after location and/or environmental studies have been initiated, to notify IDOA that a project is being studied and to provide the following information:
- description, purpose, and scope of the proposed project,
 - map depicting the location of the project, a county highway map is acceptable,
 - total land area in acres (hectares) required for additional right-of-way and a brief description of its nature (e.g., a 10 ft (3 m) strip on north side, a 3 acre (1 hectare) parcel to flatten curve at location noted on map), and
 - indication that farmland conversion has been minimized and other appropriate mitigation included for the selected alternative consistent with the operational and safety requirements applicable to the project.

10-1.09 Special Waste

Special waste screening is required for MFT, TBP, and State funded projects. The procedure is discussed in the [Section 20-12](#).

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10-1.10 Groundwater**10-1.10(a) Introduction**

The *Illinois Environmental Protection Act* ([415 ILCS 5/1 et seq.](#)), the *Illinois Groundwater Protection Act* ([415 ILCS 55/1 et seq.](#)), and parts of the *IL Admin Code* impose requirements for protection of the State's groundwater resources to ensure their availability for beneficial purposes.

In the development of proposed LPA highway projects, potential impacts to groundwater resources consideration should be given to implementing practical measures for avoiding, minimizing, and mitigating adverse project impacts to those resources, see [Section 26-22](#) of the *BDE Manual*.

10-1.10(b) Sole Source Aquifers (SSA)

On March 11, 2015 the U.S. Environmental Protection Agency (USEPA) designated a portion of the Mahomet Aquifer system as a sole source aquifer (SSA) for Illinois. The *Safe Drinking Water Act* of 1974 gives the USEPA authority to designate all or part of an aquifer as a "sole source" if contamination of the aquifer would create a significant hazard to public health and there are no physically available or economically feasible alternative sources of drinking water to serve the population that relies on the aquifer. A significant hazard to public health is defined as the level of contaminants in an aquifer would exceed National Primary Drinking Water Standards or exceed Federal, Tribal or state public health advisory levels for currently unregulated contaminants, or violate the intent of EO 12088, "Federal Compliance with Pollution Control Standards." This designation authorizes USEPA review of federally funded projects to assess potential for contamination of the aquifer system.

LPA projects which do not include federal funds or federal action do not require any coordination with the USEPA. However, LPA's are encouraged to coordinate with the USEPA; if their project would have a potential impact to the Mahomet Aquifer. Further information may be found in [Section 26-22](#) of the *BDE Manual*.

LPA projects which do include federal funds or federal action, see [Section 20-13](#).

10-2 PROJECT STUDIES/REPORTS

Section 10-2 provides guidance on the preparation of various project studies and reports for LPA MFT, TBP, and State funded projects.

10-2.01 Information Sources

Engineering investigations must determine if the proposed highway improvement satisfies the need for safe, economical, and efficient transportation and provides other relevant benefits (e.g., traffic benefits, public services, reduction of crashes, pedestrian facilities, transit considerations). The following sections identify informational sources that are important in establishing the need for the highway improvement.

10-2.01(a) Functional Classification

[Section 27-3](#) discusses the application of the functional classification system in Illinois for geometric design applications. All highway improvements must be compatible with the functional classification of the highway under design. A highway's functional classification and highway type are important factors in determining which design policies and criteria to use and for establishing programming priorities for new construction, reconstruction, or 3R-type improvements. [Five Year Classification Maps](#) are available from the IDOT Office of Planning and Programming (OPP).

10-2.01(b) Highway Data Bank

OPP is responsible for maintaining the Illinois Highway Information System (IHIS), which includes the [Roadway Information and Procedure Manual](#) (IRIS) and [Structure Information and Procedure Manual](#) (SIP). The LPA may obtain computer generated route log listings for the State routes and local roads and streets from OPP. The available data is dependent on the highway system. The following major items may be available:

- administrative classification,
- physical dimensions,
- roadway characteristics,
- traffic data,
- geometric data,
- pavement cross sections, surface type, drainage, and shoulder conditions, and
- bridge inspection and appraisal data.

A complete listing of items is shown in the indices of the *Illinois Highway Information System - Roadway Information and Procedure Manual* and the *Structure Information and Procedure Manual*.

10-2.01(c) Current and Projected Traffic Volumes

Under the general guidance of OPP, the districts count and classify existing traffic volumes on the State highway system and some local roads and streets. OPP also maintains data used to project future traffic volumes (e.g., annual traffic growth factors). The following traffic data may be available from the District:

- current hourly and daily traffic volumes,
- current turning movement volumes,
- traffic projections and assignments for new facilities, and
- traffic projections for future design years on existing facilities.

Similar data, developed in conjunction with the Urban Transportation Planning Process, also may be available from Metropolitan Planning Organizations (MPOs). Because the design of a project is dependent upon the projected design hourly volumes, these figures must be carefully examined and questioned before using for design purposes. Improper traffic projections can result in the construction of unnecessary or inadequate highway improvements.

10-2.01(d) Crash and Skid Reduction Analyses

During the preliminary study, identify areas on the Five-Percent Report and computer-generated listings that report supplemental data for high-crash spots and roadway sections, statewide average crash rates, and all crash patterns (e.g., fixed objects) at various sites throughout the project. The Bureau of Safety Programs and Engineering (BSPE) regularly provides crash information upon request. The following is a partial listing of available crash information:

- Five-Percent Report and computer-generated listings that report supplemental data for high-crash spots and roadway sections,
- county crash summaries,
- municipal crash summaries,
- reports which can be generated for individual locations, selected geometric feature, or type of crash:
 - Five-Percent Report,
 - Intersection Profile,
 - Segment Profile,
 - Location Summary,
 - Crash – One-Line Listing,
 - Intersection Summary,
 - Cross Tab
 - Time of Day by Severity,
 - Crash Type by Severity,

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- Conditions by Severity,
- Time of Day by Day of Week,
- Roadway Description,
- Roadway Summary, and
- Animal/Vehicle Collisions.
- statewide average crash rates (distributed annually for comparison with existing project crash rates for proposed improvement justification),
- collision diagram printouts for roads and streets on the local system when the LPA is part of the Local Accident Reference System (LARS) and for intersections with State highways. Collision diagram computer plots also may be requested for intersections,
- individual crash reports for above locations, upon request from a microfilm or imaging retrieval system,
- summaries of Motor Vehicle Traffic Crashes and statewide average percentages by type of collision, light condition, and road surface. These percentages may be compared with project percentages from collision diagram summary sheets to help identify over-represented crash patterns.

10-2.01(e) Airport Coordination

Highway and bridge improvements within 2 miles (3.2 km) of publicly owned airports, within 1 mile (1.6 km) of privately-owned airports open to the public, and within 0.5 miles (0.8 km) of restricted-landing areas require coordination with the IDOT's Office of Intermodal Project Implementation, Bureau of Aeronautics. These coordination requirements concerning distance to an airport are in conjunction with height obstructions of 15 ft (4.6 m) or more above the roadway. In addition, the LPA must coordinate with the Bureau of Aeronautics for all realignments and construction improvements on new location regardless of the height of obstruction.

For those airports that are publicly owned, coordination with the Federal Aviation Administration (FAA) is required. Contact the Bureau of Aeronautics prior to communicating with FAA.

Airport clearance requirements could affect the controlling elevations and locations of pavements and structures. Discuss the necessary construction equipment (e.g., cranes, pile drivers) and highway appurtenances (e.g., signs, lighting, traffic signals, utility poles) that might affect airspace clearances. During the project's development, also contact the local airport authorities to ascertain that any proposed airport expansion plans will not cause the highway improvement to conflict with future airspace clearances. Any required vertical clearance permits must be obtained prior to plans, specifications, & estimates (PS&E) approval. Airspace clearances are defined in the Aviation Safety (92 IL Admin Code 16).

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10-2.01(f) Railroad Coordination

When a project is involved with a railroad grade crossing or separation, coordination with the affected railroad should take place at an early stage to determine if any improvement is necessary to the railroad facility and to determine funding responsibilities for the improvement. Before the railroad work can begin, it will be necessary to prepare a railroad agreement or to obtain the approval of the Illinois Commerce Commission (ICC).

[Section 5-6](#) discusses when a railroad agreement is required, agreement format, and procedures for preparing and executing the agreement. Additionally, [Section 5-6](#) provides guidance on petitions before ICC and ICC Stipulated Agreements.

During preliminary engineering, the following will occur:

1. **General.** In most instances, the LPA is responsible for the preparation of the plans for new construction, modernization, or reconstruction of highway structures, drainage facilities, and the approaches. Occasionally, the railroad will prepare plans for a structure carrying the railroad over a local highway.

All plans, specifications, and special provisions prepared by either the LPA or the railroad are subject to approval by the other party, and no changes will be allowed by either party without the consent in writing of the other party.

2. **Railroad Structures Designed By or For the Railroad.** This applies to a railroad structure over a local highway or street. When the railroad elects not to perform the structure design with its own forces and the LPA does not have the forces available to perform the design within the required schedule, a consultant may be employed to perform the design. Typically, the LPA will select a suitable consultant from a list of consultants approved by the railroad, but must follow the requirements in [Section 5-5](#). The design work is then performed by agreement between the LPA and the consultant with the railroad's approval.

In certain cases, where justified, the railroad will select a consultant to design the structure and enter into an agreement with the consultant for the design. The selection of the consultant and the terms, including fee, is subject to the LPA's approval.

In those projects where Federal-aid funds are anticipated for reimbursing the railroad's consultant for the cost of preparing the plans for a structure, the preliminary engineering cost must be programmed before IDOT can authorize the preparation of such plans.

3. **Preliminary Engineering Portion of Railroad Force Account Work.** The railroad will generally perform the preliminary engineering with its own forces for the railroad force account work covered by construction agreements between the LPA and the railroad.

In special instances (particularly warning device system design), the railroad may use the services of a consultant retained by the railroad to perform the preliminary engineering.

10-2.02 Intersection Design Studies**10-2.02(a) General**

An Intersection Design Study (IDS) is a graphic representation of a proposed treatment for the development or improvement of an intersection facility. It is based on an analysis of traffic needs and an evaluation of physical and economic elements at the intersection site. [Chapter 34](#) provides the design criteria for intersections.

The LPA will be required to prepare an IDS for intersections if any of the following conditions apply:

- in a rural area when both roads have a current 30th maximum design hourly volume (DHV) of 300 vehicles or more,
- in a rural area when a local road with a current DHV of 300 or more intersects a State marked route,
- in an urban area when both streets have a current DHV of 400 vehicles or more,
- in an urban area when a local street with a current DHV of 400 or more intersects a State marked route,
- when additional lanes and/or channelization is proposed on one or both routes, or
- any intersection designed as a roundabout.

The above conditions apply to all intersections including the terminus of a project.

[Chapter 14](#) of the *BDE Manual* provides guidelines for the preparation of an IDS and the data that is required to be documented. The designer should also consider the following:

- if an existing intersection would normally require an IDS, but it is found to be adequate for the design year traffic, a capacity analysis is considered adequate,
- for any intersection where additional turning lanes or channelization are proposed, and traffic volumes are less than those shown above, a capacity analysis will not normally be required,
- for warrants on traffic signals, see [Chapter 39](#).

10-2.02(b) Processing

All IDSs and major geometric changes for MFT, TBP, and State funded projects should be reviewed by the District geometrics unit, as a best practice

10-2.03 NBIS Length / Bridge Condition / Hydraulic Report**10-2.03(a) NBIS Length**

Based on the definition of a bridge by the American Association of State Highway and Transportation Officials (AASHTO) and as given in the National Bridge Inspection Standards (NBIS), the NBIS length is 20.0 ft (6.1 m).

10-2.03(b) Bridge Condition Report

The Bridge Condition Report (BCR) summarizes the findings of the investigation of a bridge and its components. It is used to establish the scope of work on the extent of repair, replacement (partial or total), and widening or other improvements. The BCR allows the LPA and IDOT to determine the most cost-effective method of correcting the reported structural, geometric, or hydraulic deficiencies and for restoring a bridge to a structurally adequate and functionally serviceable condition.

A BCR is not required for total structure replacement for projects using non-federal funding.

A BCR is required for all repair projects affecting the load carrying capacity of the structure (an abbreviated BCR will be allowed), rehabilitation and widening projects or for which a Preliminary Bridge Design and Hydraulic Report (PBDHR) must be submitted for IDOT approval. This includes not only projects using MFT, TBP, or State funds, but also bridges of NBIS length or greater, also see Sections 10-1.01(c) and (d). All rehabilitation and widening projects require an in-depth report and is to include color photos. The following items are necessary for an in-depth report:

1. Introduction. The introduction should provide the reason for the report.
2. Administrative and Geographical Information. The report should include detailed administrative and geographical information (e.g., facility carried, feature crossed, age of bridge).
3. Inspection Information. Include what type of inspection was performed (e.g., visual, testing type, equipment), results of inspection, degree of impairment to structure, and any structural deficiencies. Precast prestressed deck beams should be sounded and scaled as part of the inspection.
4. Description. The report should include a description of the physical condition of the bridge and the deficiencies that require correction.
5. Verification. The ability and capacity of the existing structure for reuse should be verified and documented. This should include at a minimum, a statement that the structure is adequate for the required and stated design load. In addition, for structures to remain over waterways, the BCR should verify the adequacy of the structure for scour.
6. Recommendations. Note all recommended repairs and any methods of repair.
7. Justification. Provide justification for any proposed work.

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8. Photos. Include color photos of deficient areas.
9. Asbestos Determination (Form BLR 10220). Form [BLR 10220](#) is required when the scope of work disturbs the bridge deck or wearing surface, if not previously submitted.
10. Master Structure Report (S-107). This report is output from the [Structure Information Management System](#) (SIMS). The current S-107 should also be included with the PBDHR submittal.

For structures on 3R and resurfacing only projects not requiring any rehabilitation and where change in surface thickness is 0 in. or greater, provide color photos and a description of the structures as described in the Master Structure Report, as well as Form [BLR 10220](#). These structures should preferably be in good condition (structure condition rating of 5 or greater). A formal BCR will then not be required for these structures. However, a load rating analysis, with submittal of Form [BBS 2795](#) and Form [BLR 06510](#), will be required, as well as other materials described in Section 4.2 of the [Structural Service Manual](#).

When the scope of the anticipated rehabilitation work is limited to bridge deck and minor structural repairs (without need for a widening or replacement), only the preparation of a Bridge Condition Report for Deck Repair is required. Because the geometrics of the structure will not be altered, this type of work normally will not require a Type, Size, and Location (TS&L) submittal as discussed in Section 10-2.03(b). However, a load rating analysis, with submittal of Form [BBS 2795](#) and Form [BLR 06510](#) will be required, as well as other materials described in Section 4.2 the [Structural Service Manual](#).

Submit the required number of copies of the BCR to the District BLRS. The District BLRS will forward the BCR to the Local Bridge Unit (LBU) in the Bureau of Bridges and Structures (BBS) for review and approval. The BCR must be approved prior to or with the approval of the PBDHR.

10-2.03(c) Preliminary Bridge Design and Hydraulic Report (PBDHR)

The PBDHR contains the necessary information for use by IDOT personnel to review the preliminary bridge design and hydraulics for LPA bridge and culvert construction projects, and for obtaining construction permits from the IDNR Office of Water Resources (OWR). For further information on permits, see [Chapter 7](#). Submittal of PBDHR to IDOT is required for all structures of NBIS length, or greater as well as when a permit is to be issued, except for:

- structures having a clear span of 10 ft (3 m) or less, or a waterway opening of 100 ft² (9 m²) or less (including over-the-road flow) for the design flood.
- in addition, submittal is not required for structures for which the preliminary design has been prepared by IDOT.

Prior to the submittal of the PBDHR to the BBS, the proposed structure number (SN) must be assigned and entered into IHIS by the District (see [Section 6-2](#)).

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For most projects where the structure is a rural stream crossings, a completed Form [BLR 10210](#) with attachments, including the plan and profile sheet, hydraulic/hydrologic analysis and calculations, foundation borings/soil report (see Section 10-2.05), Asbestos Determination Certification (Form [BLR 10220](#)), Scour Critical Evaluation Coding Report (Form [BBS-SCE](#)), hydraulic certification statement, or joint application form as applicable, should provide sufficient information for IDOT to review and approve proposed projects.

Detailed TS&L drawings must be prepared and submitted as part of PBDHR for projects that have at least one of the conditions listed below:

- structures carrying or crossing an Interstate highway,
- a roadway under the jurisdiction of the State of Illinois,
- structures over roadways or railroads,
- urban structures,
- structures having a clear span of 100 ft (30 m) or greater,
- projects funded with Illinois Major Bridge funds,
- unusual or complex structures,
- structures designed by IDOT,
- retaining walls,
- multi-use structures, or
- boardwalks.

Simple structures, such as rural precast concrete deck beam structures on pile bent spill thru abutments and piers, or simple culverts, typically do not require TS&L drawings, as Form [BLR 10210](#) and plan and profile sheet are sufficient to describe the proposed structure. In addition, for pile supported substructures, the pile encasement type should be provided on Form [BLR 10210](#). For similar locations using superstructures such as steel wide flange beams (or plate girders, concrete I-beams, etc.), the PBDHR submittal must include a cross section thru the superstructure. The additional structure information is provided for IDOT personnel to review and approve the preliminary bridge design.

The following information and/or forms should be included with the PBDHR as applicable:

1. Stream Crossings. For most rural stream crossings, a completed Form [BLR 10210](#) with attachments should provide sufficient information for IDOT personnel to review and approve preliminary bridge designs.

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- 2. Borings/Structural Geotechnical Reports (SGR). Foundation borings are required following the procedures in the [IDOT Geotechnical Manual](#) (see Section 10-2.05). Record the boring data for all structures on the Soil Boring Log (Form [BBS 137](#)), or similar form. Include this data as part of the Form [BLR 10210](#) submission. When appropriate, borings are required to be submitted with the PBDHR. This assists the BBS in review of the preliminary foundation design and for determination of scour (SIP Item 113). There may be occasions when borings are to be taken “Before Final Design”, such as:
 - a. some culverts, and
 - b. single span pile bent spill thru bridges where SIP Item 113 is coded “8B” for scour, and the only decision is pile type.

Boring information is highly recommended at an early stage and before the PBDHR submittal. The waiving by the BBS of the boring/SGR requirement with the submittal is not automatic. PBDHRs submitted without this required information for approval of the PBDHR may be returned as incomplete.

- 3. Pile Encasement Type. For pile supported substructures, the pile encasement type should be provided on Form [BLR 10210](#).
- 4. Superstructure Cross Section. For locations using superstructures such as steel wide flange beams (or plate girders, concrete I-beams, etc.), the PBDHR submittal must include a cross section thru the superstructure.
- 5. Type, Size, and Location (TS&L) Plans. TS&L drawings are detailed bridge configuration plans that are used as the basis for the development of construction plans.
- 4. Certification Statements. The certification statements included with the Hydraulic Reports submitted to IDOT should reference the [IDOT Drainage Manual](#) as the publication providing the policies and procedures for determining hydraulic adequacy. See [Section 7-2](#) for permitting and certification requirements for those structures requiring an OWR permit.

The information below is provided for approval requirements for those structures not requiring an IDNR construction permit:

- a. Structures for Drainage Areas Not Requiring a Permit. This is applicable for structures in rural areas with drainage areas less than 10 mi² (26 km²) and for structures in urban areas with drainage areas less than 1 mi² (2.6 km²). The following certification statement should be included with the PBDHR submittal:

<p>I hereby certify that the waterway opening for the proposed structure has been designed using hydrologic and hydraulic engineering methods in accordance with the policies and procedures presented in the Drainage Manual of the Illinois Department of Transportation.</p> <p>P.E. Seal (with date of expiration) (Signature): _____ Date: _____</p>

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- b. Superstructure Replacements Not Requiring a Permit. A PBDHR submitted to BBS for a superstructure replacement project should contain a certification statement that the existing structure has not been the cause of “demonstrable flood damage,” similar to the certification statement for the Statewide Permit 12 provided in [Section 7-2](#). When using this certification, the engineer should consider the structural and hydraulic adequacy of the structure to remain, including scour.

If the municipal or county engineer cannot provide the certification statement for flood damage, a complete hydrologic and hydraulic analysis is required to verify the hydraulic adequacy of the existing waterway opening, and the following certification statement should be included with the report.

I hereby certify that the waterway opening for the existing/proposed structure has been analyzed and evaluated using hydrologic and hydraulic engineering methods in accordance with the policies and procedures presented in the Drainage Manual of the Illinois Department of Transportation.

P.E. Seal (with date of expiration) (Signature): _____ Date: _____

When making this certification, the engineer is acknowledging that the “design risk assessment process” has been performed as described in the [IDOT Drainage Manual](#).

- c. Maintenance/Rehabilitation Exceptions. The current policy of IDNR OWR does not require a construction permit for projects considered to be maintenance. Maintenance includes repair or replacement of the superstructure, widening or resurfacing, minor dredging to restore the waterway opening to the original cross section design, and culvert extensions of up to 100%, but not exceeding 40 ft (12 m) in length (i.e., culvert extension of up to 40 ft (12 m) on an existing 40 ft (12 m) culvert).

However, IDOT requires the hydraulic adequacy of the existing waterway opening be investigated to approve PBDHR for certain projects. Such includes projects that involve the use of federal or State funds, or locally funded projects when the clear span is NBIS length or greater.

Projects involving the total removal of an existing superstructure and the construction of a new superstructure on the existing substructure units, and culvert extensions as noted above, require hydraulic submittals.

The hydraulic submittal should include the existing and proposed design and 100-year hydraulic openings and elevations and must be sufficient to evaluate the impacts of scour on the existing substructure to remain (for bridges). Note that approval of the BCR requires verification of scour adequacy, which may require hydraulic evaluation for scour during that phase. The supporting data should be included, and a certification statement included that the existing structure has not been the cause of “demonstrable flood damage”. Use a certification statement similar to that provided for Statewide Permit 12 provided in [Section 7-2](#).

5. Review. Submit the required number of copies of the PBDHR to the District BLRS for transmittal to BBS for review and approval.
6. Proposed Structure Number (SN). The proposed SN, when required, should be assigned and entered in the IHIS prior to submittal, and must be entered before approval of the PBDHR.
7. Design Exceptions. The PBDHR is to include justification for any design exceptions necessary for the structure (i.e. the clearance above design highwater elevation).

The LPA is responsible for obtaining all other permits including IDNR OWR (individual permits) when necessary. Approval of the PBDHR by IDOT will be contingent on the hydraulic approval and permit by IDNR OWR. For additional guidance on permits, see [Chapter 7](#).

10-2.04 Drainage Studies

The roadway alignment is dependent on the interrelationships of several variables. High-water elevations and the depth of roadway ditch flow for surface drainage directly influence the gradeline. Hydraulic structure sizes and storm sewer systems may significantly affect project cost estimates. For these and other reasons associated with drainage controls, a drainage study containing preliminary hydrologic and hydraulic analyses should be prepared where highway drainage and/or structures will significantly affect the design or cost of a project. A drainage study is an investigation of the existing and proposed drainage patterns that affect a section of roadway. Drainage studies are discussed in more detail in the [IDOT Drainage Manual](#). See [Chapter 38](#) for drainage design guidelines.

The district may request that a drainage study be submitted for review when a concern about the adequacy of a drainage feature is identified during review of the plans.

10-2.05 Geotechnical Studies and Reports

10-2.05(a) Geotechnical Report

The purpose for a Geotechnical Report is to provide insight into area geology, pedology, and other engineering factors to be used by the designer. If soil stability problems are anticipated, a preliminary Geotechnical Report should be prepared during the preliminary study phase. Information on the geotechnical reports can be found in the [IDOT Geotechnical Manual](#).

While a final pavement design is usually not needed until plan preparation, a determination of pavement type and approximate thickness may be needed during the preliminary study phase. [Chapter 44](#) discusses pavement design procedures and when a Geotechnical Report is required.

10-2.05(b) Structure Geotechnical Report (SGR)

A SGR is necessary for projects involving bridges, culverts, retaining walls, or other structures. However, for many LPA structures, such as those on low volume roads with little change in grade, it may be possible the SGR consists only of soil borings with foundation recommendations.

The design engineer must ensure foundation information provided is sufficient. All soil borings must be tied to the vertical and horizontal project datum.

The SGR shall be included with the PBDHR submittal to the BBS. For additional requirements for PBDHR submittals see Section 10-2.03(c).

10-2.06 Commitments

A commitment is a documented obligation or promise made by a properly authorized representative of the LPA for carrying out a specific action or actions affecting the planning, design, land acquisition, construction, or operation of a highway project that involves special consideration and action. A commitment file must be kept for all State funded local projects and is recommended for MFT projects. [Section 22-2](#) provides additional information concerning the recording of commitments. When applicable, note the commitments in the project agreements and contract documents. The commitment list is to be included with the plan submittal to the District BLRS. If the LPA is under an MFT Memorandum of Understanding, the LPA is responsible for providing the District BLRS with a copy of their commitment file at the same time as the rest of the project file is submitted.

10-2.07 Design Criteria

10-2.07(a) General

Design criteria for MFT and State funded projects can be found in [Part IV](#) of the *BLRS Manual*. Use Form [BLR 22120](#) to document the adherence of the proposed project to the BLRS design criteria. For those agencies without a licensed professional engineer (PE) on staff, the entire form must be fully completed and submitted to the District BLRS prior to submittal of the plans.

10-2.07(b) Design Exceptions

In general, the designer is responsible for making a reasonable effort to meet the design criteria presented in this *Manual*. However, recognizing that this will not always be practical or cost effective, [Section 27-7](#) discusses the evaluation of design exceptions to the geometric design criteria.

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Form [BLR 22120](#) is also used to document the justification and approval of design exceptions that are necessary for the completion of the project. The form must be fully completed by those LPAs without a licensed professional engineer on staff. LPAs with a licensed PE on staff will only need to complete page one of the form and those portions of the form where a design variance from a specific design criterion is being requested.

Requests for design exceptions should be submitted in writing to the District BLRS. A written response will then be sent to the LPA.

LPAs operating under an Agreement of Understanding will be allowed to determine the acceptability of Level Two design exceptions without District BLRS approval. A copy of the form should be kept in the LPA's project file.

10-2.08 Work Zone Transportation Management Plans for Impact on State Highways

For MFT or state funded projects that impact a State highway, the LPA shall follow procedures contained in Section [22-2](#) except the LPA should coordinate directly with the District rather than taking to a FHWA/IDOT coordination meeting.

10-2.09 Complete Streets for State-Maintained Routes

10-2.09(a) General

[605 ILCS 5/4-220](#) requires that bicycle and pedestrian ways shall be given full consideration in the planning and development of transportation facilities, including the incorporation of such ways into State plans and programs. Therefore, when a LPA project follows or intersects a State highway, and there is any type of work (including the addition of turn lanes) to the State highway, [Chapter 17](#) of the *BDE Manual* will apply to the State highway.

10-2.09(b) Application

For all LPA projects that impact a State highway in or within one mile of an urban area, bicycle and pedestrian ways shall be established for State highways in conjunction with the construction, reconstruction, or other change of any State transportation facility except:

1. In pavement resurfacing projects that do not widen the existing travel way or do not provide stabilized shoulders; or
2. Where approved by the Secretary of Transportation based upon documented safety issues, excessive cost, or absence of need.

The location of the State highway in a non-urban area is in and of itself insufficient to automatically exclude it from consideration of the Complete Streets law. Other factors to consider include bicycle accommodations on either side of the project, bicycle generators in the project vicinity, bicycle travel along State highways, and safety concerns.

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The District or CBLRS may direct questions regarding the applicability of the law to the Statewide Bicycle and Pedestrian Coordinator.

10-2.09(c) Construction Options for Bicycle Travel

Each project must be evaluated on an individual basis. Some of the options in accommodating bicyclists on a State-maintained route include:

1. The installation of a 10-foot wide shared use path;
2. Paved shoulders in accordance with policy guidelines in the *BDE Manual*; or
3. In urban areas, a wider travel way.

Appropriate bicycle accommodations at roadway intersections along the State highway are required (curb cuts, ADA ramps, etc.).

10-2.09(d) Exceptions to the Complete Streets Law

The Secretary of Transportation must specifically approve accommodation exceptions in or within one mile of urban areas covered in the law based on documented safety issues, excessive cost (as determined by the *BDE Manual*), or absence of need. The LPA shall submit their request of exception to the District. Signed documentation of the Secretary's concurrence shall be included in the project files.

10-2.09(e) Funding for Complete Streets

The LPA will be responsible for the cost of any work along a State highway required by the bicycle and pedestrian accommodations.

10-3 RIGHT-OF-WAY

The procedures for the acquisition of right-of-way by a LPA are flexible but should adequately address all significant concerns based on the specific situation. [605 ILCS 5/5-801 thru 803](#), [605 ILCS 5/6-801 thru 805](#), and [65 ILCS 5/11-76, 76.1, and 76.2](#), also govern the acquisition of right-of-way. This Section presents a general overview of right-of-way issues for LPAs. The [IDOT Land Acquisition Policies and Procedures Manual](#) provides additional guidance and potential requirements in the acquisition of right-of-way.

Additional coordination through the District Bureau of Land Acquisitions is required when:

- federal funds are used in any phase of the project (see [Section 22-3](#));
- right of way is to be acquired in the name of the State (see Section 10-3.03); or
- coordination is a requirement of the state funds. Additional coordination is typically not required when using state funds such as Economic Development Program (EDP), Truck Access Route Program (TARP), or listed under [Section 4-2](#).

10-3.01 Interest to be Acquired

10-3.01(a) Fee Title

LPAs may expend MFT funds to acquire fee title to any land, rights, or other property necessary for highway purposes by purchase or through eminent domain. It is recommended that fee title to be acquired for all right-of-way within the proposed right-of-way line, except when it is considered feasible to acquire a dedication or permanent easement. Ensure deeds or court orders are recorded in the county in which the property is located.

10-3.01(b) Dedication

Dedications are when a property owner of private property allows the land to be used for public use, and the acceptance by the proper public authority. This is commonly done when a developer of a subdivision dedicates the right-of-way for the roadways which are to be accepted by the LPA.

10-3.01(c) Permanent Easement

Permanent easements for highways purposes, are acquired for the perpetual right to construct and maintain a public highway and incidental facilities over and across the surface of lands. Examples would be construction and/or installation of appurtenant highway facilities such as outfall storm sewers, riprapping of stream channels, or channel changes are examples that may require future entry for maintenance, or future improvements. Ensure permanent easements are recorded in the county in which the property is located.

10-3.01(d) Temporary Easement

Temporary easements are grants of an estate or interest in the land and are irrevocable. Ensure that the easements are recorded. They are transferred with the sale of the land. Acquisition of temporary easements should be accomplished in the same manner as the acquisition of a fee acquisition or a permanent easement. Obtain temporary easements where the specified use is essential to the completion of a project and future entry is not necessary. Examples when a temporary easement may be necessary are detour roads; borrow pits (owned or furnished by the LPA), removal of the remainder of buildings located partially on acquired right-of-way, or channel changes requiring no future maintenance by the LPA. Ensure temporary easements are recorded in the county in which the property is located.

10-3.01(e) Temporary Use Permit and Right-of-Entry

Occasionally once construction has begun, an unknown issue may arise requiring work off the right-of-way. In this case, a temporary use permit and right-of-entry may be appropriate and are the terms used to describe a license giving permission to a LPA to do a particular act or series of acts on the land of another without possessing any estate or interest in that land.

A license with respect to real property does not usually continue with the sale of the land and may be terminated in various ways. Consequently, the acquisition of temporary use permits should be confined to particular areas of construction (e.g., sloping of lawns, extending back slope beyond the right-of-way lines, reconstruction of driveways) where a nominal amount of money is involved, the probability of termination is minimal, and the effect of termination would not jeopardize completion of the project.

10-3.01(f) Right-of-Way Donations

Right-of-way for MFT projects may be secured through right-of-way donations. Ensure the landowner has been informed of their right to receive just compensation. However, in case of donations, it is not necessary to appraise the property or to offer compensation. It is recommended the LPA follow Section 4.1.12 of the [IDOT Land Acquisition Policies and Procedures Manual](#) including the various forms.

10-3.01(g) Acquisition of Railroad Property

When the LPA requires property interest from a railroad to complete a highway improvement, sufficient lead time to acquire these interests is essential. Once it is determined that a project will require the acquisition of property owned or under the control of a railroad, it is critical that the CBLRS be informed. The following will apply:

1. Acquisition of Railroad Non-Operating Property. The acquisition of non-operating railroad property is accomplished in the same manner as any other acquisition of property for a highway improvement.

2. Acquisition of Railroad Operating Property. Where a proposed highway improvement will cross or longitudinally use a railroad's operating property, the LPA generally will acquire a permanent easement to construct and maintain the improvement. There will be instances when a highway project will require only the temporary use of railroad property. When this situation occurs, permission to do work of a temporary nature on railroad right-of-way will be included in the construction and maintenance agreements between the LPA and the railroad.

The railroad is responsible for executing the necessary documents to cover the rights or interests required for the highway project, regardless of whether it owns the fee title or easement. Section 3.6.16 of the [IDOT Land Acquisition Policies and Procedures Manual](#) provides information on the compensation of railroad right-of-way. If condemnation is necessary, consult with the District BLRS and Land Acquisition. However, note that permission of the ICC is a prerequisite to the filing of the complaint for condemnation and motion for the right of immediate possession and the time required must be considered when scheduling the project.

10-3.02 Right-of-Way Statement

LPA projects built under the supervision of IDOT should not be advertised for letting until the necessary right-of-way has been secured. Material awards for day labor projects should not be made until the necessary right-of-way for construction has been secured. Authorization for the expenditure of MFT funds for day labor materials or work will not be given to the LPA until the right-of-way is clear. As soon as the right-of-way has been secured, the appropriate LPA official (e.g., county engineer, highway commissioner, city engineer, municipal official) is responsible for submitting a statement to that effect to the District BLRS.

10-3.03 Right-of-Way for a State Highway

If the right-of-way will be acquired for work on a State highway, the LPA must follow IDOT's procedures for land acquisition. If the acquired right-of-way is to be added to the state's highway system, full compliance with Title II and III of the *Uniform Relocation Assistance and Real Property Acquisition Act of 1970* is mandatory. Contact the District's Bureau of Land Acquisition to coordinate before proceeding.

10-3.04 Right-of-Way Procedures Versus Funding Type

If there is a possibility that a MFT funded project may be changed to a federally funded project, ensure that the federal procedures for land acquisition are followed; see [Section 22-3](#). If proper procedures were not followed, the project may not be eligible for federal funding.

10-3.05 Right-of-Way Markers

Right-of-way markers are required on all county improvements; their use is optional on township and municipal improvements.

10-4 UTILITY COORDINATION

10-4.01 Definition

A utility is defined as a privately, publicly, or cooperatively owned line, facility, or system for producing, transmitting, or distributing communications, cable television, power, electricity, light, heat, gas, oil, crude products, water, steam, waste, storm water not connected with highway drainage, or any other similar commodity. This includes any fire or police signal system or street lighting system, which directly or indirectly serves the public. The term utility also applies to a utility company inclusive of any wholly owned or controlled subsidiary. The term utility includes those facilities used solely by the utility that are a part of its operating plant.

10-4.02 Plan Preparation and Field Location of Utilities

Generally, it will be the responsibility of the planner and designer to attempt to locate, identify, and, to the maximum extent practical, avoid disturbance, or to provide for the relocation of all existing identified utilities. Send a copy of the preliminary plans to all affected utility companies in the early stages of the project.

In the design plans, show the type and nature of all utility facilities (mains and services) located within the limits of the right-of-way and indicate all owners, their addresses, and list the Joint Utility Locating Information for Contractors (JULIE) phone number (800-892-0123) or 811.

Show the utilities with the appropriate symbols. For guidance, see the [IDOT Highway Standards](#) and [IDOT CADD, Modeling and Deliverables Manual](#). The vertical and horizontal location of utilities, to be relocated or adjusted by their owners, need not be exact. However, if the utility were to remain in place or were relocated or adjusted by the contractor, vertical and horizontal dimensions must be shown to the accuracy provided by the utility owner.

When a utility owner fails or refuses to stake the utility or provide a written statement to the contractor, the Engineer will authorize the contractor to locate the facility with payment made in accordance with the [IDOT Standard Specifications](#). If a utility is located on right-of-way by permit, the cost of locating the utility should be at the utility owner's expense.

10-4.03 Estimates and Final Bills for Moving or Removing Utilities

Utility agreements are necessary when an improvement requires relocation or adjustment of utility appurtenances, except when existing permits provide for moving or removing a utility. [Section 5-7](#) provides guidance on a preparation of the utility agreement.

In preparing the cost estimate, consider the following:

1. District Review. The District must review and approve the cost estimate for the work before the work is started. When only MFT funds are involved and the total cost of the utility adjustment is less than \$5,000, neither an estimate of cost nor an audit of the final bill will be required.

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2. Additional Information. Indicate the age of the existing facility on the cost estimate. Include a staking diagram that shows the existing and proposed right-of-way lines.
3. Cost Details. Include the applicable items from the following list in the cost estimate:
 - a. cost of labor for moving or removing existing utility,
 - b. equipment expense for moving or removing existing utility,
 - c. cost of labor for installation,
 - d. equipment expense for installation,
 - e. cost of new material necessary for installation,
 - f. credit for extended service life,
 - g. engineering and overhead costs,
 - h. credit for betterments not required by road construction, and/or
 - i. material salvage from existing utility.

Provide a detailed estimate for Items 3a through 3e, 3h, and 3i showing the number of hours, rate, kind of equipment, items of material, etc. For Items 3f and 3g, provide detailed computations.

4. Labor Rates and Equipment Rental Rates. Indicate the labor rates and equipment rental rates used to determine the cost estimate.
5. Extended Service Life. Calculate the credit for extended service life (Item 3f.) as follows:

$$\text{Credit} = \frac{\text{Expired Service Life of Replaced Facility}}{\text{Total Estimated Service Life of Replaced Facility}} \times \text{Original Cost}$$

Where:

Expired Service Life of Replaced Facility = the number of years that the particular facility has been in service.

Total Estimated Service Life of Replaced Facility = the sum of the period of actual use plus the period of expectant remaining life.

Original Cost = the original cost of the facility being replaced.

6. Depreciation. If the facility is still in operation but has been fully depreciated by the utility company, the interested parties, by mutual agreement, need to reestablish the expectant remaining life of the replaced facility.
7. Public/Private Property. If portions of a facility to be adjusted are on both private and public right-of-way, proportion of the final cost between that on private property and that on public property in the same relations that the dollar values for each bear to the approved estimate.

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Where the utility company elects to construct an entirely new facility and retire (remove) the existing utility, include Items 3c, 3d, 3e, 3f, 3g, and 3h in the estimate. If only a portion of the existing facility will be removed, use Items 3a, 3b, 3g, and 3i for that portion of the work. Item 3f may be omitted if the facility involves only a utility line crossing of the highway, or a segment of a utility line that is less than 1 mile (1.6 km) in length, provided the replacement facility for the segment is not of greater functional capacity or capability than the one it replaces, and includes no betterments.

If the utility company elects to move the existing facility and replacement material is unfit for reuse, include Items 3b, 3e, 3g, and 3i in the estimate.

If desired, reimbursement to the utility company may be made on an agreed lump-sum basis, for adjustment work estimated to cost less than \$25,000. Also, a detailed final bill will not be required. If the reimbursement is a lump sum, include with the estimate of cost, a statement signed by the proper utility official indicating concurrence in the estimated cost as the figure for which the reimbursement will be made.

The expenditure of MFT funds may be authorized by the LPA for the full amount of the utility adjustment estimates at the time the estimates are approved. To facilitate payment, the LPA should submit a Request for Expenditure (Form [BLR 09150](#)) with the estimate to the District BLRS.

In approving the estimate of cost and reviewing of the final bill, IDOT will be governed by the policies set forth by FHWA and [Chapter 15](#).

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10-5 CONTEXT SENSITIVE SOLUTIONS (CSS)

See [Section 21-7](#) for CSS requirements.

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10-6 ACRONYMS

This is a summary of the acronyms used within this chapter.

AASHTO	American Association of State Highway and Transportation Officials
BBS	Bureau of Bridges and Structures
BCR	Bridge Condition Report
BDE	Bureau of Design and Environment
BLRS	Bureau of Local Roads and Streets
BSPE	Bureau of Safety Programs and Engineering
CBLRS	Central Bureau of Local Roads and Streets
CSS	Context Sensitive Solutions
DHV	Design Hourly Volume
EcoCAT	Ecological Compliance Assessment Tool
EDP	Economic Development Program
EO	Executive Order
ESR	Environmental Survey Request
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
ICC	Illinois Commerce Commission
IDNR	Illinois Department of Natural Resources
IDOA	Illinois Department of Agriculture
IDOT	Illinois Department of Transportation
IDS	Intersection Design Study
IHIS	Illinois Highway Information System
<i>ILCS</i>	<i>Illinois Compiled Statutes</i>
ILEPA	Illinois Environmental Protection Agency
IRIS	Illinois Roadway Information and Procedure
ISAS	Illinois State Archaeological Survey
LARS	Local Accident Reference System
LAWCON	Land and Water Conservation Fund
LBU	Local Bridge Unit
LPA	Local Public Agency
MFT	Motor Fuel Tax
MOA	Memorandum of Agreement
MPO	Metropolitan Planning Organization
NBIS	National Bridge Inspection Standards
NPS	National Park Service
NRCS	Natural Resource Conservation Service
OPP	Office of Planning and Programming
OSLAD	Open Space Lands Acquisition and Development
OWR	Office of Water Resources (IDNR)
PBDHR	Preliminary Bridge Design and Hydraulic Report
PE	Professional Engineer
PS&E	Plans, Specifications, & Estimates

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SCS	U.S. Soil Conservation Service
SGR	Structure Geotechnical Report
SHPO	State Historic Preservation Officer
SIMS	Structure Information Management System
SIP	Structure Information and Procedure
SN	Structure Number
SSA	Sole Source Aquifer
TARP	Truck Access Route Program
TBP	Township Bridge Program
TS&L	Type, Size, and Location
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency

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10-7 REFERENCES

1. *National Historical Preservation Act*
2. *Department of Transportation Act*
3. *Land and Water Conservation Act*
4. *Federal Aid in Fish Restoration Act*
5. *Federal Aid in Wildlife Restoration Act*
6. *Bald and Golden Eagle Protection Act*
7. Executive Order 11988 “Floodplain Management”
8. *Illinois Endangered Species Protection Act* ([520 ILCS 10/11\(b\)](#))
9. *Illinois Natural Areas Preservation Act* ([525 ILCS 30/17](#))
10. *Interagency Wetland Policy Act of 1989* ([20 ILCS 830/1](#) et seq.)
11. *Open Space Lands Acquisition and Development Act*, ([525 ILCS 35/1](#) et seq)
12. *The Illinois Historic Preservation Act* ([20 ILCS 3410/1](#) et seq.)
13. *The Illinois State Agency Historic Resources Preservation Act* ([20 ILCS 3420/1](#) et seq.)
14. *The Farmland Preservation Act* ([505 ILCS 75/1](#) et seq.)
15. *Illinois Environmental Protection Act* ([415 ILCS 5/1](#) et seq.)
16. *Illinois Groundwater Protection Act* ([415 ILCS 55/1](#) et seq.)
17. *Safe Drinking Water Act*
18. [Chapter 14](#) “Intersection Design Studies”, *BDE Manual*, IDOT
19. [Chapter 17](#) “Bicycle and Pedestrian Accommodations”, *BDE Manual*, IDOT
20. [Chapter 26](#) “Special Environmental Analyses”, *BDE Manual*, IDOT
21. [Appendix A](#) “Duplicated Regulations and Guidance”, *BDE Manual*, IDOT
22. [Appendix C](#) “Authority/Responsibilities”, *BDE Manual*, IDOT

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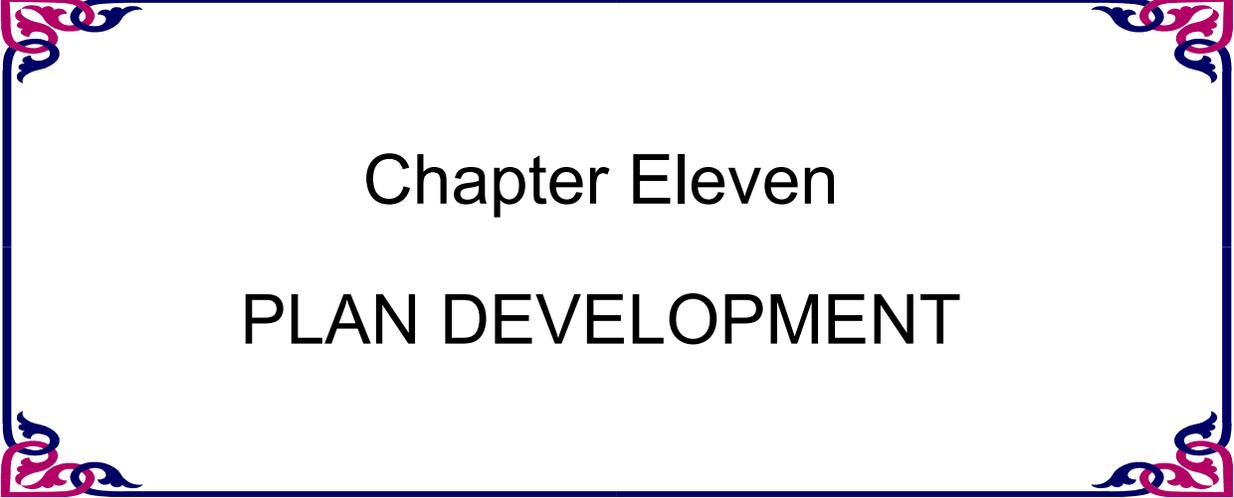
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23. [Chapter 4](#) “Local Roads and Streets Funding”, *BLRS Manual*, IDOT
24. [Chapter 5](#) “Agreements”, *BLRS Manual*, IDOT
25. [Chapter 6](#) “Bridge Inventory and Inspections”, *BLRS Manual*, IDOT
26. [Chapter 7](#) “Permits”, *BLRS Manual*, IDOT
27. [Chapter 15](#) “Documentation Review”, *BLRS Manual*, IDOT
28. [Chapter 20](#) “Special Environmental Studies”, *BLRS Manual*, IDOT
29. [Chapter 21](#) “Requirements for Public Involvement Programs”, *BLRS Manual*, IDOT
30. [Chapter 22](#) “Project Development”, *BLRS Manual*, IDOT
31. [Chapter 27](#) “Basic Design Controls”, *BLRS Manual*, IDOT
32. [Chapter 34](#) “Intersections”, *BLRS Manual*, IDOT
33. [Chapter 38](#) “Drainage Design”, *BLRS Manual*, IDOT
34. [Chapter 39](#) “Traffic Control Devices”, *BLRS Manual*, IDOT
35. [Chapter 44](#) “Pavement Design”, *BLRS Manual*, IDOT
36. [CADD, Modeling and Deliverables Manual](#), BBS and BDE, IDOT
37. [Drainage Manual](#), BBS, IDOT
38. [Geotechnical Manual](#), BMPR, IDOT
39. [Highway Standards](#), BDE, IDOT
40. [Land Acquisition Policies and Procedures Manual](#), BLA, IDOT
41. [Roadway Information and Procedure Manual](#), OPP, IDOT
42. [Structural Service Manual](#), BBS, IDOT
43. [Structure Information and Procedure Manual](#), OPP, IDOT

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11-1 PLAN PREPARATION

The local agency is usually responsible for preparing plans for local agency projects. Section 11-1 discusses the preparation of these plans for MFT and State funded projects.

11-1.01 Initiation

The designer is responsible for preparing the plans so that they can be accurately constructed in the field. To properly prepare the plans, the designer must have a well-defined scope of work. Form BLR 22120 can be used to define the design criteria for the project. Additionally, at the beginning of plan development, the designer should review the project commitment file when applicable. This file should contain all commitments made to IDOT, other agencies, and the public during the development of the project.

The local agency is responsible for the design of structures in its projects. The work is generally performed by either in-house staff or by consultants. However, under some circumstances, the Bureau of Bridges and Structures (BBS) may prepare structure plans for a county.

605 ILCS 5/4-101.4 provides that IDOT must prepare bridge design plans and specifications for a county when requested to do so by the county engineer. However, scheduling is critical and sufficient lead-time must be allowed to perform this work. The use of qualified consultants is encouraged for all design projects, particularly for those projects on expedited schedules. The following guidelines are provided for making requests to BBS for IDOT design assistance:

1. Request. The county should send a letter to BBS indicating the proposed scope and schedule and requesting the services of BBS. The Local Bridge Unit of BBS will review the request and advise the county if the services can be provided within the requested time frame.
2. Timing. The lead time required will vary according to the complexity of the structure and availability of BBS staff. The request notification should be made no later than at the submission of the Preliminary Bridge Design and Hydraulic Report (PBDHR), and significantly earlier for non-routine type structures. This should allow sufficient time for the county to procure a consultant to prepare the design if BBS cannot provide the requested services within the time period specified by the county.

11-1.02 Plan Types

Plans types may consist of one or more of the following:

1. Contract Plans. Contract Plans are typically prepared on 34 in x 22 in (D size) (864 mm x 559 mm) sheets that are considered full size plan sheets. Each sheet includes a borderline with a 2 in (51 mm) left-binding margin, 0.5 (13 mm) in right margin, and 1 (25 mm) in top and bottom margins. This provides a working area of 31.5 in x 20 in (800 mm x 500 mm).

Contract plans may also be prepared on 11 in x 17 in (B size) sheets. Each sheet includes a border line with a 1 in left-binding margin and 0.5 in right, top, and bottom margins. This provides a working area of 15.5 in by 10 in (394 mm x 254 mm).

2. Abbreviated Contract Plans. This type of plan is adaptable to special types of projects (e.g., minor emergency repairs, safety improvements, resurfacing, restoration, rehabilitation, pavement marking). Abbreviated Plans may be included in the contract proposal when prepared on 8.5 in x 11 in (A size) (216 mm x 279 mm) sheets. They typically consist of only the information needed to describe the scope and type of work.
3. Structure Plans. Structure Plans are Contract Plans for highway traffic and drainage structures that require the seal of a structural engineer. Where appropriate, Standard Plans for precast prestressed concrete deck beam bridges may be used as an alternative to a custom design. These plans must be used without a modification of the standard design, unless the modified plans are sealed by an Illinois licensed structural engineer.
4. Lighting Plans. These plans are part of the Contract Plans and include details of any proposed lighting construction. See Section 41-7 for design guidelines.
5. Traffic Signal Plans. These plans are part of the Contract Plans and include details of any proposed traffic signal construction. See Section 39-4 for design guidelines.
6. Right-of-Way Plans. These plans are the basic engineering documents for the acquisition of right-of-way and are developed to define the areas necessary to be acquired to construct and to maintain the highway improvement. They are drawn using the same size, type of sheets, and scale as the Contract Plans.
7. Utility/Railroad Plans. The utility and railroad companies use these plans to conduct the necessary relocations and/or improvements to their facilities. Typically, they are not included with the Contract Plans. When they are included, it is for information purposes only unless the work is to be performed by the contractor. If they are included in the Contract Plans, the drawings are the same size, type of sheets, and scale as the Contract Plans.

11-1.03 Plan Content

The designer should prepare the contract plans as simply as practical. Avoid the use of duplicated data and unnecessary cross-references. A description of the various plan sheets follows.

11-1.03(a) Contract Plans

Contract Plans should contain the following information:

1. Cover Sheet. A cover sheet is required for all plans. It identifies the project type, project location, type of funding, and other pertinent project information, and it provides a place for signature and seal of a licensed professional engineer, and for plan approval. It may also contain an index of sheets if an index is not included as a separate sheet.
2. Summary of Quantities. The Summary of Quantities should be placed on the Cover Sheet if space allows, otherwise, place it on a separate sheet following the Cover Sheet. The Summary of Quantities should show the appropriate quantity breakdowns based on the construction and safety work type, project location, funding sources, etc. Ensure that the wording of the pay items agree with the *IDOT Standard Specifications and Special Provisions*.
3. Typical Section Sheet. The following applies to the Typical Section Sheets:
 - Ensure that all applicable typical sections are provided. Note the title of the typical section and applicable stations directly below the typical section.
 - Include all General Notes applicable to the typical sections.
 - Note all applicable pay items on the typical section.
 - Include the structural pavement design information.
4. Plan/Profile Sheets. Include Plan and Profile Sheets prior to the Detail Sheets.
5. Traffic Control Plan. Provide for the handling of traffic through and/or around the work area. Where necessary, provide plan sheets showing lane closures and constrictions, construction staging, and detours.
6. Erosion and Sediment Control Plan. Graphically illustrate the locations of all temporary and permanent erosion and sediment control devices, including when they should be applied in relation to the sequence of construction operations.

7. Detail Sheets. Where necessary, details may be included. The following are typical examples of detail sheets:

- where the project involves a complex intersection,
- drainage details that are not covered in the *IDOT Highway Standards* or on the Plan and Profile Sheets,
- where there is a change in the roadway surface or base course width,
- Signing Plans, where applicable, and/or
- environmental mitigation plans (e.g., wetland plans), where required.

8. Traffic Signal Plans. Traffic Signal Plans should contain the following information:

- detail sheet showing the intersection layout and stationing,
- traffic volumes for all legs of the intersection,
- approaching and exiting travel lanes, turning lanes, shoulder, and median widths,
- proposed phasing diagrams,
- all roadway features that may affect the stationing or setback of poles (e.g., guardrail, barrier median, barrier curb, signs exceeding 50 ft² (4.5 m²), driveways, culverts, railroads, pipelines),
- the approximate height of any power and telephone lines over the roadway,
- the location of all lighting poles and luminaries,
- the proposed location for the controller cabinet and signal posts,
- electrical distribution and control system designs, include wiring diagrams, and
- drawings of equipment, foundations, and electrical details.

9. Lighting Plans. Lighting plans should contain the following information:

- stationing at appropriate intervals,
- travel way, shoulder, and median widths at frequent intervals,
- all roadway features that may affect the stationing or setback of poles (e.g., guardrail, barrier median, barrier curb, signs exceeding 50 ft² (4.5 m²), driveways, culverts, railroads, pipelines);
- the approximate height of any power and telephone lines over the roadway,
- the location of power poles from which service may be obtained,
- if traffic signals are present or proposed, the location of the power pole and control cabinet,

- the location of all poles and luminaries,
 - electrical distribution and control system designs, include wiring diagrams (e.g., control circuit diagram), and
 - drawings of equipment, foundations, and electrical details,
 - type of pavement,
 - indicate either residential or commercial,
 - all conduit and cable runs, including the size of the cable and conduit at each location, and
 - the calculated footcandles at the pavement surface.
10. Structure Plans. Structural plans should follow the requirements in the *BBS Bridge Manual*. Include the county engineer's certification and professional engineer seal or structural engineer's seal as appropriate.
11. Cross Sections. The following information should be included on the cross sections:
- Provide the proposed centerline pavement surface elevation on each cross section.
 - Label the side slope on the first and last cross section of each sheet and where there are changes in the slope. Show the side slope using a vertical to horizontal ratio (e.g., 1V:3H).
 - Show the cut and fill areas, in square feet (square meters), above or beside each cross section.
 - Provide a full section for each crossing culvert pipe with elevations.
 - Include guardrail requirement, where applicable.
12. Highway Standards. See Section 11-4 for a discussion on *IDOT's Highway Standards*.

11-1.03(b) Utility Plans

Utility Plans should include the following details:

- the type and nature of all existing utility facilities (e.g., mains and services) located within the limits of the right-of-way,
- all owners and their addresses,
- existing and proposed right-of-way lines,
- any temporary adjustments,
- the location of the final utility facility and cross sections for all buried utilities, and

- the sequence and schedule of adjustments, relative to other construction activities.

11-1.03(c) Railroad Plans

Include the following information to the railroad plans:

1. At-Grade Crossings. For at-grade crossings, include the following:

- the number of mainline and subsidiary tracks,
- the type and width of crossing,
- the angle of crossing,
- the general condition of the existing crossing,
- the existing and proposed warning devices,
- the number and speeds of passenger and freight trains,
- the anticipated construction date,
- the current highway ADT for existing crossing,
- the 10 year projected highway ADT for proposed crossing,
- the type of proposed rail to be used in the project,
- the distance between existing and proposed crossings, and
- any abandoned crossing.

2. Grade Separations. For grade separations, include the following:

- the vertical clearance between the highway or railroad rails and bottom of the superstructure,
- a plan and profile of the track and of the proposed highway improvement for 500 ft (150 m) each way from the intersection of the highway and railroad centerlines,
- the flow line and cross section of existing and proposed drainage structures involved,
- typical highway and track cross sections,
- all railroad and highway right-of-way lines,
- the distance to a railroad Mile Post,
- the location and height of wire lines on the railroad right-of-way,
- all details for any track adjustments or runaround tracks proposed,
- detour road-crossing details and proposed temporary warning devices, including a plat and description of temporary easement, if required,

- detailed plans of the structure, and
- all other construction data pertinent to the project.

11-1.03(d) Right-of-Way Plans

See the *IDOT Bureau of Land Acquisition Manual* for information concerning the preparation of Right-of-Way Plans.

11-1.04 Drafting Guidelines

Project drafting is typically performed using CADD. The *IDOT CADD Roadway Drafting Reference Guide* (CADD Guide) provides information on the use of CADD. However, manual drafting is still being used on some projects, especially small, simple projects. Section 63-3 of the *BDE Manual* provides general information on the drafting criteria for preparing plans, including:

- dimensioning guidelines for plan sheets,
- guidelines for using abbreviations,
- use of symbols on the plan sheets and cell libraries,
- guidelines for capitalization (e.g., use upper case for all text shown in the plans);
- stationing guidelines,
- guidelines for showing superelevation rates, grades, angles, etc., on the plans,
- guidelines for sheet numbering,
- recommended drawing scales,
- sheets sizes,
- sheet organization, and
- data plotting (CADD or manual drafting).

11-2 PLAN REVIEW**11-2.01 Preliminary Plan Review****11-2.01(a) General Review**

The purpose of the preliminary plan review is to ensure the plans are in conformance with the design criteria presented in this *Manual* and other IDOT documents and is appropriate for the site. The preliminary plan review will occur after the designer has essentially completed the plans including the cover sheet, plan and profile sheets, detail sheets, cross section sheets, determination of pay items, special provisions, etc. During this stage, the designer should address any utility conflicts and determine if adjustments and/or agreements are necessary. This also may include a plan-in-hand field review, if deemed necessary. This is the best design stage for IDOT and other agencies that may have a role in the project to conduct a major review of the plans. All major content comments must be made during this review period. All plan commitments of record should be incorporated into the preliminary plans. IDOT and agencies that have made commitments on the project should review the preliminary plans to ensure that the plans comply with their commitments.

For major projects, more than one plan review may be necessary to avoid having to make substantial changes late in the plan preparation process.

11-2.01(b) Bridge Plans

The Local Bridge Unit within the Bureau of Bridges and Structures (BBS) will be responsible for advising, reviewing, and/or approval of the local agency bridge plans.

For certified bridge/box culvert plans, a preliminary review is not required. For complex and unusual designs, a preliminary submittal should be made for review. The stage in the plan development for this review should be determined after the review of PBDHR. For more complex projects, additional reviews may be necessary. Contact the Local Bridge Unit of BBS to discuss the need for preliminary reviews.

11-2.01(c) Lighting Projects

1. Impact on State Highway. The local agency shall submit pre-final plans and specifications that involve lighting improvements along a State highway or lighting improvements that impact a State highway (i.e. State/local intersection, overpasses/underpasses, frontage road, etc.) to the district. See Chapter 56 of the BDE Manual as guidance for highway lighting and design.

Except in Region 1, District 1, the district will submit pre-final plans and specifications for highway lighting improvements to the Central BLRS. Central BLRS will forward the pre-final plans and specifications to the Electrical and Mechanical Unit of BDE for their

review and approval. Central BLRS will forward the comments from the BDE review to the district.

Final Plans, Specifications & Estimate will be forwarded to the Electrical and Mechanical Unit of BDE for a final review prior to letting the project.

Region 1, District 1 will review and approve plans and specifications for highway lighting improvements for local agencies with Region 1, District 1.

2. No Impact on State Highway. Highway lighting improvements along non-State highways that do not impact a State highway may be reviewed by the Department if requested by the local agency; however, the local agency must comply with any recommended changes as a result of the requested review. The procedures for review of lighting plans that impact state highways shall be followed.

11-2.01(d) Traffic Signal Plans

The local agency is required to submit plans and specifications that involve traffic signal improvements at intersections with State highways. Except in Region 1 District 1, the district will then forward the plans and specifications to the Central BLRS for review by the Central Bureau of Operations. Projects that involve traffic signal improvements at intersections with non-State highways will be sent for review by the Central Bureau of Operations when PS&E is submitted to the Central BLRS for letting. The Central Bureau of Operations will review the plans and specifications for compliance with the ILMUTCD and IDOT traffic signal requirements.

11-2.02 Pre-final Plan Review

Pre-final plans are essentially the same as the final plans. If there are only minor review comments on the preliminary plans, these plans can then be finalized and forwarded to the district for approval before the project is scheduled for letting. Prior to this review, the designer should incorporate and/or address all comments made during the preliminary plan review.

The district will review the pre-final plans to ensure that:

- its comments from the preliminary plan review have been incorporated into the plans or addressed satisfactorily in the transmittal correspondence,
- the changes from the preliminary plans do not conflict with any commitments, and
- the plans still conform to the design criteria.

11-2.03 Final Plan Review

The purpose of the final plan review is to ensure that reviewer comments from the pre-final plan review have been addressed. Revisions or changes should not be necessary.

11-2.04 Final Plan Approval and Release

All plans must be approved by the appropriate local highway department or departments and released for bidding by the IDOT District Office. Figure 11-2A shows the signature block that should be used on all local highway plan cover sheets.

AGENCY RESPONSIBLE FOR LETTING	
Approved	<div style="text-align: right;">_____ (DATE)</div> <hr style="border: 0; border-top: 1px solid black;"/> <div style="text-align: right;">_____ (SIGNATURE)</div> <hr style="border: 0; border-top: 1px solid black;"/> <div style="text-align: right; font-size: small;">Local Agency, Position</div>
Passed	<div style="text-align: right;">_____ (DATE)</div> <hr style="border: 0; border-top: 1px solid black;"/> <div style="text-align: right;">_____ (SIGNATURE)</div> <hr style="border: 0; border-top: 1px solid black;"/> <div style="text-align: right; font-size: small;">District # Engineer of Local Roads & Streets</div>
Releasing for Bid Based on Limited Review	<div style="text-align: right;">_____ (DATE)</div> <hr style="border: 0; border-top: 1px solid black;"/> <div style="text-align: right;">_____ (SIGNATURE)</div> <hr style="border: 0; border-top: 1px solid black;"/> <div style="text-align: right; font-size: small;">Deputy Director of Highways, Region # Engineer</div>

Note: If multiple local agencies are involved in a project, each local highway department must approve the plans. An additional approved section needs to be added.

PLAN APPROVAL AND RELEASE SIGNATURE BLOCK

Figure 11-2A

11-3 SPECIFICATIONS AND SPECIAL PROVISIONS

11-3.01 General

The IDOT publications *Standard Specifications for Road and Bridge Construction (IDOT Standard Specifications)*, the *Supplemental Specifications and Recurring Special Provisions*, contract special provisions, and plans all are essential parts of the contract. They should complement each other and provide complete instructions for the work to be accomplished. If a discrepancy exists among these documents, the relationships as described in the *IDOT Standard Specifications* will apply.

11-3.02 Specifications

11-3.02(a) *IDOT Standard Specifications*

The *IDOT Standard Specifications* outline the general requirements and covenants applicable to all highway construction improvements as well as provisions relating to materials, equipment, and construction requirements for individual items of work on road and bridge construction projects awarded by IDOT. The *IDOT Standard Specifications* are intended for general and repetitive use. They provide IDOT criteria for:

- the scope of work,
- control of work,
- control of materials,
- legal regulations and responsibilities to the public,
- contract execution and progress, and
- measurement and payment of contract items.

The *IDOT Standard Specifications* are published in book form and are updated every 3 to 4 years. They are approved by the Specifications Committee, which acts in an advisory capacity to the Director of Highways. The Specifications Committee includes permanent representatives from the Bureaus of Bridges and Structures, Design and Environment, Construction, Materials and Physical Research, Operations, Local Roads and Streets, District One, FHWA, and the Illinois State Toll Highway Authority. The other eight downstate districts hold three seats on a 3-year rotating basis. The Director of Highways chooses the chairperson for a 4-year term. The Standards and Specifications Engineer in the Bureau of Design and Environment is the recording secretary.

Suggested changes to the *IDOT Standard Specifications* initiated by local highway authorities or the district should be submitted to the Central BLRS Policy and Procedures Unit for consideration by the Specification Committee.

Use of the *IDOT Standard Specifications* is required for local agency projects administered by IDOT. They may also be used for other local agency projects and private work.

11-3.02(b) Supplemental Specifications

Supplemental Specifications are additions, deletions, and/or revisions to the *IDOT Standard Specifications* that have been adopted by IDOT since the last printing of the *IDOT Standard Specifications*. They require the approval of the Specification Committee. They are automatically considered a part of the *IDOT Standard Specifications*. Supplemental Specifications are contained in the *Supplemental Specifications and Recurring Special Provisions* that is revised and printed in book form each year.

11-3.03 Special Provisions

11-3.03(a) General

Special provisions are additions or revisions to the *IDOT Standard Specifications* documenting conditions and requirements for special situations. A special provision should not modify another special provision.

11-3.03(b) Recurring Special Provisions

Recurring Special Provisions are special provisions that are commonly used on many projects. Unlike the *IDOT Standard Specifications* and the Supplemental Specifications, Recurring Special Provisions do not require the approval of the Specifications Committee. Recurring Special Provisions are printed annually in the *Supplemental Specifications and Recurring Special Provisions* and are included in a bidding document and contract by referencing their applicability through the use of a check sheet. The designer is responsible for checking the appropriate Recurring Special Provisions for the project and including the check sheet with the bidding documents.

11-3.03(c) Contract Special Provisions

Contract Special Provisions are the special provisions that the designer includes with the proposal that is submitted with the plans to the district. They may include one or more of the following:

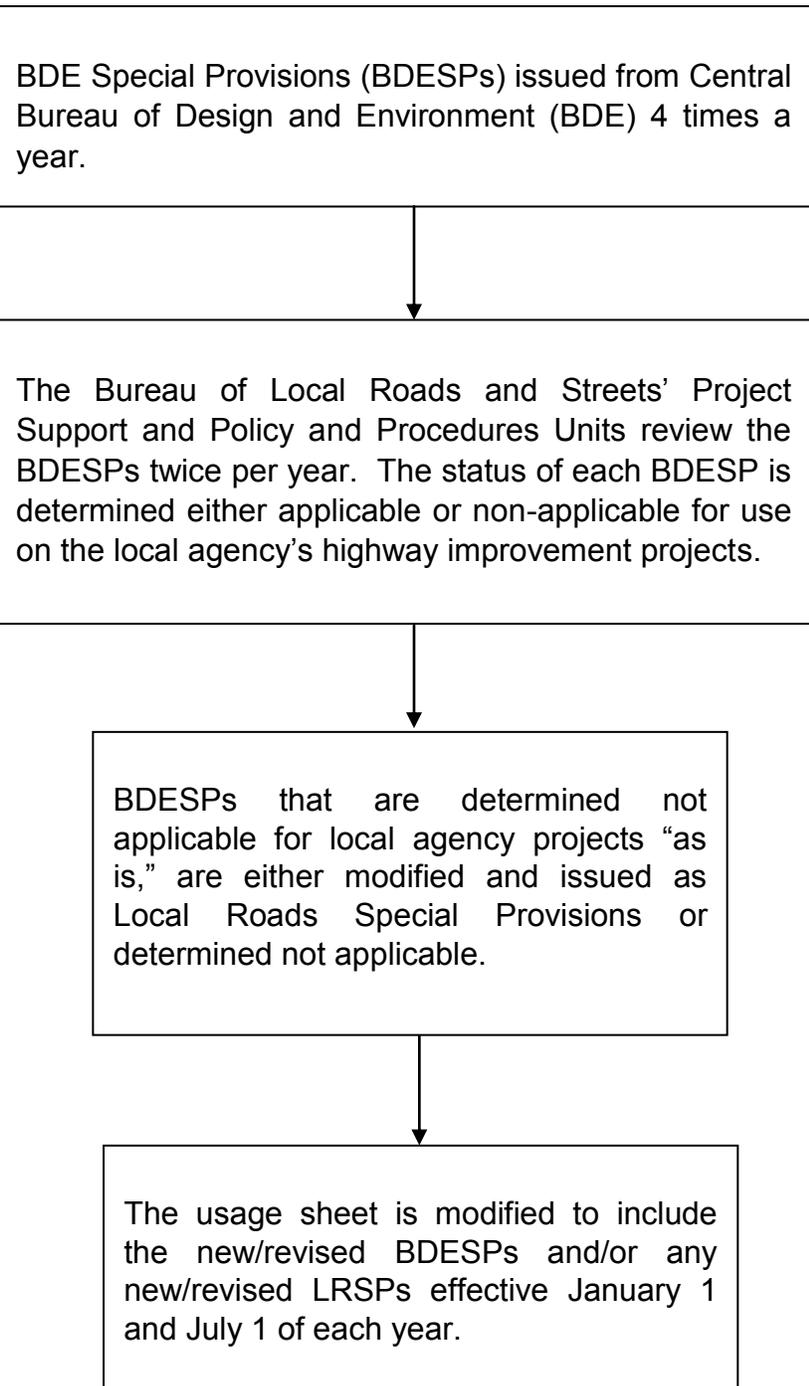
1. Bureau of Design and Environment Special Provisions (BDESPs). These special provisions are contract special provisions issued quarterly by BDE for statewide use. They are issued through BDE effective beginning with a specific letting. The Central BLRS reviews a list of BDESPs and the usage guide semi-annually to local agencies and consultants. The full packet is available for download from IDOT's website. The

designer is responsible for including the appropriate BDESPs into the proposal for each project.

Figure 11-3A presents the procedure for distributing special provisions from BDE to the Central BLRS.

2. Guide Bridge Special Provisions (GBSPs). Guide Bridge Special Provisions are contract special provisions issued by the Bureau of Bridges and Structures that may have changes from letting to letting. The designer is responsible for including the appropriate GBSPs into the proposal for each project. These special provisions are available on the IDOT website.
3. Local Roads Special Provisions (LRs). Local Roads Special Provisions are contract special provisions issued for statewide local agency use. These special provisions are written to cover the needs of local agencies when they differ from those of the State and are designated with an "LR" followed by a number which references the section of the *IDOT Standard Specifications* that the LR Special Provision revises (e.g., LR 302 revises Section 302 of the *IDOT Standard Specifications*). LR Special Provisions are available for downloading from the IDOT website. The designer is responsible for including the appropriate LR Special Provisions into the proposal for each project.
4. District Special Provisions. District Special Provisions are contract special provisions addressing concerns unique to a district (e.g., material shortages, labor agreements). Prior to general insertion into contract proposals, the district approves these special provisions. They may be obtained from the district office. The designer is responsible for including the appropriate District Special Provisions into the proposal for each project. The district may also recommend these special provisions for consideration as BDE Special Provisions or Local Roads Special Provisions.
5. Project Specific Special Provisions. Project specific special provisions are contract special provisions written by the designer to address a unique situation on a project. These special provisions should not be used in more than one project. Project specific special provisions are required wherever a project contains work, material, unique sequence of operations, or any other requirements that are necessary for the completion of the project but are not included in the *IDOT Standard Specifications*, *Supplemental Specifications* and Recurring Special Provisions, BDE Special Provisions, Guide Bridge Special Provisions, Local Roads Special Provisions, or District Special Provisions. These special provisions should not be prepared to personalize the work to the ideas of the designer or to place emphasis on certain aspects of a project. The practice of emphasizing particular procedures and requirements already stated in the *IDOT Standard Specifications* is more properly accomplished at the preconstruction conference. The designer is responsible for writing and including the appropriate Project Specific Special Provisions into the proposal for each project.

The district may consider these special provisions for District Special Provisions or recommend them for LR Special Provisions or BDE Special Provisions.

**DISTRIBUTION OF SPECIAL PROVISIONS****Figure 11-3A**

The *IDOT Standard Specifications* and Supplemental Specifications are included in the contract documents by referencing the applicable editions in the first paragraph of the special provision portion of the bidding document and contract. Recurring Special Provisions are included through the use of a check sheet. Contract Special Provisions are included in the documents provided to the contractor.

11-3.04 Special Provisions Preparation

11-3.04(a) Preparation Steps

The designer should use the following steps when preparing a special provision:

1. **Determine Need.** The designer should review the existing specifications, standards, details, special provisions, and plans to ensure that there is a need for the special provision. If the topic is not adequately covered in one of the other documents, only then should a special provision be prepared. The purpose of the special provision should be clear. Some examples are:
 - changes or clarifications to the general requirements or covenants of the construction contract,
 - changes or clarifications to the material or equipment requirement,
 - changes or clarifications to a construction procedure,
 - establishing or modifying a pay item, and/or
 - describing a new or experimental procedure or product.

If an existing standard specification includes the information necessary for a project, but is not clear, do not rewrite the specification into a special provision. Send a detailed recommendation to the district for clarification. Additionally, if it is required to only revise or add new information to an existing standard specification, do not rewrite it. Use one of the following suggestions in wording this type of special provision:

- “Work shall be in accordance to Section _____ except for _____” or
 - “Revise the second sentence of Article _____ to read _____”.
2. **Research.** The designer should research the topic so that complete and detailed information is available before writing the special provision. If the designer determines this special provision will be applicable in more than one project, submit the special provision to the district and/or Central BLRS for consideration as a District Special Provision, Local Roads Special Provision, or Inserted Special Provision.
 3. **Format.** Prepare special provisions in the same manner as the *IDOT Standard Specifications*. Section 11-3.04(b) presents the format that should be used.

4. Writing the Special Provision. Once all the research has been completed, the first draft can then be prepared. The designer may want to review existing special provisions for guidance. The following are several grammatical recommendations for preparing special provisions:
 - a. Wording. Write in the passive voice.
 - b. Sentences. Prepare the special provision using simple language and words. Keep words and sentences short (i.e., 20 words or less), unless complexity is unavoidable.
 - c. Paragraphs. Limit paragraphs to three or four sentences.
 - d. Terminology. Words used should be consistent with their exact meaning. Use the same word throughout; do not use synonyms. Avoid any words that have a dual meaning. Section 11-3.04(d) presents the recommended terminology that should be used. Omit the use of extraneous words and phrases.
 - e. Pronouns. Avoid the use of pronouns, even if this results in frequent repetition of nouns.
 - f. Punctuation. Carefully consider the punctuation using the minimum number of punctuation marks consistent with the precise meaning of the language. Ensure that the meaning of any sentence is not in doubt.
 - g. Parentheses. Avoid the use of parentheses (). Instead, use commas or rewrite the sentence.
 - h. Numbers. It is unnecessary to write numbers both in words and figures. Write all numbers associated with abbreviated units numerically (e.g., 2 m, 8 mph, 32 kPa). Write fractions as decimals. Decimals less than one and greater than -1 should be preceded by a zero. Numbers within charts and tables are always written as numbers.

For numbers not associated with an abbreviated unit, use the following:

- numbers from zero to ten will be spelled out (e.g., ten hours, two-way radio, seven tires);
- numbers greater than ten will always be written as numbers (e.g., 12 hours, 50 cycles, 11 percent); and
- numbers less than one will be written as decimal numbers except inches will be written as fractions (e.g., 0.2 acre, 300 mm, 3/4 in).

- i. Dates and Times. Use numbers for time, day, and year. Use the full name of the month.
5. Reviewing. The designer should review the previously completed paragraphs as succeeding ones develop. Where necessary, redraft preceding paragraphs to reflect later thoughts.
6. Submissions. The designer should prepare and distribute the preliminary draft of the special provisions to the district for review and comment as soon as practical. The designer will be responsible for incorporating the reviewers' comments into the final draft.

11-3.04(b) Format

Prepare special provisions in the same format as the *IDOT Standard Specifications*. The sections of the special provision that should be addressed, when needed, include:

1. Description. Provide a brief narration of the work to be performed with references to specifications, plans, or other special provisions that further define the work. The description usually begins with "This work shall consist of..." Only mention the major aspects of the work.
2. Materials. Designate the materials to be used in the work and establish their requirements. Delineate complete specifications of the properties of each material and the test method. References may be made to AASHTO, ASTM, or other recognized standards/procedures. Where a material is already specified in the *IDOT Standard Specifications*, reference the appropriate article or section with any necessary changes stated. Do not reproduce a standard specification in its entirety to revise one or two elements.

The use of proprietary specifications is generally prohibited by the Illinois Compiled Statutes. However, the statutes do allow, under certain conditions, proprietary items to be used. Where the designer has a need for a proprietary specification, see Section 11-3.05(d) or contact the district for guidance.

3. Equipment. Designate the equipment to be used in the work and establish its requirements. Where a piece of equipment is already specified in the *IDOT Standard Specifications*, reference the appropriate article or section with any necessary changes stated. Do not reproduce a standard specification in its entirety to revise one or two requirements.
4. Construction Requirements. Describe the sequence of construction operations or the desired end product. Only use the presentation for the sequence of construction operations if it is critical to achieve the desired result.

5. Method of Measurement. Describe the units of measurement for each pay item and where the item will be measured (e.g., in place, in truck, at plant). Designate any modifying factors and other requirements needed to establish a definite measured unit.
6. Basis of Payment. Describe the units and the pay item name for which payment will be made. Note the entire pay item name in upper-case letters. Do not include a listing of all elements of the work.

11-3.04(c) Guidelines

In addition to the above sections, the following presents several guidelines the designer should consider when developing special provisions:

1. Completeness. The designer should ensure that the essentials have been included, each requirement is definitive and complete, and the *IDOT Standard Specifications* have not been duplicated. The special provision should not be vague.
2. Clarity. To ensure clarity, the designer should:
 - clearly delineate the method of measurement and basis of payment,
 - make a clear, concise analysis of the job requirements for general conditions, types of construction, and quality of workmanship. Do not leave the contractor in doubt on what they will be required to do,
 - give directions, never suggestions,
 - never assume the contractor knows what is meant,
 - avoid conflicting or ambiguous requirements. Every specification should have only one meaning, and
 - never conceal difficulties or hazards from the contractor. This avoids conflict during the project.
3. Conciseness. Each special provision should be as concise as practical. When reviewing the special provision, the designer should consider the following suggestions:
 - where practical, refer to an existing specification and delineate only the portion changed,
 - avoid duplications between different special provisions and any related contract documents,
 - do not give reasons for a specification requirement,
 - do not provide additional information that is unnecessary for the preparation of bids and the accomplishment of the work,
 - once stated, do not repeat any instruction, requirement, direction, or information,

- use cross-references, wherever practical,
 - write the specification in the positive form (e.g., use “will” instead of “will not”), and
 - do not include instructions to the local agency or IDOT in the specification.
4. Correctness. To ensure that the special provision is written correctly, the designer should review the following:
- do not include items that cannot be required or enforced,
 - ensure that the specification does not punish the contractor or supplier,
 - ensure that the specification does not unintentionally exclude an acceptable product, construction method, or any equipment,
 - ensure that the provision does not change the basic design of the item,
 - minimize the inclusion of work incidental to a pay item,
 - do not specify impossibilities (The practical limits of workers and materials must be known and recognized),
 - specify standard sizes and patterns wherever practical,
 - use best available technology,
 - ensure that the contractor will not be held responsible for the possible inaccuracy of information furnished by the local agency and/or IDOT,
 - ensure sufficient attention has been provided to assessing the durability or reliability of the material or procedure discussed. The use of recognized standards should be referenced to ensure that the specified performance or characteristics are achieved. If not, define the testing criteria completely and accurately,
 - make a careful, critical examination of manufacturers’ or trade associations’ recommendations and require supporting evidence,
 - requirements should be stringent (A strong requirement can be relaxed more economically, when the need arises. Weak specifications cannot be strengthened without increasing cost and generating claims),
 - ensure that the provision gives directions that are consistent with the standard practice currently used by IDOT or the local agency, and
 - ensure that the special provision only modifies the *IDOT Standard Specifications* and not other special provisions.

11-3.04(d) Terminology

Phraseology and terminology used in the *IDOT Standard Specifications* also should be used in the special provisions. In addition, the designer should consider the following:

1. Abbreviations. Generally, avoid abbreviations. However, they may be used if they are defined and the definitions are consistent with the accepted meanings. Always use the abbreviations for the terms listed in the *IDOT Standard Specifications*.
2. Amount, quantity. Use “amount” when writing about money only. When writing about measures of volume, use “quantity.”
3. Any, all. The word “any” implies a choice and may cause confusion. In place of “any,” the term “all” should be used.
4. Article. Capitalize “Article” when referring to an article of the *IDOT Standard Specifications*.
5. As per. Do not use “as per”; instead, use “according to.”
6. As shown on the plans. Use “as shown on the plans” instead of “as shown in the plans,” “as detailed on the plans,” “as shown on the detail sheets,” “as shown on the highway standards,” or “as shown on sheet (*number*) of the plans.”
7. Contractor. Use the word “Contractor” in place of the word “bidder” when writing special provisions for construction. “Bidder” should only be used for proposals. Contractor should always be capitalized.
8. Course. Use “course” for layers, not for “lifts.”
9. Day. Define the type of day to be used (e.g., calendar day, working day).
10. Department. Use “Department” in place of “Illinois Department of Transportation.” Department should always be capitalized. Do not use the IDOT acronym in the contract documents.
11. Included In. Use “included in the cost” instead of “incidental to.” The price of all work will be factored somewhere into the contract. Bid prices are generally lower when the contractor knows where to include costs.
12. Pay Item. Use “pay item” instead of “bid item.”
13. Proposal. Do not use the word “proposal” when the word “contract” is intended. The term “proposal” only should be used to describe requirements during the bidding process.
14. Said. Do not use “said pipe,” “said aggregates” but, instead, use “the pipe,” “the specified aggregates.”

15. Same. Do not use “same” to replace a pronoun like “it” or “them” standing alone, such as “connected to same,” “specified for same,” or “same will be given consideration.” The sentence should be rewritten to clearly describe what is meant.
16. Section. Capitalize “Section” when referring to a section in the *IDOT Standard Specifications*.
17. Shall, will. Use the word “shall” when specifying the responsibilities of the contractor. Use the word “will” when specifying the responsibilities of IDOT (“we will,” “they shall”).
18. State. The term “State” is preferred over the “State of Illinois” or “Illinois.”
19. Such. Do not end a sentence with the word “such.” “Such” usually means “of this or that kind,” or similar to something stated. Instead, state that which is actually meant, or name the work to be completed or rephrase the sentence.
20. The. Do not eliminate “the” for brevity.
21. Unless Otherwise Specified. Do not use the term “unless otherwise specified.” In special provisions, the designer should know if something will be “otherwise specified.” In the *IDOT Standard Specifications* everything can be “otherwise specified” in the plans or through Contract Special Provisions.
22. Unit Price. Use “contract unit price” instead of “contract unit price bid.”

11-3.04(e) Unit Abbreviations

The *IDOT Standard Specifications* and the Supplemental Specifications provides a list of unit abbreviations adopted for the *Standard Specifications* and the *Supplement Specifications and Recurring Special Provisions*.

11-3.05 Specifying Materials

11-3.05(a) Specifying Aggregates for Surfaces and Bases

The local agency may specify in a special provision a surface or base course that provides for the use of either crushed or uncrushed aggregate. It is permissible to also allow local materials in addition to the materials specified in the *IDOT Standard Specifications* for a particular surface or base.

11-3.05(b) Specifying Seal Coat or Blotter Aggregate

Special provisions for seal coats and blotter treatments may provide for a specific type of aggregate (e.g., gravel, crushed stone). Either material, or one material to the exclusion of the

other, may be specified. If one material will be specified to the exclusion of the other, provide a special provision to define the type and gradation of the desired aggregate material. It is permissible to allow an approved local gradation in addition to those specified in the *IDOT Standard Specifications* for a particular surface treatment.

11-3.05(c) Specifying Bituminous Materials

It is permissible, where the *IDOT Standard Specifications* permits the use of two or more types of bituminous materials, to specify one type to the exclusion of the others, or separate bids may be taken on two or more types. In the latter case, the special provision may specify that the awarding agency reserves the right to make the award to the lowest responsible bidder for any type.

11-3.05(d) Patented or Proprietary Items

Proprietary items may be included in a contract if:

- standard items are also included and the contractor has the option to select either the standard or the proprietary method of construction or maintenance (605 ILCS 5/9-110), or
- where they are essential to ensure compatibility with an existing system.

Document the reason for specifying the product in the project files patented and/or proprietary items shall be approved by IDOT's Bureau of Materials and Physical Research's Products Evaluation Unit. The Products Evaluation Circular is available on IDOT's website.

11-3.05(e) Guaranty/Warranty Clauses

Except as noted below, guaranty or warranty clauses that require the contractor to guarantee or warrant materials and workmanship will not be approved. This restriction is not intended to prevent local agencies from benefiting under any guaranty or warranty given as a customary trade practice for any material or product purchased. Exceptions to this restriction are as follows:

5. Electrical or Mechanical Equipment. Contracts that involve furnishing and/or installing electrical or mechanical equipment may include contract clauses that require:
 - Manufacturers' warranties or guarantees on all electrical and mechanical equipment, consistent with those provided as customary practice.
 - Contractors' warranties or guarantees providing for satisfactory in-service operation of the electrical and mechanical equipment and related components for a period not to exceed 6 months following project acceptance.

6. Separate Non-Participating Pay Items. Guaranty/warranty clauses that are incorporated into the contract as separate non-participating pay items.

11-3.06 Experimental Projects or Features

An experimental feature may be a material, equipment item, process, method, traffic operational device, or other feature that has not been sufficiently tested under actual conditions to merit acceptance without reservation in normal highway construction or which has been accepted, but needs to be compared with alternative acceptable features to determine relative merits and cost effectiveness. The *Products Evaluation Circular*, which is a useful document for determining the status of new product proposals in Illinois, can be found on IDOT's website.

For an experimental feature to be authorized or approved for inclusion in a project, an Experimental Features Work Plan must be prepared for approval by the Bureau of Materials and Physical Research (BMPR). The work plan must be prepared and submitted through the district, prior to submission of PS&E. This work plan should contain or reflect the following items:

- A project location map.
- The experimental feature and the method of construction, as well as the materials, process, technique, and/or equipment necessary that is a departure from normal procedures.
- The objective of the experiment in terms of the purpose, how the results might be used, and the benefits (e.g., savings in time, money, and lives).
- A suggested evaluation process including the frequency of inspection. A control section should be provided unless the nature of the experiment is such that a control section would serve no purpose.
- The estimated difference in cost. Note that higher costs are normally anticipated; however, the experimental feature should not be excluded for this reason.
- Plan drawings and any special provisions pertaining to the experimental feature that would be beneficial.
- The estimated time or duration necessary for evaluation.
- Reference to any research on the subject.

Upon receipt of the work plan, the district will forward the work plan with a recommended action to the Central BLRS. Upon receipt by the Central BLRS, the appropriate Project Development Engineer will review the proposal. After review, the proposal will be discussed with the Bureau of Materials and Physical Research (BMPR). If BMPR accepts the project, the Project Development Engineer will inform the district of approval by memorandum. The district will notify the local agency of the approval.

BUREAU OF LOCAL ROADS & STREETS
PLAN DEVELOPMENT - MFT and State Funds

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Nov 2007

If BMPR recommends the project but does not have the manpower to evaluate it, the project may still be approved if the local agency, the district, or some other acceptable party agrees to evaluate the project and maintain the records. If approved in this manner, the Project Development Engineer will notify the district by memorandum as detailed above. The local agency will be responsible for submitting annual and final reports to BMPR through the district. Assistance in the preparation of work plans, evaluation records, and final reports is available from the Central BLRS Policy and Procedures Unit.

11-4 HIGHWAY STANDARDS

The *IDOT Highways Standards* are developed by the Bureau of Design and Environment (BDE) in collaboration with other bureaus and are approved by BDE for general use. Districts and local agencies may submit ideas and details for the *IDOT Highways Standards* to BDE.

The *IDOT Highways Standards* provide details on various design elements that are consistent from project-to-project. They provide information on how to construct the various design elements. Design data and/or specifications are not included on the highways standards. The designer is responsible for providing a copy of the standard in the proposal for local-let projects.

11-5 QUANTITY ESTIMATES

In addition to preparing clear and concise plans, as described in Section 11-1, the designer needs to compile an accurate summary of the project quantities. This information leads directly to the Engineer's Estimate, which combines the computed quantities of work and the estimated unit bid prices. An accurate summary of quantities is critical to prospective contractors interested in submitting a bid on the project. Chapter 64 of the *BDE Manual* presents guidelines on calculating quantities for highway construction projects.

11-5.01 Guidelines for Preparing Quantity Computations

When preparing quantity computations, the designer should consider the following guidelines:

1. Specifications. Cross check all items against *the IDOT Standard Specifications* and the *Supplemental Specifications and Recurring Special Provisions* to ensure that the appropriate pay items, methods of measurement, and basis of payment are used. If an item is not covered in the *IDOT Standard Specifications* or *Supplemental Specifications and Recurring Special Provisions*, a special provision, plan note, or detail must be included in the contract documents to cover the item. Only the official name and description should be used in the contract documents, special provisions, and summary of quantities.
2. Rounding. The quantity of any item provided in the plans should check exactly with the figure on the computation sheets. Indicate any rounding of the raw estimated figures on the computation sheets. Unless stated otherwise, no rounding of the calculations should be done until the value is incorporated into the summary of quantities sheet.
3. Significant Digits. When calculating quantities, carefully consider the implied correspondence between the accuracy of the data and the given number of digits.
4. Cost Estimate. Only use the total values from the summary of quantities sheets to develop the cost estimate. Show all items described in the plans that will be included in the cost estimate on the plan sheets. Section 11-6 provides the criteria for preparing construction cost estimates. These quantities are used to determine the final Engineer's Estimate.
5. Estimating Forms/Computation Worksheets. Blank copies of the estimating forms and computation worksheets are available from BDE.

11-5.02 Computer Estimates

For most projects, the computer can be used to develop some of the quantity estimates. For small projects, it may be more efficient to manually calculate the quantities for all elements, including earthwork. Each software package (e.g., GEOPAK) uses different procedures for

determining how and which quantities can be estimated. The designer should give special consideration to how the plans are prepared on the computer (e.g., cell names, levels, processing procedures) to allow the software to determine the quantities.

11-5.03 Computation Records

In preparing the project quantities, prepare computation sheets for each item used on the project. Combine these sheets and bind them with a cover sheet. The preparer should sign or initial and date each sheet. The checker should also sign or initial and date each sheet. Number the sheets and indicate the total number of pages on each sheet (e.g., Sheet x of y).

Check all values obtained through computations or use of standardized tables, preferably on an independent basis. For those pay items where agreements may be reached to make payment on the basis of planned quantities, an independent check should be performed and noted. Note the resolution of any differences between original and check computations. Where the computer performs computations, an independent check is not required. However, make spot checks of the input and review the computation output sheet for obvious mistakes. Additionally, sign and date the computer output similarly to hand computation sheets.

Retain the quantity computations within the project file.

11-5.04 Units of Measurement

Estimate the quantities for all contract bid items using the terms and units of measurement presented in the *IDOT Standard Specifications*. Show the values determined from the computations on the summary of quantities sheet, and elsewhere in the plans. Section 64-1 of the *BDE Manual* illustrates typical rounding criteria that should be used on the summary of quantities sheet and in the plans; note that certain elements are rounded based on standard manufacturer sizes.

11-5.05 Construction Time Estimates

Exercise care when estimating the contract time. Contract time, working days, and calendar days are defined in the *IDOT Standard Specifications*. Unreasonable time limitations will unnecessarily increase bid prices and the potential for claims, which is especially important if the proposal includes provisions for liquidated damages. The procedures and factors to consider when estimating the contract time are discussed in Section 66-2 of the *BDE Manual*.

11-5.06 Non-Defined Work**11-5.06(a) Lump-Sum Items**

Use lump-sum bid items only where the scope of work for the item is clearly defined, and the amount of work has a minimal chance of changing during construction. The *IDOT Standard Specifications* defines which quantities may be estimated as lump sum. Wherever practical, list the quantities for the separate items that will be included within the lump-sum item. The list should note that the separate “quantities are for estimating purposes only.” Where there is a significant chance of quantity changes, the work must be bid by the unit and not lump sum. Where lump-sum items are used, the total quantity for the project will always equal one.

11-5.06(b) Items Included in Other Work

No item should be shown as incidental to another pay item or the contract. If any item will be included as part of another item, it must be addressed by the specifications or with a special provision. The designer should only include an item of work in another pay item where the scope of work for both is clearly defined and the probability of the quantity of either item changing is minimal. Generally, minimize the use of items included in other pay items. It is difficult for bidders to prepare an accurate estimate for a project that contains incidental items for which quantities or the scope of work is indeterminable.

Generally, use the applicable pay item for those items that are normally covered in the *IDOT Standard Specifications*. Where the quantities or scope of work items are indeterminate at the time of bidding, these items should be paid for on a force account basis as described in the *IDOT Standard Specifications*.

11-6 COST ESTIMATES

An estimate is the predicted project cost at the time of receipt of bids developed from a knowledge of cost of labor, materials, equipment, overhead, profit, and incidental items. The following apply to local let projects. For additional guidance on cost estimates, see Chapter 65 of the *BDE Manual*.

11-6.01 Project Estimates

A local agency is required to submit a project cost estimate for all work administered by IDOT. Estimators should evaluate the following:

1. Labor Costs. Labor costs are variable throughout the State. The estimator must determine not only what types of crafts, but also the most efficient number of workers in each craft that will be required to complete construction of the improvement. Additionally, the estimator must take into consideration the efficiency of the local labor, their working agreement, welfare and fringe benefits, guarantees of minimum working hours per week, show-up time clauses, and non-working conditions due to mechanical breakdowns or bad weather in determining a unit cost for labor. Social security, compensation, and liability insurance costs must also be added to the labor costs as it pertains to the items involved.
2. Material Costs. Material prices should be obtained from area suppliers. Note that these prices are probably higher than those obtainable by a contractor. Therefore, the estimator should use judgment based on past experience.
3. Equipment Costs. Equipment costs include:
 - ownership expense for depreciation,
 - repairs,
 - taxes, and
 - storage, when equipment is idle.

Operating expenses are kept separate and include fuel, oil, and grease.

4. Overhead Costs. Overhead costs may include bonds, moving equipment, incidental materials, general supervision, and field cost accounting.
5. Profit. Profit may range from 10% (over \$100,000) to 20% (\$5,000 or less).
6. Incidental Costs. Incidental costs may occur for:
 - work that is incidental to the contract,

- stage construction,
- tight completion dates,
- excessive hand work, and
- congested work area.

11-6.02 Estimating Forms

Form BLR 11510 is available for use by local agencies in preparing cost estimates for construction projects.

11-7 PLANS, SPECIFICATIONS, AND ESTIMATES (PS&E) PROCESSING**11-7.01 PS&E Submittal**

The local agency will submit PS&E for all improvements, except Group II-A or Group II-B maintenance items (see Section 14-2.04), to the district for review and approval. All highway plans must be sealed by an Illinois licensed professional engineer, which includes the licensee's written signature, date of signing, and expiration date of the license. The plans must also be signed by an appropriate local agency official. After approval, the project can be scheduled for a letting.

11-7.02 Bond Issue and Special Assessment Improvements

A local agency may propose a bond issue or special assessment improvement with the intention of either using MFT funds in conjunction with or, at a later time, requesting the expenditure of MFT funds to retire the bonds or the public benefit assessment portion of the improvement. Submit PS&E for these projects in the same manner as required for typical MFT projects. For special assessment work, submit PS&E to the district for approval before initiating the court proceedings.

11-7.03 Approval of Bridge Plans

Bridge plans that are included in PS&E will be approved as follows:

1. Structural Engineer's Seal, Signature, and Certification. The following applies to the requirements for a structural engineer's seal, signature, and certification:
 - a. Plans Prepared by a Structural Engineer. For plans prepared by an Illinois licensed structural engineer, the seal of the structural engineer responsible for the design must be affixed to the plans. The plans must include the licensee's written signature, date of signing, and expiration date of the license. The seal of a licensed professional engineer is not an acceptable substitute to the structural engineer's seal.
 - b. Plans Prepared by the County Engineer (Non-Standard). The Engineer of Bridges and Structures will seal structure plans for counties, provided that a county engineer, who is an Illinois licensed professional engineer, has prepared the plans. Sufficient time must be allowed for the review by the Bureau of Bridges and Structures (BBS). The county engineer will place the following statement on the General Plan and Elevation Sheet of the structure plans:

licensed structural engineer perform this review. In order to facilitate this review, submission of foundation borings must be included with the Preliminary Bridge Design and Hydraulic Report (Form BLR 10210).

2. Hydraulic Responsibility. The responsibility for hydraulic and hydrological analyses and the geometrics of a bridge/box culvert lies with a professional engineer. Therefore, all structure plans (including certified and Standard Bridge Plans) require a professional engineer's seal, signature, date of signing, and expiration date of the license. The local agency and the designer are responsible for ensuring that PS&E conform to the Division of Water Resources construction permit and the approved Preliminary Bridge Design and Hydraulic Report.

Additionally, if MFT funds are used to construct municipal storm sewer outfalls outside the corporate limits, ensure that the plans that are submitted to the district are accompanied by copies of the following:

- an ordinance prohibiting connection by other than a government agency to the outfall system outside the corporate limits; and
- maintenance agreements.

3. IDOT Review for MFT and TBP Projects. The district will approve all plans MFT and TBP funded structures after any structural review has been completed by BBS.

4. IDOT Review of County and Road District Bridges. The plans for bridges and culverts section, 605 ILCS 5/5-205.1 requires that plans, specifications, and estimates for all bridges and culverts with a clear span length of more than 30 ft (9 m) to be built by the county, or by one or more road districts, be submitted to IDOT for review and approval, irrespective of funding.

For bridges and culverts that will be constructed with funds that IDOT does not supervise, submit two sets of plans directly to BBS and forward a copy of the transmittal letter to the district. BBS will retain one set of plans and return the other set to the county engineer.

5. Preliminary Bridge Design and Hydraulic Report (Form BLR 10210) Approval. After IDOT approval of form BLR 10210, the local agency will not be required to submit the design plans for structural review except for the following situations:

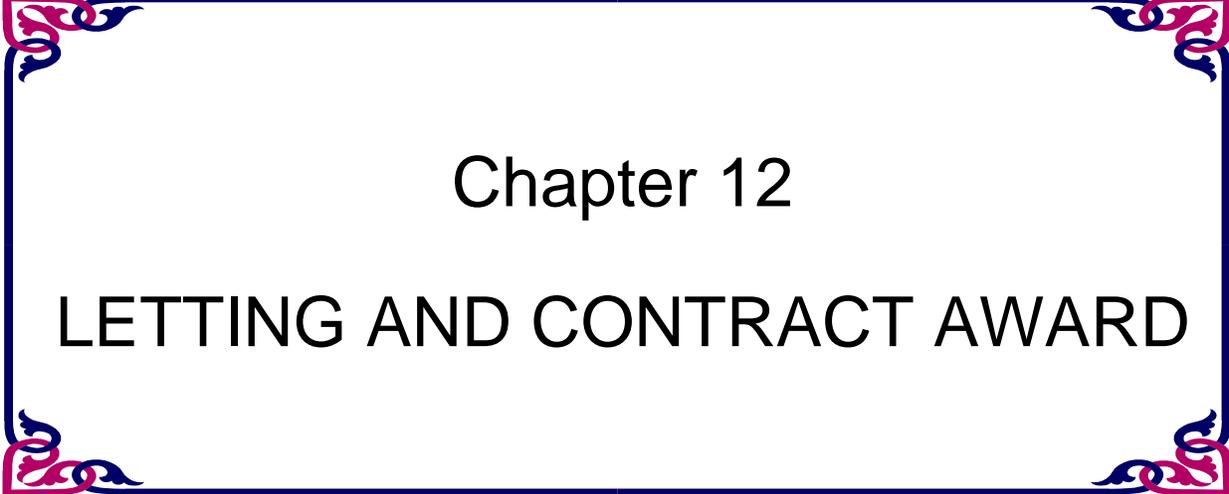
- when the plans are to be signed and sealed by the Engineer of Bureau of Bridges and Structures (for local agencies who have prepared the plans using a non-structural engineer),
- for complex, unique, or major bridges, and/or
- for streets over State highways.

11-7.04 Approval of Lighting Plans

For all lighting plans, the seal of the professional engineer responsible for the lighting design must be affixed to the plans. The plans must include the licensee's written signature, date of signing, and expiration date of the license.

11-7.05 Release of Contract Plans

The district will review and release for letting the plans, special provisions, and the local agency's estimate for all projects, excluding railroad crossing signal related improvements.



Chapter 12

LETTING AND CONTRACT AWARD

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12-1 PROCUREMENT PROCEDURES

The Illinois Department of Transportation (IDOT) will apply the following procedures when exercising the approval responsibility given to it by the Illinois Highway Code for the letting of local public agency (LPA) contracts or approval of day labor work.

The procurement procedures described herein apply to work that can be performed either by a contractor or by day labor. Day labor work typically requires the purchase of materials to be incorporated into work performed by LPA employees using LPA equipment. The following Sections discuss the common types of procurement and day labor procedures.

12-1.01 Types of Contracts

12-1.01(a) Formal Contracts

A formal contract is a written agreement between a LPA and a contractor setting forth the obligation of the parties including, but not limited to, the performance of the work, the furnishing of labor and materials, and the basis of payment based on an engineering design.

12-1.01(b) Material Proposals

A material proposal is a form of contract used to purchase materials for day labor operations. Within the material proposal there may be various bid groups. These bid groups may be created to:

- group similar items together to be supplied by one vendor,
- group items within a maintenance operation to be completed by one vendor, or
- based on specific locations to be completed by one vendor.

Each bid group is considered as a separate contract. Material is typically furnished to the job site, stockpile, or other location. Furnishing may include tailgating and distributing by the material supplier. The LPA may also pick up the material at the material supplier facility using LPA equipment and employees, this is typically considered freight on board (FOB).

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12-1.01(c) Deliver & Install Proposals

A deliver & install proposal is a form of contract like a material proposal in that the cost and delivery of material for the work operation is the substantial or principal cost of the contract. Within the deliver & install proposal there may be various bid groups, as discussed for material proposals. However, this proposal requires site work such as broom and roll aggregate for seal coat or performing a small amount of base patching or repair. A deliver & install proposal may be used for the following work operations that are based on limited engineering design, review, and oversight:

- bituminous surface treatments including base preparation,
- pavement striping including paint, thermoplastic, and preformed pavement marking,
- landscape planting,
- removing and re-erecting guardrail and terminals, and
- intermittent resurfacing.

12-1.01(d) Quotations

A quotation is a contract commitment from a material supplier for a specified period, with the understanding that the LPA will obtain the material at the lowest on-the-road cost. A quotation may be used in lieu of a material proposal for the purchase of material, including the placement in stockpiles or storage tanks or the pouring of ready-mixed concrete. It may not be used if the supplier is to incorporate the material into the roadway. Quotations are useful when the material may be needed at various locations and times, the quantity of material may not be known, or the same supplier may not always have the material available.

12-1.02 Methods of Procurement

Formal contract, material proposals, deliver & install proposals, and quotations that use Motor Fuel Tax (MFT) and other State funds are subject to the following methods of contract procurement. The following Sections discuss common types of procurement and provide guidance in determining when a formal bid is required.

12-1.02(a) Competitive Sealed Bids

Competitive sealed bids involve the preparation of an invitation for bids for a formal contract, a material proposal, a deliver & install proposal, or a request for quotations; see Section 12-2.01. The bids must be advertised and a public letting held, see Section 12-3. Consider the following when assessing the need for competitive sealed bids:

1. Formal Contracts. Bids are required for all projects estimated to equal or exceed the amount in Figure 12-1A.

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2. Material Proposals and Deliver & Install Proposals. Bids are required for the purchase of materials (excluding material already bid) during the duration of a day labor construction project for either of the following:
 - the purchase of similar type of material (e.g. all grades of aggregates, all sizes pipe culverts, all grades of bituminous materials) is estimated to equal or exceed the amount in Figure 12-1A; or
 - the purchase of all materials furnished from any one vendor, including any cost for placement or incorporation of the materials into the work by that vendor, is estimated to equal or exceed the amount in Figure 12-1A .

3. Quotations. The requirement for bids is the same as for material proposals. All bidders may revise the quotation monthly by sending the LPA a registered letter at least five days before the end of any month. The new quotation will go into effect on the first day of the month following proper notification. Purchases are permitted from only those suppliers that submitted acceptable quotations at the public letting.

LPA Type	Population	Dollar Limit	Statute
<u>County</u>	<u>Less than 2,000,000</u>	<u>\$30,000 or more</u>	<u>55 ILCS 5-1022</u>
<u>County</u>	<u>2,000,000 or greater</u>	\$5,000 or more	Cook <u>County's</u> Ordinances Section 34 - Article IV - Procurement Code
Township/Road District	N/A	\$20,000 or more	<u>60 ILCS 1/85-30</u>
Municipality (Commission Form)	N/A	\$25,000 or more	<u>65 ILCS 5/4-5-11</u>
Municipality	Less than 500,000	\$25,000 or more	<u>65 ILCS 5/8-9-1</u>
Municipality	500,000 or greater	Greater than \$10,000 or more	<u>65 ILCS 5/8-10-3</u>

DOLLAR LIMITS REQUIRING COMPETITIVE SEALED BIDS

Figure 12-1A

12-1.02(b) Sole Source Suppliers

Occasionally, a LPA may require a material for which there is only one available supplier (e.g. ready-mix concrete delivered to a job site where there is only one producer within the allowable time-of-haul distance) and the cost equals or exceeds the amount in Figure 12-1A. If the LPA can demonstrate to the district that a single supplier is the only practical source, MFT funds may be used for a negotiated price material purchase. The LPA is responsible for obtaining district approval.

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12-1.02(c) Emergency Purchases

Bids are not required for an emergency purchase, unless time permits. Emergencies are situations that are, or may become, a detriment to public health, safety, service, or property (e.g. a situation requiring immediate repair to prevent further damage to public property or serious disruption in public service). It is desirable to first obtain district approval by telephone or written correspondence. The nature of the situation, however, may dictate otherwise, which must be assessed on a case-by-case basis. Within 10 days of the emergency purchase, provide the district with written notification of the emergency condition, the name of the vendor or contractor involved, and the amount expended. The amount is not limited, but the emergency must be validated and shown to exist.

12-1.02(d) Centralized Joint Purchasing

LPAs may purchase materials for public projects jointly with the State. These purchases must be conducted in accordance with the policies set forth by the Department of Central Management Services (CMS). These policies and the publication "Joint Purchasing Manual, Government Units Reducing Through Centralized Procurement" are available from the Procurement Services Division of CMS or from the [CMS website](#).

LPAs may also use MFT funds for cooperative joint purchases of materials among two or more agencies. If another agency is the lead agency using other funds, the requirements within Chapter 12 must be met. The district will assist these agencies in assembling the bidding specifications and proposals, advertising for bids, and evaluating the bids. Subsequent to receiving bids, each separate agency will be financially responsible for their respective share of the joint material purchase.

12-1.03 Use of "Alternative" and "Type" Bids

"Alternative" bids and "Type" bids are used when a LPA desires to receive bids for two or more different types or classes of work for a particular work item. When used, the proposal and plans must differentiate the types or classes of work by using the prefix word "Alternative" or "Type" followed by a differentiating number or letter (e.g. Alternative I, Alternative II, Type A, Type B).

12-1.03(a) Alternative Bids

Use alternative bids where the types or classes of work are comparable (equal and competitive). Do not use alternatives where identical pay items can be used to define the scope of all types or classes of work. Rather, provide bidders the option of selecting the type or class of work. When this method is used, it is not mandatory that the contractors bid on all alternatives, but the award must be made to the lowest responsible bidder regardless of which alternative bid is lowest. The following is a sample statement for alternative bids:

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The plans and proposal contain designs for concrete and bituminous pavements with equivalent pavement design life. [LPA] has no preference for the one to be constructed. The award is made to the lowest responsible bidder regardless of which alternative has the low bid.

12-1.03(b) Type Bids

Type bids should be used sparingly but may be used when the types or classes of work are not directly comparable (equal or competitive). This method is typically used where little information exists on the relative cost of the types or classes of work, or when a LPA may want to select a higher type construction if the additional cost for a higher type is acceptable to the LPA. Type bids may also be used if a LPA has a limited amount of funds available but wants to maximize the construction based on the funds available. In this case, each type would be a different project length. The awarding agency may make the award to the lowest responsible bidder for any type. The proposed criteria to be used in determining the lowest bidder should be developed by the awarding agency before bids are requested. The following is a sample for type bids:

The plans and proposal contain designs for concrete and bituminous pavements. The pavement design life for one pavement may be different than the other. Base the decision on which type of pavement to award on the difference of cost between the two types. The award is made to the lowest responsible bidder of either type.

12-1.03(c) Alternative Deliveries

Material proposals requesting bids for materials via two or more alternative delivery methods must include the unit price cost differential for the purpose of determining the lowest bid favorable to the awarding authority. For example, bids are solicited for furnishing gravel or crushed stone (FOB) a truck at the plant and for furnishing and hauling the material to the job. It is necessary to add the cost of delivery to the FOB plant bid to determine the bid which is most advantageous to the awarding authority. The cost of delivery includes the cost per mile (km) of hauling the material to the job site and the cost for unloading the material at the job site. These costs shall be predetermined and stipulated in the material proposal on a unit price basis. These unit prices, although estimated, should be as accurate as practical based on the best available cost information.

12-1.03(d) Combination Bids

A combination bid is a total bid received for two or more proposals on the same letting. This bid may be less than the total of the individual bids on each proposal. Any allowable combination must be specifically established by the LPA and included in the letting advertisement. To submit a combination bid, the contractor must also submit a separate bid with unit prices for each pay item for each proposal of the combination. A contractor is not required to submit a combination bid or a bid on each proposal of the combination. The LPA has the right to make awards to the low bidder for the combination or to the low bidder for each separate proposal.

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12-1.04 Proposal Guaranty

Bidders are required to furnish a Proposal Guaranty with their bid as evidence of good faith. The Proposal Guaranty may be a bid bond, bank cashier's check, or a certified check for not less than 5% of the amount bid or for the amount specified in the special provisions. All bids for MFT or State funded contracts and material proposals must be accompanied by a Proposal Guaranty in accordance with the special provisions.

12-1.04(a) Elimination of Proposal Bid Bond

A LPA may deny the use of a bid bond as a Proposal Guaranty, but may not further restrict the Proposal Guaranty.

12-1.04(b) Special Assessment Projects

If a municipality intends to use MFT funds for the public benefit portion of a project constructed under the Local Improvement Act, the provisions of [65 ILCS 5/9-2-103](#) are applicable to the furnishing of a Proposal Guaranty. All bids submitted must be accompanied by cash or a certified check, payable to the President of the Board of Local Improvements, for not less than 10% of the total amount. This will require the insertion of a special provision into the proposal.

12-1.04(c) Illinois Department of Corrections

The Illinois Department of Corrections industries will frequently request bidding proposals to furnish materials that they manufacture. They are exempt from the requirements to furnish a Proposal Guaranty with bids to furnish materials for MFT and State funded projects.

12-1.05 Day Labor Procedures

12-1.05(a) Approval of Day Labor Forces

[605 ILCS 5/5-403](#), [5/6-701.1](#), and [5/7-203.1](#) provide with IDOT approval, a LPA may perform work with its own forces. The LPA is required to obtain approval in writing from the district prior to initiating this type of work, and include the following information in the written request:

- type of work to be performed,
- approximate quantity of work,
- equipment owned or available,
- previous experience with the type of work, and
- past performance on conducting similar work.

Upon receipt, the district will review and approve the request as follows:

1. Equipment. Equipment may be used by the LPA for day labor work as follows:

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- a. Owned and On-Hand Equipment. Equipment that is owned and on hand by the LPA may be used for day labor work. All asphalt plants require approval from the Bureau of Materials.
 - b. Leased/Rental Equipment. Long-term lease or rental purchase equipment must be on hand and the terms of the lease or rental purchase available.
 - c. Specialized Equipment. For municipalities and counties, specialized equipment may be leased or rented when the majority of equipment required for the work is owned by the LPA. This exception requires prior district approval.
 - d. Road Districts. Day labor forces using only county or road district equipment may perform road district work. Road district equipment may include the following:
 - equipment that is owned by the road district (road districts may not lease or rent equipment). The only exception is for road districts with a population of less than 15,000 may lease up to \$2,000 in a fiscal year ([605 ILCS 5/6-411](#)).
 - equipment that is being acquired under contracts providing for installment payments over a period of not more than 10 years, with interest on unpaid balance not to exceed 9% ([605 ILCS 5/6-201.17](#)), or
 - equipment that may be used or acquired through an agreement with other highway commissioners, corporate authorities of any municipality in the same or adjoining counties, or with the county board in the same or adjoining counties for the lease or exchange of idle equipment ([605 ILCS 5/6-201.10](#)).
2. Previous Experience. This review will involve the amount of day labor work performed by the LPA and a review of the experience of the supervisory personnel.
 3. Past Performance. This review will involve the review of correspondence relative to progress, performance, and record of meeting obligations on previous day labor projects.
 4. Previously Approved Day Labor Forces. A LPA that has been approved for a specific type of work may be reapproved, if performance has been satisfactory.
 5. Types of Work. A LPA must be approved for each type of work it is requesting to be performed by day labor forces. For example, approval for bituminous surface treatments will not qualify a LPA to construct a plant mix surface.

12-1.05(b) Equipment Ownership Expenses

The equipment usage cost eligible for MFT or State funds for a day labor project is based on the actual time the equipment is in operation during the duration of a day labor project.

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The usage rate to be paid for publicly or privately owned equipment must not exceed the rates in the [Schedule of Average Annual Equipment Ownership Expense](#), as adjusted for the Producer Price Index for Construction Machinery Manufacturing (this is sent out by Circular Letter typically in February), or the Equipment Watch Blue Book. Note that the rate in the schedule includes the standard operating cost for servicing and repair, fuel, lubricants, filters, tires, etc. No additional compensation for ordinary operating expenses will be allowed. For equipment rates that are not listed in the schedule, complete and send the Equipment Expense Rate Data (Form [BC 2370](#)) to the District Bureau of Local Roads and Streets (BLRS) for forwarding to the Central BLRS (CBLRS). Ensure that any supplemental information that can be used in determining the rates is attached to the form.

The LPA is responsible for listing all equipment to be used, the rate to be reimbursed for each piece of equipment, and system used to calculate the rate on Form [BLR 12110](#). Forward the completed form to the District BLRS for approval.

Expendable equipment (e.g. equipment completely consumed or used up on a project) costing \$1,000 or less, including small tools, can be purchased with MFT funds for use on a day labor improvement.

12-1.05(c) Agreed Unit Prices

Agreed unit prices may be used in place of actual labor and equipment usage costs when the LPA will perform the work with its own work force and equipment. Ensure that the agreed unit price includes all the labor and equipment necessary to complete the item of work as specified. An agreed unit price is pay item specific. Do not include in the agreed unit price for one pay item the labor and equipment cost associated with another pay item. If the material cost is known (e.g., material furnished from a publicly owned source such as a general stockpile) it may be included in the agreed unit price.

The request for agreed unit prices must be submitted with the estimate of cost to the district for approval. Include the following statement:

***[LPA]** hereby agrees to complete the preceding schedule of work at the unit prices as shown.*

The above statement is signed by the following individuals:

- the county engineer for work to be performed by the county,
- the highway commissioner and county engineer for work to be performed by the road district, and
- an appropriate municipal officer having duties in connection with the work for municipalities.

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12-1.06 Agreed Unit Prices for Bituminous Treatments of Municipal Streets by Road Districts and Counties

Upon approval of the district, a municipality may arrange with the road district or county in which the municipality is located to have it furnish and apply bituminous materials and seal coat aggregates on municipal streets at an agreed price or at actual cost. In requesting approval of these arrangements, provide information showing the price for the material that the township or county must pay, and the amount to be charged for hauling and spreading the materials by county or road district forces.

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12-2 INVITATION FOR BIDS - LOCAL-LET PROJECTS

Most MFT and State funded projects have a local letting. If a project is scheduled for a State letting, see [Section 24-1](#).

An invitation for bids refers to the compilation of pertinent bidding information relative to the project assembled into a single booklet for issuance to bidders. The bidders make a written offer to perform the proposed work. Except for Maintenance Group II-A and II-B items, the LPA is responsible for preparing and submitting all proposals to the district for review and approval, along with the status of the utility adjustments and right-of-way acquisition.

12-2.01 Invitation for Bid Contents

12-2.01(a) Formal Contract Proposals

Include the following in the formal contract proposal that is submitted to the district:

- LPA Formal Contract Proposal (Form [BLR 12200](#) and Form [BLR 12200a](#)),
- Proposal Bid Bond (Form [BLR 12230](#)), if allowed by the LPA,
- Affidavit of Availability (Form [BC 57](#)), if prequalification is required,
- Certified Apprenticeship and Training Program (Form [BLR 12325](#)),
- Affidavit of Illinois Business Office (Form [BLR 12326](#)),
- Check Sheet for Supplemental Specifications and Recurring Special Provisions, with applicable items marked,
- Contract Special Provisions, including Form [BLR 11310](#),
- applicable [Bureau of Design and Environment \(BDE\) Special Provisions](#),
- applicable [Bureau of Local Road and Streets Special Provisions](#),
- applicable Guide Bridge Special Provisions,
- applicable [Material Specifications](#),
- applicable District Special Provisions,
- applicable LPA Special Provisions,
- applicable LPA Ordinances/Resolutions,
- when plans are prepared on reduced size sheets, plan sheets may be included in the proposal,
- applicable IDOT [Highway Standards](#), if not included in the plans,
- permit documents including, but not limited to:
 - U.S. Army Corps of Engineers permits, letters of authorization, and attachments,

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- IDNR Office of Water Resources permits,
- U.S. Coast Guard permits, and
- IEPA permits
- foundation borings; include in the plans or proposal the location and log data documenting the results of any subsurface explorations for each foundation sounding or boring,
- Storm Water Pollution Prevention Plan, Contractor Certification Statement, and Erosion Control Plan, if required, and
- Prevailing Wage Rates or provide a special provision with a reference to [Illinois Department of Labor \(IDOL\) website](#) for prevailing wage rates.

Submit the following to the district with the formal contract invitation to bid. However, this information shall not be provided to bidders:

- Estimate of Time
- Estimate of Cost (Form [BLR 11510](#))

12-2.01(b) Material Proposals and Deliver & Install Proposals

Include the following in the material proposal or deliver & install proposal invitation for bid that is submitted to the district:

- Local Public Agency Material Proposal or Deliver & Install Proposal (Form [BLR 12240](#)),
- Proposal Bid Bond (Form [BLR 12230](#)), if allowed by the LPA,
- Affidavit of Availability (Form [BC 57](#)), if prequalification is required,
- Material Schedule of Prices (Form [BLR 12241](#)); the pay item wording must be in accordance with the IDOT Standard Specifications for Road and Bridge Construction and the Special Provisions. All items in a bid group must be listed together under a single bid group number,
- Apprenticeship or Training Program Certification (Form [BLR 12325](#)), required for all deliver & install proposals and any deliver & install bid group in a material proposal,
- Affidavit of Illinois Business Office (Form [BLR 12326](#)), required only when Form [BLR 12325](#) is inserted,
- Check Sheet for Supplemental Specifications and Recurring Special Provisions, with applicable items marked,
- Contract Special Provisions, including Form [BLR 11310](#),
- applicable [BDE Special Provisions](#),
- applicable [Local Roads Special Provisions](#),
- applicable LPA Ordinances/Resolutions,

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- applicable Guide Bridge Special Provisions,
- applicable [Material Specifications](#),
- applicable District Special Provisions,
- applicable LPA Special Provisions,
- applicable IDOT [Highway Standards](#), and
- Prevailing Wage Rates or provide a special provision with a reference to [IDOL website](#) for prevailing wage rates, required for all deliver & install proposals and any deliver & install group in a material proposal.

Submit the following to the district with the material proposal or deliver & install proposal invitation to bid. However, this information shall not be provided to bidders:

- Estimate of Cost (Form [BLR 11510](#))

12-2.01(c) Request for Quotations

Include the following information with the Request for Quotations (Form [BLR 12250](#)):

- Contract Special Provisions, including Form [BLR 11310](#),
- applicable Inserted Special Provisions,
- applicable [Local Road Special Provisions](#),
- applicable Guide Bridge Special Provisions,
- applicable [Material Specifications](#), and
- applicable District Special Provisions.

12-2.01(d) Bid Bonds

If the LPA allows a bid bond as a Proposal Guaranty, include Form [BLR 12230](#) in the proposal. If an electronic bid bond will be allowed in lieu of a traditional bid bond, the LPA is responsible for checking the designated box at the bottom of Form [BLR 12230](#) prior to the proposal being distributed to interested bidders. Bidders will be required to supply an electronic bid bond identification number from an IDOT approved surety company. Special software is not required for implementation; however, the LPA will need internet access to verify the status of the electronic bid bond.

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12-2.01(e) Wage Rates

Wage rates, as determined by the LPA or the IDOL, must be included in all formal contracts and deliver & install proposals containing bid items to be directly incorporated in the work by other than LPA forces (e.g. roadway components bid in place). The applicability of these wage rates in material proposals for bid items not directly incorporated in the work is governed by [820 ILCS 130/3](#). IDOL interprets the current law to exempt hauling of materials by suppliers to stockpile locations. All questions of applicability of the Prevailing Wage Act are governed by the determinations of IDOL. Prevailing wage rates may be obtained from [IDOL's website](#).

The Contractor and each subcontractor shall submit monthly, in person, by mail, or electronically, a certified payroll to the LPA or their designee in charge of the project. The certified payroll shall consist of records of all laborers, mechanics, and other workers employed by them on the project. The records shall include each worker's name, address, telephone number when available, classification or classifications, the gross and net wages paid in each period, the number of hours worked each day, and the starting and ending times of work each day. Any Contractor or subcontractor, who remits contributions to a fringe benefit fund that is not jointly maintained and jointly governed by one or more employers and one or more labor organizations in accordance with the federal Labor Management Relations Act, shall also include the worker's hourly wage rate, hourly fringe benefit rates, the name and address of each fringe benefit fund, the plan sponsor of each fringe benefit, if applicable, and the plan administrator of each fringe benefit, if applicable, in the certified payroll record.

The worker's full social security number and home address shall not be included on weekly transmittals. Instead the payrolls shall include an identification number for each worker (e.g., the last four digits of the worker's social security number). The certified payroll shall be accompanied by a statement signed by the contractor or subcontractor which avers that:

- such records are true and accurate;
- the hourly rate paid to each worker is not less than the general prevailing rate of hourly wages required; and
- the contractor or subcontractor is aware that filing a certified payroll that he or she knows to be false is a Class B misdemeanor.

The LPA is required to keep the certification records submitted for a period of not less than five years. Furthermore, these records, except an employee's address, telephone number, and social security number, shall be made available in accordance with the Freedom of Information Act.

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12-2.01(f) Incentive/Disincentive Provisions

Incentive/disincentive provisions are typically used in formal contracts to motivate contractors to complete a critical project ahead of schedule. The incentive clause will compensate the contractor for each day that work is completed ahead of schedule and the disincentive clause will assess a deduction for each day the schedule is overrun. Use of these provisions should be restricted to critical projects (e.g. projects where it is highly desirable to minimize traffic delay and inconvenience) and must be approved by the CBLRS. See [Section 66-2](#) of the *BDE Manual* for additional information on incentive/disincentive provisions.

12-2.01(g) LPA Ordinances/Resolutions

The LPA may include contract language that requires the bidder to comply with local regulations established by ordinances or resolutions. By including this contract language, the LPA accepts responsibility for administering this contract language. Furthermore, if this contract language is determined to conflict with federal or state regulations or MFT policies, the State and/or MFT funding used for the project may be jeopardized.

12-2.02 Review and Approval

Except for Maintenance Group II-A and II-B items, the LPA will submit all proposals to the district for review and approval. This review may be done concurrently with or subsequent to the review of the plans, specifications, and estimates (PS&E). The project cannot be scheduled for letting until the proposal has been reviewed and approved by the district.

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12-3 LETTING AND AWARD PROCEDURES

12-3.01 Prequalification of Bidders

12-3.01(a) General

The LPA shall ensure that the prequalification requirement is advertised in the Notice to Contractor's Bulletin. Furthermore, on Form [BLR 12200](#), the Prequalification box shall be marked if prequalification is required by Section 12-3.01(b) or the LPA elects to require prequalification.

12-3.01(b) Prequalification Required

All prospective bidders on formal contracts estimated to cost more than \$50,000 must be prequalified unless the formal contract is part of the LPA's maintenance program (See [Section 14-2](#) for requirements). The following criteria apply:

1. Highway Projects. IDOT prequalification is required for highway related projects.
2. Non-Highway Projects. For non-highway projects (e.g., independent bikeways, sidewalks, landscaping), the LPA may request approval from the district to use local contractor qualification procedures.
3. Building Projects. Capital Development Board (CDB) prequalification is required for building construction projects. Obtain a list of prequalified contractors from the CDB one week prior to issuing any proposals. Contractors are required to provide a copy of their CDB prequalification letter prior to receiving bidding documents.

12-3.01(c) Prequalification Optional

For formal contracts estimated to cost less than \$50,000 and formal contracts that are part of the LPA's maintenance program, the awarding agency has the option of using prequalification requirements. Prequalification of bidders is optional for all material proposals and deliver & install proposals regardless of the estimated cost.

12-3.02 Advertising to Receive Bids

12-3.02(a) Notice of Letting

Upon determination that a public letting is required for work to be performed by formal contract, material proposal, deliver & install proposal, or quotation, a Notice of Letting must be advertised to inform all potential bidders of the scheduled letting. Ensure that the Notice of Letting includes the following information:

- the location where the plans and proposals are available for distribution,
- the location, date, and time of the bid opening,
- a brief description of the project,
- major pay item quantities, and

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- any prequalification requirements.

This information is necessary to inform potential bidders of the size and nature of the projects. Prior to advertising for bids for MFT and State funded local work, the district must have approved the PS&E and proposal, and a statement that the right-of-way has been acquired must be on file in the district.

12-3.02(b) Contractors Bulletin

LPA's MFT and State funded projects with local lettings are advertised in IDOT's Notice to Contractors Bulletin. The bulletin is published on a weekly basis and is issued each Thursday. The bulletin is also available on IDOT's website. Each advertisement must appear in the bulletin not less than 11 days before the date on which bids are to be received. This enables the advertisement to appear in at least two issues of the bulletin.

All LPA let projects financed with MFT or State funds must be advertised for letting in the bulletin. IDOT requires no additional public notice; however, this does not relieve the LPA from complying with the State law concerning these advertisements.

As a service to LPAs, projects financed with other funds may also be advertised in the bulletin. Project identification and major quantities should be provided to the district to be included in the advertisements for these projects.

Each district is responsible for inputting their respective advertisements into IDOT's information processing system. Once the entries have been verified and corrected, the district will transmit the advertisements to the CBLRS and notify the Bureau bulletin manager. The entries and notification must be received in the CBLRS prior to noon on Tuesday for a project to be advertised in the bulletin issued on Thursday of the same week. The district must be given adequate advance notice of a scheduled letting in order to input the advertisement by the bulletin deadline. Contact the appropriate district office for district deadlines and when [BLR 12310](#) "Computer Data for Contractors Bulletin" must be submitted by the LPA.

12-3.03 Issuing Bid Proposals

12-3.03(a) General

The advertisement and Notice of Letting indicate where bidding proposals are available. It is the contractor's responsibility to request a proposal if the contractor is interested in bidding on a project.

Denying a proposal to a contractor who is otherwise qualified to bid should be the result of a resolution enacted by the LPA governing board or council. For any letting, a LPA may refuse to issue authorization to bid to a prospective bidder for any of the following reasons:

- uncompleted work, which in the judgment of the LPA, might hinder or prevent the prompt completion of additional work awarded,

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- false information provided on a bidder's Affidavit of Availability,
- failure to pay, or satisfactorily settle, all bills due for labor and material on contracts in force at the time of issuance of proposal forms,
- failure to comply with any prequalification regulations of IDOT,
- default under previous contracts,
- unsatisfactory performance record as shown by past work for the LPA, judged from the standpoint of workmanship and progress,
- when the contractor is suspended from eligibility to bid at a public letting where the contract requires approval of IDOT,
- when any agent, servant, or employee of the prospective bidder currently serves as a member, employee, or agent of a governmental body that is financially involved in the proposal work, or
- when any agent, servant, or employee of the prospective bidder has participated in the preparation of plans or specifications for the proposed work.

A LPA may not, however, use unsatisfactory performance on work for another agency as a basis to deny the bidder a proposal. Since proposals are issued to contractors with the intent of soliciting bids, eligibility for bidding is generally assumed unless communicated otherwise. If the contractor is a responsible bidder meeting the acceptance criteria in Section 12-3.04, the award will be made to the contractor with the lowest bid once bids are opened. It is therefore important to ensure that each contractor is eligible for award prior to issuing proposals. ~~Denying a proposal to a contractor who is otherwise qualified to bid should be the result of a resolution enacted by the LPA governing board or council.~~

12-3.03(b) Prequalification Requirements

The following applies before the letting when prequalification is required:

1. Certificate of Eligibility. The LPA official who issues proposals to prospective bidders must make the proposals available only to contractors who furnish a certified or photostatic copy of their currently dated Certificate of Eligibility. The following conditions apply:
 - the total financial rating stated on the Certificate of Eligibility must equal or exceed the total estimated value of the project, and
 - the Certificate of Eligibility must show that the contractor has work ratings for the types of work on the project covering at least 50% of the estimated cost of the project.

This form must be kept on file by the LPA. If an IDOT representative is present at the letting, the form must be made available to the representative.

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2. Affidavit of Availability. At the option of the LPA, bidders may be required to furnish Form [BC 57](#) "Affidavit of Availability" before the proposal is issued to the bidder. With this option, a special provision shall be inserted in the proposal to be used in place of Check Sheet Item LRS 6 or LRS 7.
3. Not For Bidding Proposals. The LPA may also issue proposals and plans to material suppliers or to other contractors wishing only to subcontract a part of the work, even though they are not prequalified. However, these proposals must be plainly stamped or marked, "NOT FOR BIDDING."
4. Bidding on Multiple Projects. If more than one project is scheduled at a letting, contractors may bid on all sections for which they are prequalified.
5. Joint Ventures. Prequalified contractors may combine their available bidding capacity and bid as a joint venture. The joint venture is limited to a maximum of three prequalified contractors. The contractors must notify the LPA of their intent to bid as a joint venture at the time of request for a proposal. Each contractor must provide a copy of his/her Certificate of Eligibility. A joint venture is not acceptable for projects estimated at less than \$1,000,000 if more than one of the proposed joint venture partners has an individual prequalification rating and bid capacity to bid the item without a joint venture. Contractors whose financial ratings are based upon unaudited financial statements will not be permitted to joint venture with each other to bid on contracts that are estimated to exceed \$500,000.

12-3.04 Lettings

12-3.04(a) **General**

If the contractor is a responsible bidder meeting the acceptance criteria of the LPA and IDOT, the award will be made to the contractor with the lowest bid once the bids are opened. This is known as award to the lowest responsive and responsible bidder. In addition to prequalification, if required, the low bidder for all formal contract proposals, all deliver & install proposals, or any deliver & install group in a material proposal must comply with the following:

1. The bidder must comply with all applicable laws concerning the bidder's entitlement to conduct business in Illinois.
2. The bidder must comply with all applicable provisions of the Prevailing Wage Act.
3. The bidder must comply with Subchapter VI ("Equal Employment Opportunities") of Chapter 21 of Title 42 of the United States Code (42 U.S.C. 2000e and following) and with Federal Executive Order No. 11246 as amended by Executive Order No. 11375.
4. The bidder must have a valid Federal Employer Identification Number or, if an individual, a valid Social Security Number.
5. The bidder must have a valid certificate of insurance showing the following coverage: general liability, professional liability, product liability, workers' compensation, completed operations, hazardous occupation, and automobile.

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6. The bidder and all bidder's subcontractors must participate in applicable apprenticeship or training programs approved by and registered with the United States Department of Labor's Bureau of Apprenticeship and Training. For any bidder or subcontractor that shall perform all or part of the work of the contract or deliver & install proposal solely by individual owners, partners, or members and not by employees to whom the payment of prevailing wages would be required, this certification is not required. All bidders must complete the appropriate section of Form [BLR 12325](#) "Apprenticeship or Training Program Certification" included in the bid documents.
7. The bidder must submit a signed Form [BLR 12326](#) "Affidavit of Illinois Business Office" stating that the bidder will maintain an Illinois office as the primary place of employment for persons employed in the construction authorized by the contract. This form is not required for material proposals, and only required for deliver & install proposals or any deliver & install group in a material proposal, if Form [BLR 12325](#) is required.

If a bidder does not comply with these requirements or fails to submit proper certification, the bidder is considered not responsible and ineligible for award. If the bid is awarded, MFT or State funding will not be allowed on the project.

12-3.04(b) Prequalification Requirements

When prequalification is required, the following applies:

1. Certificates of Eligibility. Prior to opening a contractor's bid, the LPA representative must reexamine all Certificates of Eligibility, in accordance with Item 1 in Section 12-3.03(b). Concurrence of the contractor's eligibility must also be obtained from the IDOT representative, if present at the letting, prior to opening the bid.
2. Ineligible Contractors. The LPA is not required to read a bid from a contractor that does not meet prequalification and responsibility requirements.

12-3.04(c) Opening Bids

At the time and place specified in the Notice of Letting, all bids received from bidders will be opened and read, except for any bid from a contractor that is not qualified as noted previously. Any bid received after the designated time shall be returned unopened to the bidder. The person reading the bid should state the name of the bidder, describe the Proposal Guaranty, and read the total bid amount for each contract or material group and all discounts, if applicable. Individual unit prices and extensions may be read at the option of the LPA.

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12-3.05 Determination of Lowest Responsible Bidder

12-3.05(a) Extension of Unit Bid Prices

After proposals are opened and read, the extension of the unit bid prices are to be checked along with the summation of those extensions. If a total price is not shown or there is a discrepancy between the product of the unit price multiplied by the quantity, the unit price will govern. Where a contractor's bid proposal does not contain a unit price for a pay item, but does contain a total price for the same item, the total price will govern and be considered in determining the contract bid price. The unit price for these items will be calculated by dividing the total price quoted by the number of units listed. The calculated unit price will be considered the unit price that the contractor intended to bid if the project is awarded. The calculated unit price will govern the payment for that item of work.

If the contract proposal contains neither a unit price nor a total price for a pay item, the proposal must be rejected.

For material proposals and deliver & install proposals, there must be either a unit price or a total price for all items in a bid group or the bid for that group must be rejected.

12-3.05(b) Affidavit of Availability

On projects requiring prequalification of bidders, the two lowest bidders are to file an Form [BC 57](#) "Affidavit of Availability" with the awarding agency within 24 hours of the letting. The Affidavit must:

- be notarized and dated currently,
- include the amount of all uncompleted work (e.g., either as principal or subcontractor),
- be based on the most recent engineer or owner's estimate,
- include the location and the name of the agency under which jurisdiction the work is to be performed,
- include the commitment of equipment and personnel on payroll or rental basis even though no formal contract exists,
- include a list of all work for which the contractor is low bidder that has not yet been awarded or rejected, and
- include a list of all subcontractors and the value of work sublet.

The data contained in the Affidavit is of a confidential nature and should not be discussed publicly at any time.

12-3.05(c) Bidding Capacity

Consider the following when analyzing a contractor's bidding capacity:

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1. Available Financial Rating. The contractor's Available Financial Rating is computed by taking the combined value of uncompleted work the contractor has to perform with its own forces (Form [BC 57](#), Part II) and deducting this amount from the contractor's financial rating as shown on the Certificate of Eligibility. The net result is the contractor's Available Financial Rating, which must equal or exceed the estimated value of the project.
2. Available Work Rating. The contractor's Available Work Rating is computed by first deducting from the individual work ratings on the Certificate of Eligibility, the value of all similar type of uncompleted work to be completed by the contractor's own forces as a prime or subcontractor included on Part II of Form [BC 57](#). To determine the total Available Work Rating for a specific project, add the computed balance of the individual work rating for all work items applicable to the project; however, in this process, use the lesser of the balance of the individual work ratings or the estimated value for the work item in the project. The total Available Work Rating must equal or exceed 50% of the estimated value of the project, less any specialty items for the contractor to be awarded the contract.

When the proposed work requires more than one construction season (e.g., 8 months or 168 working days) to complete, the work ratings on the Certificate of Eligibility are multiplied by the number of construction seasons for completion. Any work underway on other projects is divided by the number of seasons to complete that project. The Available Work Rating is then determined using these adjustments.

3. Multiple Awards. If a contractor is the low bidder on two or more contracts on the same letting, the sum of the bids must not exceed the available bidding capacity of the contractor, as determined above. The contract(s) awarded in this situation will be the choice of the LPA and not the contractor.

12-3.05(d) Return of Proposal Guaranty

After all bids have been checked, tabulated, and the relationship between the proposals has been established, the Proposal Guaranty checks of all but the two lowest responsible bidders for each contract or material group must be returned promptly. Bid bonds will not be returned.

After three working days from the date of opening proposals, the LPA may permit the two lowest bidders to substitute bid bonds on Form [BLR 12230](#), executed by corporate surety companies satisfactory to IDOT, for the bank cashier's checks or certified checks submitted with their proposals as Proposal Guaranties.

12-3.06 Award or Rejection

The awarding agency has the right to award the contract, to reject any or all proposals, to waive technicalities, to advertise for new proposals, or to proceed with the work if, in its judgment, the best interests of the awarding agency will be served.

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12-3.06(a) Conflict of Interest

It is important to understand that a conflict of interest may be direct or indirect (e.g., as result of a personal or business relationship). Additionally, the appearance of a conflict of interest should be avoided, as an apparent conflict may undermine public trust if not sufficiently mitigated.

The Public Officer Prohibited Activities Act ([50 ILCS 105/3](#)) regarding conflict of interest states in part, “*No person holding any office, either by election or appointment under the laws or Constitution of this State, may be in any manner financially interested directly in his own name or indirectly in the name of any other person, association, trust, or corporation, in any contract or the performance of any work in the making or letting of which such officer may be called upon to act or vote...*”. The act provides for certain exemptions to the prohibition. However, those exemptions are very restrictive and should be carefully reviewed.

12-3.06(b) Award of Formal Contracts, Material Proposals and Deliver & Install Proposals

The county board, in the case of county or road district projects, or the city council or president and board of trustees, in the case of municipal projects, must make all awards. Committees of the governing body (e.g. road and bridge or public works committees) may not make awards.

The LPA may award a contract or accept a material proposal or quotation in the following circumstances:

1. Low Bid Below Estimate. If a contractor is the lowest bidder at or below the estimate and is recognized as responsible and eligible to bid, and all other factors are considered acceptable by the LPA and IDOT, the contract must be awarded to that contractor. In this case, MFT and/or State funds to the extent agreed upon will be authorized to the full extent of the contract costs.
2. Bid Over the Original Estimate. IDOT will not approve an award made for materials or contract construction that exceeds the estimate unless just cause for making the award is provided by the LPA. In these cases, IDOT will make an analysis of the justification for making the award and, if deemed necessary, the LPA will be asked to submit a revised estimate of the cost to justify its action.
3. Award with Two Low Bidders. If two bidders submit equal bids, the LPA shall consult with the District BLRS on how to proceed with the award. Acceptable practices for breaking the tie may include flipping a coin, drawing cards, rolling dice, or another random practice agreed upon by the District BLRS and the LPA. The two bidders shall be given the opportunity to be present when the LPA breaks the tie.

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4. Award under Unusual Circumstances. If actions are taken that do not fall into the above options, IDOT will require a letter signed by the chairman of the county board, mayor, or president of the municipality, setting forth the reasons for the actions. When a road district(s) is involved, the highway commissioner(s) must also sign the letter or submit a supplementary letter. IDOT will review the reasons. If they are not satisfactory, IDOT may decline to approve the action.
5. Award to Other Than Low Bidder. If the LPA makes an award to a bidder other than the lowest responsible bidder, the following applies:
 - a. the LPA may rescind its action and award the contract to the lowest responsible bidder, in which MFT funds and/or State funds to the extent agreed upon may be used to the full extent of the contract cost, or
 - b. MFT and State funds will not be approved or authorized to finance any portion of the contract cost or material purchase should the LPA enter into a contract with other than the lowest responsible bidder.
6. Material Proposals and Deliver & Install Proposals. The following applies:
 - a. Bid Group. All items in a bid group must be awarded to the same bidder. The award is made based on the total bid for all items in the group.
 - b. Materials Furnished to a Specific Location. When bids are solicited for the purchase of materials that are to be delivered to a specified location, including materials spread or installed on the road, the lowest responsible bidder will be awarded the contract to furnish the materials.
 - c. Materials to be Picked Up at Source. A LPA may take bids to purchase materials that are to be picked up at the source of supply. The determination of the successful bidder for these materials may depend upon a transportation cost in addition to the unit price bid for the material. The LPA must specify in the proposal how the transportation cost is to be calculated. This transportation cost is usually computed on a predetermined charge per mile (km) from the bidder's source to the job site or to a centrally located point(s) within the LPA's jurisdiction. After the bids are opened, the distance in miles (km) from the designated point(s) to each bidder's source of supply is determined. The lowest bidder for these materials is that bidder whose unit price bid plus the transportation represents the lowest on-the-road cost to the purchasing agency. In cases where there are multiple locations, it could entail awarding more than one bidder.

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7. Quotations. When a LPA has solicited quotations rather than a material proposal for the purchase of materials, the LPA is responsible for providing copies of the Form [BLR 12250](#) "Request for Quotations" submitted by the material supplier to the district for approval. After approval, the LPA should return an approved copy to the supplier and retain one copy in their file. The quotations from all responsible bidders may be accepted. Where material is needed for a particular project or location, the supplier, whose quoted price plus transportation cost represents the lowest on-the-road cost to the LPA, will be asked to furnish the material for that work location. If a supplier, whose quoted price represents the lowest cost, is unable to furnish the material when requested, the LPA may purchase the material from the supplier whose quoted price is the next lowest. Documentation of these incidents must be kept on file for audit purposes. If a supplier is continually unable to furnish materials when requested, the LPA should consider that supplier non-responsible, document the details, and refuse to issue the supplier quotation requests for future work.
8. Time Frames. A LPA shall award all MFT and State funded formal contracts, material proposals, or deliver & install proposals within 45 calendar days of the opening of proposals to the lowest responsible and qualified bidder whose proposal complies with all requirements prescribed. The LPA will notify the successful bidder by letter of intent that the bid has been accepted, and subject to the following conditions, that bidder will be the contractor.

If a formal contract, material proposal, or deliver & install proposal is not awarded within 45 days after the opening of proposals, bidders may file a written request with the awarding authority for the withdrawal of their bid, and the LPA must permit the withdrawal.
9. No Bids Received. If after properly advertising for bids and no bids are received; the LPA shall consult the District BLRS office to discuss. A formal letter will be required from the LPA to provide justification on the option chosen. The district will need to concur.
 - a. Review and revise original bid proposal for possible errors or ambiguous information, which may have caused bidders to be cautious to place a bid. If the original bid proposal is revised and is required to be let; a new letting date must be advertised with the revised bid proposal.
 - b. If the original bid proposal does not need revised and time is not a factor, the LPA is encouraged to re-let and possibly send the proposal to other potential bidders.
 - c. If the original bid proposal does not need to be revised, but time is a factor, the LPA may take quotations as discussed earlier. This is based on the LPA did attempt to seek the lowest bid as discussed earlier.

12-3.06(c) Rejection of Bids

Rejection of bids should be based on the following considerations:

1. All Bids Over Estimate. All bids are over the estimate, where no justification is provided for the higher bid, and the LPA is of the opinion that a lower bid can be obtained through re-advertising.

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2. Contractor Overextended. Due to overextension of the contractor's Maximum Available Work Rating or the contractor's Available Financial Rating, as determined in Section 12-3.05(c), a contractor with the low bid below the estimate is declared as not being a responsible bidder by the LPA and/or IDOT.
3. Irregularities. Reasons for rejection of bids based on irregularities include one or more of the conditions discussed in Section 12-3.03(a) or any of the following reasons:
 - more than one proposal for the same work from an individual, firm, partnership, or corporation under the same name or different names,
 - evidence of collusion is found among bidders,
 - unbalanced proposals in which the bid prices for some items are, in the judgment of the LPA and IDOT, out of proportion to the bid prices for other items,
 - if the proposal does not contain a unit price or a total price for a pay item listed, except in the case of authorized alternative pay items or lump sum pay items,
 - if the proposal is other than that furnished by the LPA, or if the proposal is altered or any part thereof is detached,
 - if there are omissions, erasures, alterations, unauthorized additions, conditional or alternative bids, or irregularities of any kind which may tend to make the proposal incomplete, indefinite, or ambiguous as to its meaning,
 - if the bidder adds any provision reserving the right to accept or reject an award, or to enter into a contract pursuant to an award,
 - if the proposal is not accompanied by the proper Proposal Guaranty, or
 - if the proposal is prepared with other than ink or typewriter, not properly signed, or otherwise fails to meet the requirements of the requirements of the special provisions.

If the lowest responsible bid is below the estimate and IDOT concurs with the LPA's reason for rejection, the project may be re-advertised. IDOT may consider the low responsible bid that was submitted at the original letting as an established price for comparison purposes against the bid prices received at any subsequent letting for the same work. If considerable time has elapsed between the original and subsequent letting, the estimate of the cost may be adjusted due to inflation factors with the approval of IDOT.

12-3.07 Contract Bond for Formal Contracts and Deliver & Install Proposals

The LPA shall require every Contractor to supply and deliver a performance and payment bond to the LPA with good and sufficient sureties for formal contracts, for deliver & install proposals, and deliver & install groups within a material proposal costing over \$50,000. The amount of the bond shall be fixed by the LPA, and the bond, among other conditions, shall be conditioned for the completion of the contract, for the payment of material used in the work, and for all labor performed in the work, whether by subcontractor or otherwise. The surety shall be acceptable to the LPA, shall waive notice of any changes and extensions of time, and shall submit its bond on the form furnished by the LPA. If the contract is for emergency repairs, proof of payment for all

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labor, materials, apparatus, fixtures, and machinery may be furnished in lieu of the bond. ([30 ILCS 550/1](#))

12-3.08 Execution of Formal Contracts, Material Proposals, and Deliver & Install Proposals

12-3.08(a) Formal Contracts

An executed contract is required before a LPA is bound. An award may be cancelled at any time by the awarding agency prior to the execution to protect the public interest and integrity of the bidding process or for any other reason if, in the judgment of the LPA and IDOT, the best interests of the LPA will be promoted thereby. Once a contract has been awarded, it is in the best interest of all parties concerned to ensure that the contract is executed without delay.

When the LPA notifies the contractor of the LPA's intent to award the contract, they will also send the contractor copies of the contract and contract bond form, where applicable Form [BLR 12321](#), for execution by the contractor.

The contract shall be executed by the successful bidder and returned, together with the contract bond, when applicable, within 15 days after the contract has been mailed to the bidder. Failure of the successful bidder to execute the contract and file acceptable bonds, where applicable, within 15 days after the contract has been mailed to the bidder will be just cause for the cancellation of the award and the forfeiture of the Proposal Guaranty, which will become the property of the LPA, not as penalty, but in liquidation of damages sustained. Award may then be made to the next lowest responsible bidder, or the work may be re-advertised and constructed under contract or otherwise, as the LPA and IDOT may decide.

If the bidder to whom the award is made is a corporation organized under the laws of a State other than Illinois, the bidder must furnish the LPA a copy of the corporation's Certificate of Authority to do business in the State of Illinois with the return of the executed contract and bond, where applicable. Failure to furnish the Certificate of Authority within the time required will be considered as just cause for the annulment of the award and the forfeiture of the Proposal Guaranty to the LPA, not as penalty, but in payment of liquidated damages sustained as a result of this failure.

The execution of contracts by the chairman of the county board, or any duly designated contracting officer, attested to by the county clerk, is considered by IDOT as sufficient evidence that the contracts have been legally awarded by action of the county board for county and road district projects.

The execution of contracts by the mayor, president of a village board, or president of a town board, or any duly designated contracting officer, attested to by the city clerk, village clerk, or town clerk, is considered by IDOT as sufficient evidence that the contracts have been legally awarded by action of the city council, village board, or town board for municipal projects.

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The Proposal Guaranty checks of the two low bidders should be returned as soon as the contract and contract bond, where applicable, of the successful bidder have been executed and approved.

12-3.08(b) Material Proposals and Deliver & Install Proposals

The Form [BLR 12330](#) "Acceptance of Proposal to Furnish Material and Approval of Award" is to be used for the award of material proposals and deliver & install proposals. This form is the only documentation required for the district to approve the award, and together with the proposal booklet, constitutes a material purchase contract or deliver & install contract. Form [BLR 12330](#) should contain all the information regarding the type of material, estimated quantities, unit price bid, and total amount, plus point of delivery or shipping instructions. This form is to be signed by an appropriate local official and submitted to the district for approval. Approved copies of the form will be returned to the LPA. The LPA is required to return a copy to the successful bidder. The LPA at their option may follow the requirements of Section 12-3.08(a), instead of submitting Form [BLR 12330](#).

If a contract bond is not required, the LPA has the option of permitting a successful bidder to furnish a contract bond for the full amount of the award or of retaining the bidder's proposal check in lieu of the contract bond until completion of the purchase. If a bid bond was provided for the Proposal Guaranty, a contract bond will be required. When a contract bond is required or furnished, the LPA will return the Proposal Guaranty check of the successful bidder upon receipt and approval of the contract bond. The LPA will indicate their desires relative to the Proposal Guaranty and contract bond by filling in the proper spaces on the Notice of Letting portion of Form [BLR 12240](#).

The Proposal Guaranty of the second low bidder will be returned after the award of the material proposal or deliver & install proposal to the low bidder.

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12-4 LOCAL LETTING COMPLAINTS OR PROTESTS

12-4.01 General

On LPA let procurements, a bid complaint, that concerns compliance of a bidder with the Apprenticeship and Training Certification, may be filed with IDOT. IDOT will resolve bid complaints according to Section 12-4.02.

On LPA let procurements, a bid protest, that concerns fraud, corruption or illegal acts undermining the objectives and integrity of the procurement process may be filed with the LPA. The LPA will resolve bid protests according to Section 12-4.03.

12-4.02 Apprenticeship and Training Certification

12-4.02(a) Complaints

The Office of Chief Counsel (OCC) will administer all complaints regarding Section 12-3.04(a)6.

1. In order for a complaint to be valid, all complaints must be submitted in writing and filed with OCC within seven calendar days of the bid opening. The entity filing a complaint should also send a copy of the complaint letter to the LPA. Complaints filed after seven calendar days will not be considered. The complaint shall contain the name of the LPA, contract section number, name of the apparent low bidder, and the reason for the complaint. The complaint shall also include the name, address, e-mail address (if available), telephone number, and facsimile number of the entity filing the complaint.
2. To allow for the timely submittal of a complaint, IDOT will not concur with the award of any contract until the eighth calendar day following the letting. Therefore, the LPA shall not proceed with the award for eight calendar days following the letting.

For LPAs under an agreement of understanding with IDOT, the LPA shall wait eight calendar days before awarding the project.
3. When a complaint has been timely filed with OCC, the District Local Roads Engineer will be contacted. The District Local Roads Engineer will contact the LPA. IDOT will not concur with the award of the contract until the complaint has been resolved.

For LPAs under an agreement of understanding with IDOT, the LPA shall not award the contract until the complaint has been resolved.
4. Under the direction of the OCC and/or District Local Roads Engineer, the LPA and/or the bidder will gather the documents necessary to resolve the complaint. The bidder shall cooperate by promptly providing the requested information. Failure of the bidder to cooperate shall result in the bidder being deemed non-responsible.

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5. The Director of Highways Project Implementation, based on OCC's advice and recommendation, will make the final decision regarding the disposition of the complaint. IDOT will attempt to resolve a complaint within the 45-day award period. However, if the complaint resolution is expected to take more than 45 days, IDOT will coordinate with the LPA.
6. Once a complaint is resolved, the Director of Highways Project Implementation will send a letter to the entity filing a complaint, with a copy also sent to the District Local Roads Engineer. The District Local Roads Engineer will notify the LPA of the decision and proper course of action.
7. If a complaint is sustained, the remedies available are limited to an award to the next lowest responsible bidder, cancellation of the solicitation, or re-advertisement of the solicitation. If the LPA proceeds with an award on a sustained complaint, IDOT will deem the project as non-participatory for MFT or other State funds administered by IDOT.
8. Nothing in this Section shall preclude IDOT from investigating or further considering a bidder's or Contractor's compliance with the Apprenticeship and Training Certification requirements after award or project completion.

12-4.02(b) Certification Determination

Upon receiving a complaint, OCC will request and review documents to determine whether satisfactory evidence exists that the apparent low bidder participates in a U.S. Department of Labor (USDOL) approved apprenticeship and training program(s) applicable to the crafts listed in the bid documents. If IDOT determines that satisfactory evidence exists, the complaint will be denied. IDOT will neither determine the types of crafts needed to complete the work nor otherwise rule on any other issue except for if a bidder participates in apprenticeship and training program(s) applicable to the crafts listed in the bid documents.

12-4.03 Bid Protests

All bid protests shall be resolved based on the LPA's procurement procedures. The LPA shall consult with the District BLRS before any decision is finalized to ensure that IDOT will not deem the project as non-participatory for MFT or other State funds administered by IDOT.

BLRS Special Provision "Protests on Local Lettings" may be inserted into the contract or material proposal to establish bid protest guidelines on LPA lettings.

12-5 CONTRACTOR OR SUBCONTRACTOR SUSPENSION

12-5.01 General

To protect the public interest in the solicitation, execution, and performance of contracts or subcontracts administered by IDOT, it is the policy of IDOT to conduct business only with contractors or subcontractors of responsible business integrity and honesty. Suspension is a discretionary action imposed in accordance with Subpart I of Title 44 Subtitle A Chapter III Part 6 of the Illinois Administrative Code. It may be imposed only for the causes and in accordance with the procedures set forth in Subpart I.

The Chief Procurement Officer (CPO) of IDOT may suspend a contractor or subcontractor from participation on any contract or subcontract awarded by or requiring approval or concurrence of IDOT upon a determination by the CPO based upon adequate evidence that the contractor or subcontractor has engaged in conduct proscribed by Section 6.520 of Subpart I. Further information on suspension may be found at the [CPO website](#).

12-5.02 Impact to LPA Projects

12-5.02(a) Advertisements and Lettings

For projects that have been advertised by the LPA, the LPA should refuse to issue proposal documents to the suspended contractor and should not open bids, submitted by the suspended contractor.

For projects that have been let by the LPA and the suspended contractor is the apparent low bidder, the LPA should reject the low bid and return the suspended contractor's proposal guarantee. The LPA may award to the next lowest responsible bidder or the LPA may re-let the project.

For projects require pre-qualification, the LPA should ensure that a suspended contractor is not listed as a subcontractor on Form [BC 57](#) "Affidavit of Availability".

12-5.02(b) Continuation of Executory Contracts

Interim suspension, voluntary exclusion, or suspension pursuant to this Subpart I shall not relieve a contractor or subcontractor or its surety of any obligation to be performed in accordance with the terms of any executory contract or bond that remains in full force and effect. Executory contracts are voidable by IDOT or LPA without penalty or further payment, except payment for completed and accepted work, if the facts and circumstances giving rise to the suspension are of such a nature as to require action to safeguard the public interest.

If the contractor is suspended by IDOT prior to the completion of the work, the LPA may:

- cancel the contract with the suspended contractor,
- continue the contract with an alternative source of funds, or

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- submit a request to the District BLRS to continue the contract with the suspended contractor using federal, state, or MFT funds. The LPA shall provide documentation to the District BLRS validating that it is in the best interest of the public for the suspended contractor to complete the work. The District BLRS will submit the request to the CPO for a determination.

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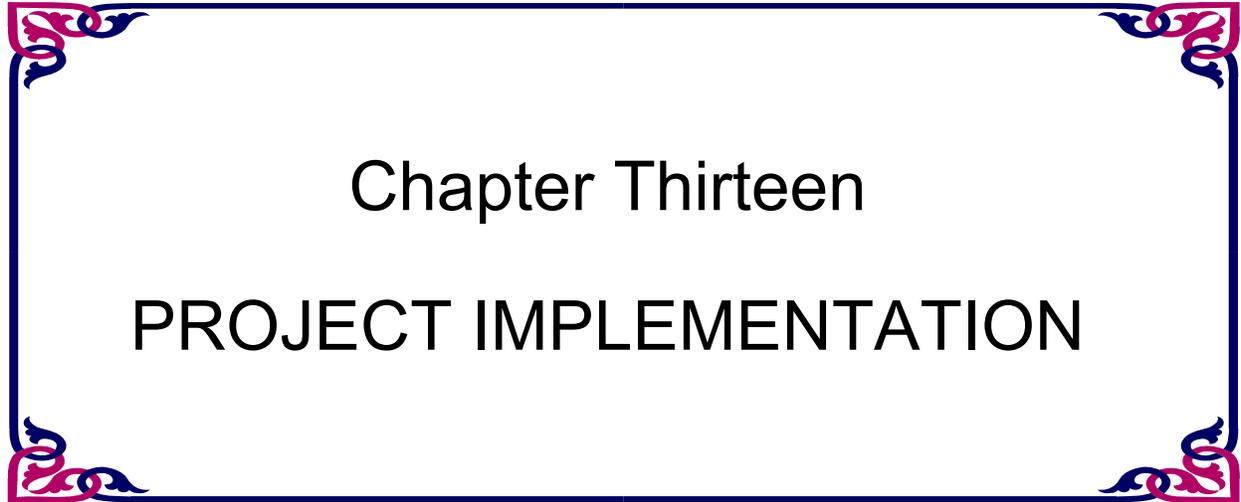
12-6 ACRONYMS

This is a summary of the acronyms used within this chapter.

BDE	Bureau of Design and Environment
BLRS	Bureau of Local Roads and Streets
CBLRS	Central Bureau of Local Roads and Streets
CDB	Capital Development Board
CMS	Central Management Services
CPO	Chief Procurement Officer
FOB	Freight on Board
IDOL	Illinois Department of Labor
IDOT	Illinois Department of Transportation
ILCS	<u>Illinois Compiled Statutes</u>
LPA	Local Public Agency
MFT	Motor Fuel Tax
OCC	Office of Chief Counsel
PS&E	Plans, Specifications, and Estimates

12-7 REFERENCES

1. [Illinois Compiled Statutes](#)
2. *Joint Purchasing Manual, Government Units Reducing Through Centralized Procurement*, CMS, April 2016.
3. [Schedule of Average Annual Equipment Ownership Expense](#), IDOT, January 2004
4. [Chapter 66](#) "Contract Processing", *BDE Manual*, IDOT.
5. [Chapter 14](#) "Maintenance", *BLRS Manual*, IDOT.
6. [Chapter 24](#) "Letting and Contract Award", *BLRS Manual*, IDOT.



Chapter Thirteen

PROJECT IMPLEMENTATION

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Chapter Thirteen

PROJECT IMPLEMENTATION - MFT AND STATE FUNDS

13-1 PRECONSTRUCTION CONSULTATION

Some form of preconstruction consultation is advisable for any project that is accomplished by contract. The consultation may be formal or informal, depending upon the complexity of the project.

When a day labor project involves furnishing and spreading materials, it is advisable to discuss project specifics with the material supplier prior to commencing work. The supplier and the local agency should agree upon scheduling of the work, method of handling traffic control, and method of payment for materials delivered. To avoid future conflicts, document these agreements in the project file.

13-1.01 Formal Preconstruction Consultation

Formal preconstruction conferences are typically held for complex contract projects. The purpose of the preconstruction conference is to arrive at acceptable solutions to potential conflicts by discussing the plans and specifications, any unusual conditions, the method and schedule of operations, mobilization of equipment, labor requirements, traffic control, and any applicable federal, State, or local requirements. As soon as practical after award, the local agency should arrange a conference with the contractor and district prior to commencing the work. On very large and complex projects, it may be desirable to hold additional separate conferences for individual operations (e.g., paving, roadside planting, electrical work). The following sections describe the procedures for conducting the preconstruction conference.

13-1.01(a) Preparation

Consider the following when preparing for the preconstruction conference:

5. Progress Schedule. The contractor should prepare a schedule that details the proposed work sequence to complete the contract work items within the allotted time (e.g., number of working days, completion date). The contractor will submit the schedule to the local agency, which will use it as a basis for checking construction progress. The contractor should include the production rates to complete each sequence of work in the progress schedule. Form BC-255 may be used for the progress schedule.

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6. Conference Attendance. Determine who should attend the conference. Typically, the following individuals are invited to attend the meeting:
- local agency representatives,
 - district local roads personnel,
 - resident engineer designated for the project,
 - contractor,
 - subcontractors and agents, as approved,
 - utility/railroad representatives, where these facilities are affected, and
 - other interested parties.

13-1.01(b) Discussion

Figure 13-1A illustrates a typical preconstruction conference agenda, which may be customized for individual projects. During the meeting, special emphasis should be placed on the following items:

1. Traffic Control. The Traffic Control Plan (TCP) should be a primary topic of discussion. The contractor will furnish the name of the individual in his direct employment who is to be responsible for the installation and maintenance of the traffic control for the project. Remind the contractor of the obligation to provide certified flaggers who have been instructed in the fundamentals of correct flagging procedures.
2. Commitments. Regardless of the fund type used, any commitments made during the planning, design, or right-of-way acquisition stages must be carried through to completion of the project. Review any commitment list, compiled prior to award of the contract, to determine if there are any commitments not included in the contract that must still be considered. Retain a copy of the commitment list to ensure satisfactory completion of all contract requirements.
3. Erosion Control Measures. At the meeting, if applicable, include a discussion of:
 - plan provision for temporary and permanent erosion and sediment control with pay items,
 - relationship of the temporary and permanent erosion and sediment control measures to the sequence of construction operation,
 - need for the contractor to supplement information in the Storm Water Pollution Prevention Plan (SWPPP) on the specific sequence of construction operations proposed for the project,
 - any project-specific concerns, problem areas, or commitments, and
 - arrangements for a field review for erosion and sediment control aspects.

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These discussions should be reflected in the meeting minutes.

Section 13-4.05 provides further guidance on the necessary measures required for erosion and sediment control.

4. Permits Required. Provide a list of the applicable permits that are required for the projects. The following applies:
 - U.S. Army Corps of Engineers (USACE) – Section 404 Permit,
 - Illinois Environmental Protection Agency (IEPA) – NPDES permit, and
 - other permits.
5. Material Suppliers and Inspection Requirements. The contractor should present a list of the material suppliers. Any special testing requirements including quality control/quality assurance requirements and procedures should be discussed. Borrow pit locations and their environmental review should be discussed.

13-1.01(c) Documentation

Include written minutes of the preconstruction conference in the permanent project file. Provide copies of the minutes to the district, the contractor, and to each individual or agency represented. The project personnel involved should also initial the minutes involving instructions to the contractor. Include these instructions in the project file.

13-1.02 Informal Preconstruction Consultation

When a formal preconstruction conference is not held, the representative for the local agency and the contractor should confer and agree upon the scheduling of the work, method of handling traffic, sources of materials, public access, and method of payment for work accomplished. Document any agreements in the project file for future reference.

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1. Contact Names and Telephone Numbers
 - a. Local Agency
 - b. District
 - c. Design Engineer
 - d. Contractor
 - e. Subcontractors
 - f. Material suppliers
 - g. Utilities
 - h. Railroads
 - i. Emergency service agencies
 - j. Mass transit agencies
 - k. Schools, mail services
 - l. Others

2. Order of Work
 - Award, execution, and start dates
 - Working days, completion date, incentive/disincentive
 - Proposed Sequence of Operations
 - Progress schedule

3. Right-of-Way and/or Easements
 - a. Is the property clear
 - b. Are there any restrictions to use
 - c. Disposition of any right-of-way conflicts or prior commitments by the local agency on behalf of property owners

4. Utilities/Railroads/Mass Transit
 - a. Status of any utility/railroad conflicts affecting the project
 - b. List of affected services and representatives to be contacted
 - c. Location of underground services
 - d. Notification time required by organizations
 - e. Resolution schedule
 - f. Railroads
 - (1) Submittal procedures
 - (2) Restrictions
 - (3) Construction/protection requirements
 - (4) Rail flagger requirements
 - (5) Insurance requirements, if any
 - g. Notification of all emergency service agencies
 - h. Notification of mass transit agencies affected by the project

PRECONSTRUCTION CONFERENCE AGENDA

Figure 13-1A

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5. **Agreements**
 - a. Local agency
 - b. Haul road use and maintenance
 - c. Jurisdictional transfer
 - d. Railroad
6. **EEO and Labor Compliance**
 - a. See Construction Memorandum 24, "Equal Employment Opportunity Contract Provisions and District Responsibilities" for details. Schedule a separate meeting, if necessary.
- a. **Sub-Contractors and Agents**
 - a. List of proposed sub-contractors
 - b. Request for approval for each sub-contractor
 - c. Nature of work to be performed by each
 - d. Subcontractor's correspondence route via prime contractor
 - e. Prime contractor representative with authority on the job at all times (designated by letter)
 - f. Minority subcontract work — in-depth discussion including conditions of award, if any
7. **Materials**
 - a. List of approved material suppliers
 - b. Request any special requirements and/or testing
 - c. Designate contractor's representative to be contacted concerning failing field or plant tests.
 - d. Locations and approval listing of borrow pits and testing procedures
 - e. Provide contractor with QC/QA requirements and procedures
 - f. Material safety data sheets (MSDS) and their location

Note: Remind the contractor and sub-contractors to provide inspected materials and sufficient advance notification to arrange inspection of plants and mixtures.

PRECONSTRUCTION CONFERENCE AGENDA

Figure 13-1A
(Continued)

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9. Records and Reports

- a. Wage rate interviews, if required
- b. Falsework plans, if required
- c. Submission for approval for source of materials
- d. Procedures to be used for pay-item documentation
- e. Required forms to be submitted to contractor
- f. All reports to be handled through prime contractor's office
- g. Stormwater Pollution Prevention Plan (SWPPP)
- h. Shop drawing requirements, timing number required, submittal/review/approval process and conditions

10. Traffic Control and Safety

- a. *Illinois Manual on Uniform Traffic Control Devices* will control signing placement not detailed in the plans
- b. Review and discussion of Traffic Control Plan (TCP)
- c. Safety control on structures
- d. Flaggers requirements (i.e., certification, training, flagger apparel)
- e. Form BT-725
- f. Speed regulation of construction equipment
- g. Name of the contractor's person responsible for traffic control
- h. Safety and health requirements
- i. Request police to report all work zone crashes to the contracting authority
- j. Contractor's proposed method of addressing traffic control
- k. Local access through the work site
- l. Access for emergency vehicles through the work site
- m. Responsibility for signing and maintaining temporary run-arounds or detours
- n. Contractor is responsible for complying with Construction Memorandum 63, "Construction Safety"
- o. Pedestrian access through the work site

11. Erosion Control

- a. Plan (temporary and permanent controls)
- b. On-site meeting
- c. Stormwater Pollution Prevention Plan (SWPPP)
- d. National Pollution Discharge Elimination System for Stormwater Discharge

PRECONSTRUCTION CONFERENCE AGENDA

**Figure 13-1A
(Continued)**

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12. Commitments

- a. Review Commitment file
- b. *IDOT Standard Specifications* and Special Provisions
- c. Contractor responsibility to obtain permits
 - (1) 404 Permit and/or stream crossings
 - (2) Open Burning of Organic Waste permit
 - (3) the resident engineer/resident technician will inspect the burn facility to ensure compliance with the Statewide permit and will document the inspection in the contract diary
 - (4) The resident engineer/resident technician will notify the Supervising Field Engineer of non-compliance
 - (5) Non-compliant facilities will cease operations until corrections are made
- d. Environmental issues and concerns
- e. Reports of citizen complaints will be forwarded to IEPA within one working day

13. Dismiss Disinterested Parties (List those leaving)

14. Reopen with Specific Construction ITEM Discussion

- a. Have the contractor explain the sequence of work
- b. Review of anticipated construction problems

PRECONSTRUCTION CONFERENCE AGENDA

Figure 13-1A
(Continued)

13-2 CONSTRUCTION PROCEDURES

13-2.01 Project Supervision

Every local agency, when using MFT or State funds for a project, has an obligation to ensure that the project is completed according to the approved plans and specifications. The local agency should provide a resident engineer/technician that is responsible for the administration of the contract. The local agency is responsible for providing survey control points to guide the contractor in its operations. It is also the agency's duty to perform any required compaction tests, thickness measurements, area or volume measurements, and other tests to determine compliance with the plans and specifications. If the local agency does not have qualified personnel on its staff to accomplish the project supervision, it should employ a consulting engineer to provide the necessary supervision. The agency, in consultation with IDOT, should determine the level of supervision required and arrange to provide the necessary personnel.

IDOT, through the Central BLRS, provides an annual program of training classes for local agencies and consultant personnel. The program provides training in a variety of skills that relate to project supervision and inspection. Information on these classes is available on IDOT's website.

13-2.02 Project Documentation

Every project undertaken by a local agency has the potential to become the subject of controversy and, possibly, litigation, regardless of the source of funding for the project. The manner in which project records are maintained may have a significant impact upon the outcome of these confrontations.

IDOT does not prescribe a specific method of project documentation for MFT or State funded local projects. However, the documentation required must be kept in the project file and be available to IDOT upon request. IDOT's *Construction Manual* can be used as a guide. This *Manual* provides a method of documentation for projects where IDOT is the awarding authority. The level of documentation is primarily determined by the complexity of the work. A routine seal coat operation would most likely require only traffic control documentation and collection of weight tickets. For a major new construction or reconstruction project, IDOT's method, or a similar procedure, is recommended to provide an acceptable level of confidence. Material inspection documentation must follow IDOT's *Project Procedures Guide*; see Section 13-3.

13-2.03 Contract Changes

13-2.03(a) **Changed Conditions, Alterations, or Cancellation of Contracts**

Subsequent to the award of a contract or a proposal to furnish materials, the local agency or contractor may become aware of circumstances that substantially affect the performance of the work. Any alterations of contracts or agreements to cancel contracts must be accomplished

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according to the provisions of the *IDOT Standard Specifications*. The inability to produce or purchase necessary materials meeting the contract specifications is not sufficient cause to cancel a contract by mutual agreement.

13-2.03(b) Changes in Specifications

After the contract or material proposal has been awarded, any major change (e.g., a change that will affect the performance, life expectancy, lower the design strength of a product) to the specifications or any change to the material specifications will require approval of IDOT. If it is deemed necessary that a change in specifications is required, the local agency may submit a request to the district providing one or more of the following conditions is met:

- the project cannot reasonably be constructed or maintained as specified,
- a substantially equal product can be obtained at a savings to the project, or
- a vastly superior product can be obtained at the original contract price.

Furnish any supporting data to substantiate the requested change. If approved, the district will advise the local agency to submit Change in Plans according to Section 13-2.03(c).

13-2.03(c) Change in Plans

1. In accordance with the Change Orders section of the Criminal Code of 1961, 720 ILCS 5/33E-9, it is the responsibility of the local agency official signing the change order to provide a written determination for all change orders or series of change orders that authorize a net increase or decrease in the cost of a local agency contract by a total of \$10,000 or more, or an increase or decrease in the time of completion by 30 days or more. Written determinations of the change order must contain one of the following depending upon the circumstances of the change:

- The undersigned has determined that the circumstances that necessitate this change were not reasonably foreseeable at the time the contract was signed.
- The undersigned has determined that the circumstances that necessitate are germane to the original contract.
- The undersigned has determined that this change is in the best interest of the local agency and is authorized by law.

IDOT will not approve contract changes unless the written determination required by the Criminal Code is in place. It is important to note that compliance with the prior written determination mandated by the Criminal Code is separate from the Change in Plans approved by IDOT. The approval outlined in the Criminal Code must be done regardless of approval of Change in Plans by IDOT.

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2. For any contract project or day labor construction project, IDOT requires the submission of a Change in Plans form BLR 13210 to document any plan changes.

a. Types of Changes. Changes in plans may be classified as major or minor:

- Major Change. A major change applies to extra work or a quantity change that:

- modifies the approved design geometrics or changes the typical section above the subgrade,
- alters the intent or scope of the contract or character of work (e.g., extending or shortening contract length, adding work that is not required to complete the contract as awarded),
- alters specifications, special provisions, or other contract requirements, see Section 13-2.03(b), or
- results in added quantities, agreed unit prices, or an agreement to perform work by force account methods that exceed the contract award or approved estimate amount by 10% or \$20,000, whichever is less.

- Minor Change. A minor change applies to extra work or a quantity change that is:

- an authorization that adjusts small changes in plan quantities to final as-built quantities, except where the change in plans alters the contract to include work locations not in the original proposal or denies the competitive bidding process,
- work accomplished at unit prices, agreed unit prices, or on a force account basis that does not classify as major and does not exceed the contract award or approved estimate amount by 10% or \$20,000, whichever is less, or
- an adjustment in unit prices of the item specifically covered by the *IDOT Standard Specifications* or Special Provisions (e.g., timber piling length adjustment).

b. Submission Requirements. The following applies with respect to the submission of major and minor changes:

- Major Change in Plans. Transmit all major changes to the plans to the district for approval prior to performing the work. Include revised plans, if necessary, for the work. If changes in plans involve a variance from policy or criteria, the procedures for variances in Section 27-7 will apply. Variances must be approved prior to the approval of the change in plans.

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- Minor Change in Plans. The district can verbally approve minor changes in plans not involving quantities prior to performance of the work. Minor changes in quantities will be approved by the county engineer for county or road district work and by the municipal engineer for municipal work. Minor changes in quantities for municipalities without a municipal engineer will require district verbal approval.

Subsequently, submit the Change in Plans form (BLR 13210) and any customary bills, plans, and pertinent data to the district for formal approval of changes in quantities and changes in plans.

- Day Labor. On day labor construction projects, document these differences on form BLR 13210 using unit prices taken from the approved engineer's estimate. Calculate the increase or decrease of the quantities of work according to the *IDOT Standard Specifications*. Additions and deductions may be combined on the same form and submitted to the district when construction is complete. Design modifications and changes in length (either addition or deduction) and applicable quantities must be submitted on separate forms from other quantity changes.

Local agencies should incorporate written determinations as required in Section 13-2.03(c)(1) into, or attach to, the appropriate document making the change (e.g., form BLR 13210, amendments, resolution).

- c. Signature Requirement. The following applies with respect to signature requirements for approval of changes in plans:

- Municipal Change in Plans. A regularly appointed or elected municipal officer will sign changes in plans for municipal work. This officer may be the president of the board, mayor, clerk, or regularly appointed engineer whose office is established by ordinance and who is appointed to the office in an official manner. Changes in plans forms signed by others cannot be accepted.
- County Change in Plans. The county engineer will sign changes in plans for county work.
- Road District Change in Plans. The county engineer (superintendent of highways in Cook County) as well as the highway commissioner will sign changes in plans for road district work. In those cases where the highway commissioner has given the county engineer authority to approve all plans, only the county engineer will need to sign the change in plans. A copy of this written permission must be on file with IDOT.

13-2.03(d) Thickness Report for PCC or Bituminous Pavements

It is the intent that all PCC and bituminous pavements be constructed to the thickness shown on the plans. Pavement thickness will be determined according to the *IDOT Standard Specifications* (e.g., cores and/or edge measurements). The following applies to pavements:

1. Core Drills. In order to prevent any delays in checking the thickness of pavement and shoulder times, coring should be accomplished as soon as the item is complete and equipment can be safely placed in the area. Coring will only be conducted under this policy when other contract provisions for coring do not apply. Contracts requiring at least 1000 yd² (800 m²) of pavement will require coring to confirm adequate thickness.

The local agency will determine the location of the cores using a random system. The local agency should use the procedures discussed in the Construction Memorandum No. 42, "Contractor Coring of Square Measurement Pavement and Shoulder Pay Items," as a guide. The core locations will be laid out by the resident engineer/technician. The contractor will complete all work necessary to perform the coring operation. The local agency will have a representative present while the contractor is coring the pavement. All costs necessary in completing the coring operations are paid in accordance with the standard specification for extra work unless otherwise provided in the contract.

2. Penalties for Thin Pavement and Surface Irregularities. Penalties assessed against a contractor for thin pavement or surface irregularities according to the *IDOT Standard Specifications* will be computed and shown as a deduction from the contract cost. Document these penalties as a separate line item on form BLR 13210. Penalties may not be calculated as pay item quantities and deducted from the contract in that fashion.

13-2.03(e) Extra Work

All extra work must comply with the requirements of the *IDOT Standard Specifications*. It is not permissible to convert extra work not covered by pay items in the contract into contract pay items to facilitate payment of the cost of the extra work.

Frequently, it is possible to negotiate an agreed price, either lump sum or unit price, to perform work that is necessary but was not included in the awarded contract. Documentation for agreed prices should include a letter from the contractor agreeing to do the work at the stipulated price, and a statement from the local agency accepting the contractor's proposal. Attach copies of the agreed price letter and local agency acceptance to form BLR 13210. Other extra work will be done on a force account basis. Approval of IDOT is required in accordance with the change in plan approval procedure.

13-2.03(f) Extension of Contract Time

The *IDOT Standard Specifications* provides the methods to be used when it is necessary to grant an extension of time to a contractor. The contractor of the local agency may request a

time extension. Submit all time extensions along with the supporting documentation to IDOT for approval.

13-2.03(g) Liquidated Damages

When a contractor fails to complete a project within the specified working days or by the specified completion date, or within the extended time as may have been allowed, liquidated damages will be assessed according to the *IDOT Standard Specifications*. The liquidated damages will be computed as a deduction from the contract and documented as a separate line on form BLR 13210.

13-2.04 Payments to Contractors

13-2.04(a) Pay Estimates

The local agency is responsible for preparing a pay estimate at least once a month and submitting to the district for the value of the work performed. Any retainage required by the project specifications is deducted from the pay estimate before payment is made to the contractor. IDOT does not require documentation of partial payment made by the local agency during the life of the project. However, it is always advisable to maintain some type of record in support of payments made to the contractor or material supplier. Use of the Engineer's Pay Estimate (Form BLR 13230) is recommended for partial payments.

13-2.04(b) Maximum Payment

Throughout the *IDOT Standard Specifications*, there are numerous references to pay items on which payment cannot be made for more than a specified percentage of the amount specified by the engineer. The purpose of the maximum pay percentages is to allow the contractor latitude in application rates as well as to discourage sloppy applications. These percentages generally apply to only those pay items that are paid for on the basis of volume or weight.

It is desirable to run daily yield checks on these items so that the contractor can be notified when production has exceeded the maximum specified quantity. The final payment is based on the plan quantity plus or minus any adjustment times the above maximum pay percentage.

13-2.04(c) Final Payment Estimate

The Engineer's Final Payment Estimate (Form BLR 13231) is required for all day labor construction and all contract projects. When preparing the final payment estimate, show the awarded quantities and costs for comparison with completed quantities and cost. Any increase or decrease in quantities must have been documented by an approved Request for Approval of Change in Plans (Form BLR 13210).

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When preparing the final payment estimate for a day labor construction project, the awarded cost information will be the same as that shown on the approved estimate. The completed cost information will be either the actual unit cost or the agreed unit cost plus the awarded unit price for the materials portion of each pay item. If the approved estimate shows the breakdown for each pay item into labor, equipment rentals, and material costs, show the same breakdown on the final payment estimate.

List additions to or deductions from the project that do not involve awarded pay items in the sections of the form set aside for “miscellaneous additions and extras” and for “miscellaneous debits”, respectively. List all agreed price items, extra work items, and early completion incentives under the miscellaneous extras and additions section of the form. The miscellaneous debit section of the form should contain items such as thin pavement penalties, surface irregularity penalties, and liquidated damages. Also, show debits to the contract for uninspected materials or non-standard construction items that have been permitted to remain in place in this portion of the form.

Prior to submitting the final payment estimate to the district for approval, the local agency should ensure that their file contains the following documentation:

- release of Liens and Waivers of Claims from all subcontractors, material suppliers, and equipment suppliers for the project,
- certification by the contractor that all laborers and mechanics have been paid fair compensation,
- evidence that all pay quantities have been properly measured and final quantities agreed to by the contractor,
- evidence of materials inspection for all materials delivered to the project, and
- time and equipment rental records for a day labor project.

If federal funds are not involved, the local agency will retain a portion of the amount due to the contractor until an approved copy of the final payment estimate is returned (605 ILCS 5/5-409 and Check Sheet # LRS15 Partial Payments). For county or road district projects, the county engineer should sign the final payment estimate. For municipal projects, the signature should be that of a regularly appointed or elected municipal officer.

13-2.04(d) Contractor Claims

If a contractor claims that additional payment is due and the local agency has not agreed that payment is due, the contractor must file a written claim with the local agency. A final decision must be rendered by the local agency within 90 days of receipt of the claim. If a contractor seeks relief of this decision, the contractor must file a claim for adjudication at the Court of Claims within 60 days after the date of the written decision of the local agency.

13-2.05 Equipment**13-2.05(a) Inspection**

The local agency is responsible for ensuring that the equipment used on MFT and State funded projects meets all requirements of the *IDOT Standard Specifications* and Special Provisions of the contract. The equipment must be of sufficient size and mechanical condition to provide satisfactory quality of work without causing injury to the roadway, structures, adjacent property, or other highways when being moved or used. The use of unsatisfactory equipment is not permitted. The *IDOT Standard Specifications* or Special Provisions may prescribe specific equipment for a particular phase of work and define the requirements and performance of that equipment. If equipment is not prescribed, the contractor is free to use any equipment, provided it is satisfactory to the local agency and meets the project requirements. The District Bureau of Project Implementation may inspect batch plants, pavers, and mixers upon request prior to the start of construction.

Many pieces of equipment carry a rating plate or operating manual from the manufacturer indicating capacity, volume, or operating features. Operation of the equipment outside these limits will generally produce an inferior product. Make a careful review of the project documents and related operating manual requirements prior to using the equipment on a project. The *IDOT Construction Manual* provides inspection checklists for construction equipment.

13-2.05(b) Substitution

If the contract specifies the use of equipment of a particular size or type, the contractor may request, in writing, permission to use alternative equipment. In these cases, the contractor will be responsible for furnishing evidence, satisfactory to the local agency, that the proposed equipment is capable of producing equal work. If the substitution is agreeable to the local agency, the agency will forward a copy of the request and any supporting documentation to the district for approval. The approval may be withdrawn at any time if results are found to be unsatisfactory. No additional compensation will be allowed the contractor for any delays or additional costs incurred as a result of using alternative equipment.

13-3 INSPECTION AND TESTING OF MATERIALS

13-3.01 General

13-3.01(a) Local Agency Responsibilities

All materials incorporated into a project, financed in full or in part with MFT or State funds, must be inspected and tested for compliance with the requirements of the *IDOT Standard Specifications*, Supplemental Specifications, Recurring Special Provisions, contract special provisions, and the *Project Procedures Guide* (PPG). The local agency is responsible for this inspection and testing before any material is incorporated into the project.

The guidelines in PPG apply to the testing and inspection of materials for all local agency projects. Exceptions to these guidelines have been developed to accommodate local agency needs. A Qualified Local Agency Representative (QLAR) must submit certain certifications for exceptions discussed in the following Sections. QLAR is defined as a county engineer, a public works director, or a municipal engineer. The public works director or municipal engineer must be a licensed Professional Engineer in the State of Illinois and a public employee.

It is important that local agency personnel receive adequate training and have access to well-maintained and properly calibrated equipment to carry out their responsibilities. Based upon the QLAR's professional judgment, they may certify their employees as qualified personnel based on prior training and related work experience. The QLAR must also certify that adequate equipment is available for the specified test. A Certification of Local Agency Material Test Procedures (Form BLR 13310) must be submitted to the district for each employee certified. This form will need to be submitted one time and only resubmitted if any of the certified conditions have changed. The local agency lab should be treated as a district lab as defined in PPG for those tests specified on form BLR 13310.

13-3.01(b) Department Assistance

Under certain circumstances, the local agency may request IDOT to take responsibility for obtaining samples of materials, making field inspections, and conducting material tests. The districts may provide some or all of these services to the local agency provided personnel are available and the work can be performed without additional expense to IDOT. Otherwise, the local agency will be required to perform these tasks with its own engineering forces and/or private testing laboratories. In all cases, the sampling, inspections, and testing will be conducted according to the *IDOT Standard Specifications* and PPG. The local agency, through its contractor, will provide any facilities as required by IDOT for collecting and forwarding samples, and making inspection.

The contractor or local agency must not use or incorporate into the work the materials represented by the samples until tests have been made and the material found to be in accordance with the *IDOT Standard Specifications*. Failing samples will be handled in accordance with PPG.

13-3.01(c) Consultants and Private Laboratories

When the local agency employs consulting engineers and/or private testing laboratories to handle the material inspection and testing, there must be an understanding with the district as to what materials will be inspected and what tests will be performed by each. The consulting engineers and/or private testing laboratories will furnish the local agencies with copies of the material inspection reports. It is the responsibility of the local agency to administrate the materials acceptance process for the contract. Trained technicians and qualified laboratories are required by PPG.

13-3.01(d) Contractors and Material Suppliers

Although the local agency has the primary responsibility for materials inspection, the contractor and material supplier also have certain obligations. It is the duty of the contractor to inform all of its suppliers of the inspection requirements and to provide the project identification data to them. When suppliers are notified of the requirements for materials inspection, they have an obligation to ensure that all materials shipped to the project are taken from stock that has been approved by the inspectors and to provide the contractor with satisfactory evidence that the materials have been approved.

13-3.01(e) Mixture Designs

IDOT may assist a local agency with mixture designs and verifications for:

- portland cement concrete (PCC) mixtures,
- hot-mix asphalt (HMA) mixtures,
- concrete aggregate mixtures and pozzolanic aggregate mixtures,
- modified soil stabilized base and subbase, and
- soil cement mixtures.

All PCC and HMA mixtures must be furnished from plants that have been approved for use by IDOT. Contact the District Materials Section for PCC and HMA plant approval.

13-3.01(f) Sampling

Acceptance sampling will be the joint responsibility of the local agency and IDOT as noted in PPG. It is the responsibility of the local agency to arrange for plant testing when the mixtures discussed in Section 13-3.01(e) are used on the project. Depending upon availability of personnel, the District Bureau of Project Implementation may be able to provide plant testing for local agency projects. If IDOT personnel are not available, the local agency must provide for plant testing either with its own personnel or through a contract with a consulting engineer.

Applicable procedures to be used and the frequency of sampling for the various mixtures are contained in the following IDOT publications:

- *Manual of Test Procedures for Materials*, and
- *Project Procedures Guide* (PPG).

13-3.02 Aggregate Gradation Control System

The Aggregate Gradation Control System (AGCS) is a program whereby any aggregate supplied to projects let under the jurisdiction of IDOT must be shipped from a certified source. The certified source maintains its own Gradation Control Program. Aggregate shipped must be certified that it meets the quality and gradation requirements in the *IDOT Standard Specifications*. Only certified sources shall ship material to local projects under the review of IDOT. No other inspection or testing is required by the local agency. The Bureau of Materials and Physical Research (BMPR) maintains an Approved Aggregate Source List.

13-3.03 Asphalt Acceptance Procedures

The procedures documented in this section apply to all local agency projects, regardless of fund type, for all grades of:

- cutback asphalts (i.e., rapid curing, medium curing, slow curing),
- road oil,
- asphalt binder, and
- emulsified asphalt.

The materials will be accepted according to the Bureau of Materials and Physical Research Policy Memoranda:

- "Performance Graded Asphalt Binder Acceptance Procedure,"
- "Emulsified Asphalt Acceptance Procedure," and
- "Cut Back Asphalt and Road Oil Acceptance Procedure."

The following procedures also apply:

1. Ordering. When ordering asphalt materials, the local agency or contractor will state that certified asphalt is required by IDOT, supplying the MFT section numbers and the name of the county or municipality.

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2. Bill of Lading. The carrier or contractor must submit a copy of the bill of lading to the county, road district, or municipal representative upon delivery. The producer's bill of lading must contain the following information:

- tank number(s) from which material was drawn,
- sequence number, identifying the tank test report,
- location where used (e.g., section, county, contract number),
- consignee and destination,
- bill of lading number,
- date of shipment,
- type of material,
- name and location of source,
- specific gravity at 60°F (15.6°C) for asphalt binder, cutback asphalts, and road oils or weight per gallon (liter) at 60°F (15.6°C) for emulsified asphalts,
- gross, tare, and net weights, and
- type of material last transported.

In addition to the above, bills of lading representing blended loads shall show the gallons (liters) or percentage of each component material.

3. Inspection upon Delivery. The local agency resident engineer will be responsible for checking and accepting the material on the project site. Material will be identified by the bill of lading accompanying the shipments. The resident engineer will check the bill of lading of each shipment to determine its type and source. This information will then be compared with data on the current list of certified sources to determine the certification status of the material. One of the following three judgments must be made regarding the acceptability of the material:

- when the bill of lading shows a source location and qualified product that are on the list of certified sources, the material will be accepted for use,
- when the bill of lading shows a source location or product that is not on the list of certified sources, but the bill of lading does contain the MISTIC test identification approval number, the material will be accepted and used, or
- when the bill of lading shows a source location or product that is not on the list of certified sources, and the bill of lading does not contain the MISTIC test identification approval number, the material will not be accepted for use.

4. Quantities. The local agency resident engineer will verify and document the quantities of accepted materials. For each project, the resident engineer will report the total quantities of accepted material used, by source and type, to the district on form BLR 13311 at the same time form BLR 13231 is submitted. The district will enter the

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quantities of certified materials into the MISTIC reporting system. Maintain copies of the bills of lading in the project file. Do not include the bill of lading with form BLR 13311 when it is sent to the district. The district will not approve final pay estimates without the completion of form BLR 13311.

5. Payment. All certified materials may be paid for after the local agency resident engineer has accepted the material and the material has been used.
6. Certified Source List. The Bureau of Materials and Physical Research will supply the certified source list to IDOT's central bureaus and district offices. A list of certified sources is also available on IDOT's website. The district will immediately notify local agencies receiving material from a source that becomes decertified. The IDOT website will also contain information regarding decertified sources.

13-3.04 Hot Mix Asphalt (HMA)

13-3.04(a) **Quality Control/ Quality Assurance (QC/QA) Program**

The HMA QC/QA Program is a process by which the daily quality control of the production and placement of the asphalt mixture is the responsibility of the contractor/vendor, while the owner/user is responsible for periodic quality assurance testing and final acceptance of the product.

1. Procedures. IDOT and industry related agencies/firms have developed QC/QA specifications through a partnering and consensus decision making process. This partnering effort between IDOT and the industry continues through annual reviews of the QC/QA specifications. The benefits of a QC/QA program are as follows:
 - a more uniform product is provided,
 - responsibility for the quality of the product is shifted to the contractor,
 - quality assurance testing by the local agency is reduced compared to the testing required by method specifications, and
 - corrective action is required to be taken promptly during construction, thereby improving the overall quality of the product.

The HMA QC/QA Program should be used on all projects, regardless of size. The Program will use the current IDOT specifications for HMA QC/QA. If a local agency does not use the QC/QA program, it will be responsible for all testing and inspection as discussed in Section 13-3.04(b).

2. Terminology. The following terms and definitions describe some of the various items and personnel involved in the HMA QC/QA process:

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- a. QC/QA Specification. An IDOT *Standard Specification* or Special Provision that applies to the construction contract. The QC/QA specification, along with its referenced documents, governs the contractor's QC requirements. These documents also specify the QA responsibilities of the engineer and local agency.
 - b. QA Manager. The person or entity employed by the local agency responsible for the quality assurance and acceptance requirements described in the specification.
 - c. QC Manager. The individual employed by the contractor and who has the responsibility for compliance with the QC provisions of the contract. The QC Manager must have training as established in the contract.
 - d. Trained Technician. An individual that has successfully completed the prerequisites established by IDOT for QC and/or QA testing, mix design, or contract administration. Training requirements are detailed in the *PPG*.
 - e. Qualified Laboratories. A laboratory qualified to perform materials acceptance testing on project produced materials as specified in the *PPG*.
3. Quality Control (QC) Responsibilities. The quality control aspect of the QC/QA program is the responsibility of the contractor. The contractor is responsible for providing a qualified laboratory and trained technicians to administer the QC portion of the contract both at the plant and in the field.
 4. Quality Assurance (QA) Responsibilities. Administration of the QA portion of the program is the responsibility of the local agency QA Manager. The expertise to perform the QA Manager duties should be available through the local agency staff, a private source, or furnished by the district as available. Depending on the circumstances, an individual may serve as both QA Manager and resident engineer. These responsibilities include monitoring QC and QA test results and ensuring investigations and corrective actions are performed. Provide the name of the individual who will perform the duties of QA Manager at the project preconstruction conference.
 5. Training. All personnel assigned to provide QA services must possess the level of training specified below. IDOT will identify sources for obtaining the required technical training. Required levels of training are as follows:
 - a. QA Manager. If a local agency employee is designated as the QA Manager, this individual must have completed the QA Manager training course. The training course is optional for local agency licensed Professional Engineers. Professional Engineers are responsible for determining if they possess the knowledge and/or experience necessary to perform the QA Manager duties. All local agency Professional Engineers are strongly encouraged to complete the training course.
 - b. Consultants. Consultants acting on behalf of a local agency must have successfully completed the HMA Level II training course.

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- c. Mix Design/Mix Verification. Individuals must have successfully completed the HMA Level III training course or be certified by QLAR to perform mix design and mix verification. QLAR may only certify local agency employees.
- d. Assurance Testing for Gradation, Voids, & AC Content. Individuals must have successfully completed the HMA Level I training course or be certified by the QLAR to perform this quality assurance testing. QLAR may only certify local agency employees.
- e. Assurance Testing for Density. Individuals must have successfully completed the HMA Density Training or be certified by QLAR to perform assurance testing for density. QLAR may only certify local agency personnel.

Additional information on training can be found in the PPG.

6. Prior to Construction. Prior to construction, the QA Manager is responsible for the following:
 - a. Laboratories. Verify and document that all laboratories used for mix design, mix design verification, quality control testing, or quality assurance testing have been inspected and approved according to IDOT criteria. The District Materials Section can verify this information.
 - b. QC Personnel. Verify and document that the contractor's QC personnel have received the appropriate QC/QA training and are listed in the IDOT trained technician database. Ensure names, social security numbers, and levels of training are provided. The District Materials Section can verify this information.
 - c. Small Quantities and Pay Items. Review the contractor's plan for QC of small quantity production, when allowed by the QC/QA Specification.
 - d. Quality Control Plan. Confirm and document that an approved annual QC plan is on file with the district. Review and approve the QC plan addendum for the project.
 - e. Mix Design. The contractor shall be responsible for all mix designs. IDOT will verify all new mix designs, or contract for same. The QA Manager will document that a verified mix design is being used.
7. During Construction. During the construction phase, the following activities will occur:
 - a. Start of Production. The QA Manager/resident engineer will:
 - verify and document that initial target values and Job Mix Formula adjustments are according to the contract,
 - witness and document the contractor's placement of the test strip and nuclear density gauge/core correlation, if applicable,

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- witness and document the contractor's development of growth curves, and
 - observe and approve the contractor's proposed rolling pattern and density targets.
- b. QA Plant Testing. The local agency will perform tests on mix sampled at the plant (e.g., QA plant tests). The district may provide some or all of these services to the local agency provided personnel are available and the work can be performed without additional expense to IDOT. A consultant/independent lab may be used for the QA plant testing requirements, provided the duties are performed by a Level I HMA trained individual and the lab has been approved by IDOT. This individual will:
- conduct independent assurance tests on split samples taken by the contractor for quality control tests at the frequency specified in the specifications for aggregate gradation and volumetric properties,
 - witness the contractor's sampling and splitting of samples, and
 - witness scale checks at least once a week. Note that only diary documentation is required if IDOT is regularly conducting scale checks for the plant.
- c. QA Field Tests. The local agency or its designated representative is responsible for the quality assurance density testing as required by the *Standard Specifications*. The following methods may be used provided the person has successfully passed the required density training:
- Local agency inspectors may perform density testing.
 - A consultant may be retained to perform density testing for the local agency.
 - Where density is to be established by coring, the associated laboratory testing is the responsibility of the local agency. QA cores will generally be split samples cored by the contractor and witnessed by the local agency or their agent.
- d. Investigations. The QA Manager will:
- be available for consultation when the QC plan or specification requires an investigation by the contractor,
 - investigate when the contractor's required test results deviate from the specified control limits, and
 - as appropriate, perform additional split sample tests and review the contractor's technician performance and testing procedures.

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- e. Documentation. The resident engineer/QA Manager will:
- provide written test results to the contractor for all required plant and density QA tests,
 - maintain a diary detailing all corrective action taken by the contractor,
 - include all activities and observations relating to production and tests in the diary, and
 - maintain records to validate the specified acceptance criteria, including validation of the contractor's QC by the assurance process, the contractor's process control and actions, and assurance testing for voids and density.

13-3.04(b) Method Specification Work

Under method specification work, the local agency is responsible for the daily quality control of the production and placement of HMA as well as periodic quality assurance testing and final acceptance of the product. The District Bureau of Project Implementation may provide some or all of these services to the local agency provided personnel are available and the work can be performed without additional expense to IDOT. Otherwise, the local agency will be required to perform these tasks with its own engineering forces and/or private testing laboratories. In all cases, sampling, inspection, and testing, both at the plant and in the field, will be conducted according to the sampling and testing frequencies found in PPG.

13-3.05 Portland Cement Concrete (PCC) Quality Control/Quality Acceptance Procedures

13-3.05(a) QC/QA Program

This Section is reserved.

13-3.05(b) Method Specification Work

Under method specification work, the local agency is responsible for the daily quality control of the production and placement of PCC as well as periodic quality assurance testing and final acceptance of the product. The District Bureau of Project Implementation may provide some or all of these services to the local agency, provided personnel are available and the work can be performed without additional expense to IDOT. Otherwise, the local agency will be required to perform these tasks with its own engineering forces and/or private testing laboratories. In all cases, sampling, inspection, and testing, both at the plant and in the field, will be conducted according to the sampling and testing frequencies found in PPG.

13-3.06 Miscellaneous Materials

All materials delivered to the jobsite for incorporation into the project must be in compliance with the *IDOT Standard Specifications* or contract Special Provisions. Method of acceptance refers to the means of determining whether the materials supplied are in compliance with the *Standard Specifications*. There are various methods of acceptance for supplied material; manufacturer's certification, approved materials lists, quality control/quality assurance, certified source, testing program, and visual acceptance. PPG contains detailed information on the various methods of acceptance.

Under the testing program method of acceptance, materials are sampled at the source or jobsite by IDOT personnel or their representatives and tested at the jobsite or in laboratories to verify specification compliance. Additional information on the testing program method of acceptance is given below:

1. Inspection at the Source. IDOT has inspectors who regularly visit most of the material suppliers within the State that furnish materials for IDOT projects. Additionally, IDOT has agreements with other States and contracts with commercial testing laboratories to accomplish source inspection at out-of-State suppliers and fabricators who are frequent suppliers for Illinois projects. IDOT will issue inspection reports for local projects providing the contractor has requested materials and furnished the supplier with proper project identification.

If a material supplier does not regularly produce materials for State projects, IDOT will assist the local agency in deciding upon the methods to be used in sampling the materials and whether or not the tests can be performed at IDOT laboratories. If IDOT is unable to perform the testing, it will be the responsibility of the local agency to arrange for sampling and testing.

2. Fabrication Inspection. Certain items (e.g., structural steel, reinforcing steel, precast and prestressed concrete beams) require some measure of fabrication prior to delivery to a job site. If the item requires shop drawings, it is the contractor's obligation to provide the fabricator's shop drawings to the local agency for review and approval. A copy of the approved shop drawings must be furnished to the district. It is the fabricator's responsibility to ensure that all raw materials used have been inspected. The inspector at the fabrication plant should document the raw materials inspection when the report on the fabricated product is issued.
3. Inspection at the Job Site. If arrangements cannot be made for source inspection or if materials are delivered that have not been inspected for some reason, the local agency should insist that the materials be stockpiled until samples have been taken and tests have been made. Under no circumstances should materials that have not been inspected be incorporated into the work. It is the contractor's and supplier's responsibility to furnish the necessary samples or assist in obtaining the samples. It is the local agency's responsibility to arrange to have the samples tested.

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IDOT requirements for the inspection and testing of materials do not preclude the use of non-participating items in a MFT or State funded project. However, clearly indicate the non-participating items on the plans, specifications, and estimate. These non-participating materials must meet the requirements of the *IDOT Standard Specifications* or contract Special Provisions in an MFT or TBP project paid with local funds.

13-4 MISCELLANEOUS CONSIDERATIONS**13-4.01 Shop Drawings****13-4.01(a) Structure Drawings**

The *IDOT Standard Specifications* require the contractor to submit shop drawings for approval for most structures and/or for shop fabrication inspections. These reviews can be conducted either by the local agency or by IDOT. The following will apply:

- a. Local Agency Review: The local agency may conduct the review or inspection if it has qualified, engineering personnel available or if it hires a qualified consultant to conduct the review and/or inspection. Local agencies are encouraged to conduct their own reviews for the following elements:
 - simple span, precast, prestressed box beam bridges, and any of the structure's appurtenances (e.g., elastomeric bearings, special-design expansion joints);
 - simple span, steel, wide flange beam, and precast prestressed box-beam structures developed from standard plans and any appurtenances;
 - continuous, multi-span precast, prestressed I-beam structures; and
 - continuous, multi-span steel structures, and simple span structures not listed above.
- b. IDOT Review. The local agency may request that IDOT perform the shop drawing review and/or fabrication inspection. IDOT's agreement to perform the work will depend on the availability and workload of the Bureau of Bridges and Structures (e.g., shop drawing review, steel fabrication inspection) and the Bureau of Materials and Physical Research (e.g., precast and/or prestressed concrete, inspection, elastomeric bearing fabrication inspection, approval of paint and high-stress bolts). To obtain IDOT's services, the local agency should provide a written request to the district as soon as the project information is available. The district will forward this request to the appropriate Bureau(s). This is especially important for steel fabrication inspection services. Figure 13-4A provides the distribution lists for various elements requiring an IDOT review or inspection. The request should also include the following information:
 - job information (e.g., structure number; route; section; county; IDOT contract number, if applicable, contract number),
 - point of contact for questions and the name of the individual to send reports to a job completion including name, contact number, and location for fabricator and prime contractor, and
 - the approximate start date and duration, if known.

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Prints sent to:	Structural Steel (Number of Prints)	Prestressed Beams (Number of Prints)	Elastomeric Bearings and Expansion Joints (Number of Prints)
Regional Engineer	1	1 ⁽¹⁾	1
Fabricator	1	n/a	2
Contractor	2	1	2
Local Agency	2	2	2
Bureau of Bridges and Structures	2 ⁽²⁾	n/a	n/a
Bureau of Materials and Physical Research	n/a	1	1
Inspection District	n/a	2 ⁽³⁾	n/a
Total Prints	8	7	7

Notes:

1. *Where erection is located.*
2. *Only if the Bureau of Bridges and Structures will provide shop fabrication inspection.*
3. *Contact the district for the latest inspection district.*

SHOP DRAWING REVIEW

Figure 13-4A

This request will authorize IDOT's reviewer and/or inspector to act as the local agency's representative.

- c. Inspector. The inspector will need an approved copy of the shop drawings and/or fabrication inspection. If the drawings or inspections were not conducted by IDOT, provide a second copy to the district. This will allow IDOT to assist the inspector with any technical or interpretative questions. IDOT also requires a copy of any Special Provisions or project-specific specifications applicable to fabrication that are different from the *IDOT Standard Specifications*.
- d. Items Requiring Review. Generally, shop drawings or a fabrication inspection will be required for all structural steel elements, prestressed concrete beams, elastomeric bearings, and expansion joints. However, not all structural items will require shop drawings and/or fabrication inspection. The contractor and resident engineer/technician should check with the district for the latest list of items not requiring a review or inspection. Special or non-standard items generally will require the contractor to prepare set of shop plans and/or have a fabrication inspection.

13-4.01(b) Precast Box Culverts

Shop drawings are required for all precast box culvert projects (including standard and non-standard box sections) as well as for manholes, junction chamber, extensions, and end sections. Shop drawing approval by IDOT is not required for standard precast concrete box culverts that comply with:

- the *IDOT Standard Specifications*,
- the *AASHTO Specifications*, and
- the specific producer's quality control/quality assurance (QC/QA) plan approved by IDOT.

In addition to the following guidance, the local agency should review the Bureau of Bridges and Structures' (BBS) latest approval policy for precast box culverts:

1. General. The following will apply:
 - a. Design. The designer should clearly indicate in the contract plans the design fill height, the span x rise, and the proper AASHTO designation (and whether Interstate loading is required) for every precast box culvert, including all extensions and end sections. The producer will be required to mark this information on the precast concrete box. To determine the design fill height, calculate the maximum and minimum fill heights between the extreme edges of the shoulders. For further design guidance, review BBS' design criteria for precast and cast-in-place concrete box culverts.
 - b. Contract Documents. It is recommended that the construction documents specify that the culverts be in accordance with the latest BMPR "QC/QA for Precast Concrete Products Policy." See the IDOT's website for the latest copy of this policy.
 - c. Producers. For precast concrete box culverts, the producer will be required to provide the producer's mark, AASHTO/ASTM designation, date of manufacture, and the span, rise, and design cover for the culvert.
2. Standard Designs. IDOT's "No Review or Approval Policy" only applies to standard precast culvert sizes. The producer should submit the shop drawings to the contractor, who will forward them to the local agency. In review of these drawings, the local agency may do one of the following:
 - a. The local agency may, at their discretion, accept the producer's shop drawings by following the procedures in the BBS' memorandum of March 1, 2002 pertaining to the review and approval of shop drawings for precast box culverts and by specifying that the culverts must meet the BMPR Policy Memorandum 02-02 "QC/QA for Precast Concrete Products Policy."

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- b. The local agency may review and approve the shop drawings by using an Illinois Licensed Structural Engineer or an Illinois Licensed Professional Engineer, either employed by the local agency or by a qualified consultant engineer.
- c. The local agency may require, by Special Provision, that an Illinois Licensed Structural Engineer or an Illinois Licensed Profession Engineer approve the shop drawings provided by the contractor/producer. The local agency may require the producer to provide a certifying statement. The following certification statement is recommended:

I certify that the details shown in the precast concrete box culvert shop drawings for this project comply with the current applicable AASHTO design specifications and contract requirements. The shop drawings will satisfy the reinforcement and dimensional requirements of the contract.

Signature: _____ License No.: _____ Date: _____

Printed Name: _____ Company: _____

- 3. Non-Standard Designs. Cast-in-place end sections and special sections detailed in the contract plans are understood to be structurally adequate and do not require additional shop drawings. Where the precast culvert is not an option, the plans should include the note "Precast culvert alternative is not allowed." Note this next to the culvert on the Plan and Elevation Sheet of the Roadway Plans and in the General Notes of the Structural Plans. For non-standard precast concrete box culverts following the procedures of the March 1, 2002 BBS memorandum, shop drawings may be submitted for review and approval to the BBS through the district. The following submittal of shop drawings will apply:

- a. Producer/Contractor. The precast producer should submit the shop drawings to the contractor. The contractor will submit the drawings to the local agency for review and approval. If found acceptable, the shop drawings should be submitted to the IDOT District Office for forwarding to BBS. Accompanying the shop drawings should be the appropriate design plan sheets that indicate the design fill height, span x rise, AASHTO designation, etc. The shop drawings should be no larger than 11 in x 17 in (280 mm x 430 mm). See Figure 13-4A (structural steel) for the number of sets that should be submitted.
- b. Local Agency. If the shop drawings are found to be acceptable, the local agency will submit the shop drawings to district. The local agency may accept the drawings based on the seal and structural certification of an Illinois Licensed Structural Engineer. This will expedite the approval process. A special provision specifying this requirement will need to be included in the project specifications. The following certification statement is recommended:

I certify that to the best of my knowledge, information, and belief, that this precast box culvert design is structurally adequate for the design fill height, span x rise,

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and AASHTO designation shown on the plans. The design is an economical one for the style of structure and complies with the requirements of the current AASHTO Standard Specifications for Highway Bridges.

13-4.02 Borrow, Use, and Waste Areas

13-4.02(a) Environmental Review

Proposed borrow areas, use areas (including temporary access roads and runarounds, plant sites, and staging and storage areas), and waste areas must be designated by the contractor and approved prior to their use. These sites will be reviewed for archaeological resources, threatened or endangered species, or their essential habitat, wetlands, prairies, and savannahs at no cost to the contractor. For additional guidance, see Section 10-1.

The following procedures apply to waste areas:

1. Form BDE-2289. Upon award, the local agency's contractor will submit form BDE-2289 to the local agency. A copy of form BDE-2289 can be obtained from the IDOT website for submittal to the district. Provide a location map showing the size and boundaries of the area and ground level photos, preferably from each direction, with form BDE-2289. If not used as the location map, also include a copy of the most recent plat book page showing the respective township.
2. Landowner Agreement. The local agency should obtain written permission from the property owner to conduct reconnaissance surveys of the areas. Submit the written permission to the district.
3. Evaluation. BDE will review the site information to identify cultural and/or biological or wetland conflicts. IDOT will advise the local agency of the expected time to complete the required surveys and will allow the contractor the opportunity to choose another site prior to survey initiation. The contractor is responsible for paying any additional testing, for mitigation, and for obtaining any permits.

13-4.02(b) Waste Disposal

Following approval of waste areas by IDOT, disposal of waste material must not create an unsightly or objectionable appearance or detract from the natural topographic features, nor be placed at an elevation higher than that of the adjacent roadway without permission from the engineer (415 ILCS 5/3-160).

See the *IDOT Standard Specifications* for additional information on the disposition of clean construction and demolition debris with respect to fill and waste areas.

13-4.03 Traffic Control in Work Zones

Traffic control in work zones will be provided according to the project Traffic Control Plan (TCP) and *ILMUTCD*. The *IDOT Highway Standards* contain typical highway standards for traffic control in work zones that are approved for use on local agency projects. Additional guidance can be found in Section 39-5.

13-4.03(a) Marked Detours

The signing of a detour route is not required for non-marked routes. However, it is advisable to use signing, especially for arterials and collectors, when there is an alternative route in the immediate vicinity of the project. The signing must be coordinated with other agencies having jurisdiction of the alternate route. Avoid the use of low-volume residential streets.

13-4.03(b) Existing Pavement Markings

Obliterate conflicting pavement markings through the work zone area to prevent confusion to vehicle operators. Painting or taping over existing markings is not acceptable.

13-4.03(c) Temporary Pavement Markings and No Passing Signs

Except for low-volume roads, provide temporary pavement markings and no passing signs on all high-type surfaces (e.g., hot-mix asphalt, concrete), in accordance with the following:

1. **Lane Markings**. At the end of each day's work, install appropriate temporary pavement markings between all lanes that are open to traffic. Temporary markings consist of stripes 4 ft (1.2 m) in length at a maximum spacing of 40 ft (12 m) along the centerline of two-lane highways, and the lane lines on multilane highways. Centerlines on two lane highways will be yellow and lane lines separating two or more lanes of traffic moving in the same direction will be white. Remove all temporary markings on the final wearing surface within 5 days after the permanent markings are installed unless otherwise noted in the plans, or requested by the engineer.
2. **Edge Markings on Multilane Highways**. Where edge lines on multilane highways are obliterated due to resurfacing and operational problems are anticipated or are occurring due to the roadway geometrics, traffic volumes, ambient lighting, or narrow bridges, place temporary diagonal lines on the shoulders beginning at the edge of the travel lanes or auxiliary lanes at intervals of 50 ft (15 m) on ramps or 200 ft (60 m) on main lines. The markings will be a minimum of 4 in (100 mm) wide and 2 ft (0.6 m) long and angled away from the direction of traffic at approximately 45°. The color of the diagonal lines will match the color of the pavement edge lines.
3. **Permanent Pavement Markings**. Replace temporary pavement markings with standard markings as soon as practical. Usually, it should not be necessary to leave temporary

markings in place for more than 2 weeks after completion of any intermediate or final surface. The time restrictions for installation of permanent pavement markings begin at the completion of each intermediate lift or final lift on the resurfacing project. If the markings are obliterated by cold-milling, the time restriction begins when the entire surface has been milled. These restrictions may be delayed by the local agency whenever the contractor cannot apply marking due to unanticipated inclement weather other than a winter shutdown on the project, strike activities, or other circumstances beyond the contractor's control. Install the permanent markings as soon as practical after construction activities are resumed. Prior to winter, standard edge lines, lane lines, centerlines, and no-passing zone markings must be installed, at a minimum, on any intermediate or final surface that will remain open to traffic during winter shutdown periods.

4. No Passing Signs. No passing zones on two and three lane roads may be identified by using either the pennant NO PASSING ZONE warning sign or the DO NOT PASS, PASS WITH CARE regulatory sign in place of pavement markings for periods of time up to 3 calendar days after an intermediate or final lift is completed. Signs may also be used in lieu of pavement markings on low-volume roads until it is practical to install the final full standard markings.

13-4.03(d) Traffic Control for Roads Closed to Through Traffic

Whenever a local authority determines that a bridge or highway construction site requires the closing of a road to through traffic, the contract documents must specify alternative procedures for flagging and controlling traffic, provided the procedures have been approved by IDOT (430 ILCS 105/2). The alternative procedures acceptable for use to reduce traffic control for roads closed to through traffic are based on the following ADT ranges through the construction zone, excluding construction vehicles:

- less than 100 ADT,
- 100 to 400 ADT, and
- over 400 ADT.

The designer is responsible for estimating the ADT through the construction zone and documenting this information in the Traffic Control Plan (TCP) on the plans. Special Provisions and/or special details relating to reduced traffic control other than flaggers must be developed and included in the TCP on a project-by-project basis. The estimated ADT may vary at different locations within the construction zone or during separate construction phases. In these cases, document locations and phases for the varying ADT criteria, so that the contractor could adjust traffic control accordingly. If no action is taken by the designer with respect to determining reduced levels of traffic control, the contractor will be required to provide the same level of traffic control within the section of road closed to through traffic as would be required for open highway conditions. The traffic control can be adjusted as follows:

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1. Flaggers. The *IDOT Standard Specifications* contain provisions for reducing the number of flaggers required where the road is closed to through traffic, but only if the expected ADT, shown on the plans or in the Special Provisions, is less than 400. The *IDOT Standard Specifications* allow the contractor to use only one flagger when the ADT is between 100 and 400 and does not require a flagger when the ADT is below 100, unless the contractor's operation encroaches on the open travel lane.
2. Traffic Control Devices. Signing within the section closed to through traffic may also be reduced from that shown on the applicable *Traffic Control Standards* when the designer has determined that reduced traffic control is appropriate. Where the estimated ADT will be less than 400, only one advance warning sign will usually be necessary. This sign should display a specific message (e.g., RIGHT LANE CLOSED AHEAD) versus a general message (e.g., MEN WORKING). Flashing lights may be omitted from the advance sign(s). Where the estimated ADT will be 400 or more, signing should be provided to full open highway requirements, except the advance signing may be reduced by omitting the first sign in the normal series (e.g., ROAD CONSTRUCTION AHEAD). Barricades, cones, and other traffic control devices should normally comply with full open highway requirements except when the operating speed of the traffic within the section closed to through traffic will be less than 45 mph (70 km/h). In these cases, the following taper rates will apply:
 - 40 mph (60 km/h) – 25:1,
 - 35 mph (55 km/h) – 20:1, or
 - 30 mph (50 km/h) – 15:1.

13-4.04 Temporary Sidewalks During Construction

The designer is responsible for assessing the need to include temporary sidewalks in the plans where existing sidewalks will be reconstructed as part of the project. The *IDOT Standard Specifications* allow the resident engineer to direct the contractor to provide an aggregate surface. In some cases, it may be advantageous to provide temporary sidewalk quantities in PS&E. Provisions for temporary sidewalks should be included under any of the following conditions:

- where a known generator (e.g., school, neighborhood, shopping center) or individuals with disabilities are known to exist (e.g., nursing home, hospitals),
- if the principal access for pedestrian traffic to a business is by an existing paved surface and that surface will be removed, or
- when the construction sequence will include the removal of existing sidewalks and the new sidewalks will not be constructed prior to a winter shutdown.

Temporary sidewalks will be a minimum of 3 ft (1 m) wide. Consider the use of wider sidewalks in areas where high pedestrian or individuals with disabilities are known to exist. If the

temporary sidewalk is to remain in place for more than 4 weeks, construct it with a minimum of either 2 in (50 mm) of Portland cement or bituminous concrete or a minimum 3 in (75 mm) compacted depth of aggregate (e.g., CA 10, CA 12, Type B) or other similar locally available aggregate as approved by the engineer. The pay item should be Temporary Sidewalk, measured in square feet (square meters) and should include removal after the permanent sidewalks are placed.

13-4.05 Erosion and Sediment Control

Temporary measures will be used to control erosion and sedimentation while a project is under construction, prior to establishment of permanent measures. Temporary measures for construction activities are presented in the *IDOT Standard Specifications*, which includes a continual system of seeding erodible/bare areas every seven days to minimize the amount of exposed surface area within contract limits. Permanent measures are part of the completed project and will be used to prevent erosion and sedimentation after completion of the construction project. The erosion and sediment control information in the plans should clearly specify what types of measures or, if known, what specific measures are to be implemented in relation to each component of construction operations that will expose areas of earth or stockpiles of material to possible erosion from storm events.

The resident engineer/technician is responsible for maintaining a project erosion and sediment control file at the construction site. The file will contain:

- the Stormwater Pollution and Prevention Plan (SWPPP) including signed Contractor's Certification Statement or an Erosion Control Plan, if SWPPP is not required,
- plan sheets showing existing and planned erosion and sediment control measures,
- a copy of each Erosion Control Inspection Report,
- a copy of the Notice of Intent (NOI), when applicable,
- a copy of each Incident of Non-Compliance (ION), when applicable, and
- a copy of the Notice of Termination (NOT), when applicable.

The local agency will submit NOI to IEPA advising of the intent to use the NPDES statewide general storm water permit. Submittal of NOI 30 days before commencing disturbances of land for project construction will authorize the discharge of storm water from the construction site under the terms and conditions of the permit. NOI must be posted at the job site.

For all projects involving erosion and sediment control measures, the resident engineer/technician is responsible for conducting a field review for erosion and sediment control with the prime contractor and any subcontractors that will be involved in implementation of the practices. Ensure the review is conducted before any earth work or clearing operations begin. The purpose of the field review is to finalize the proper timing and placement of erosion and sediment control measures. Additional field reviews will be required as work progresses. The resident engineer/technician is responsible for recording the date of each field review in the

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project diary. Document the subjects discussed in the field review, and the names and position titles of individuals in attendance, in a memorandum to the erosion control file. Have the contractor complete and sign the Contractor's Certification Statement indicating that the contractor understands the terms of the permit.

Consider the following principles in the general approach to erosion and sediment control:

- a. Construction Limits. Define construction limits to keep soil disturbance to a minimum, leaving as much existing vegetation in place as practical.
- b. Sensitive Areas. Protect sensitive areas prior to any earth moving activity. The permit requires that perimeter controls must be in place prior to earth disturbance activities.
- c. Erosion and Sediment Control Plan. Maintain an Erosion and Sediment Control Plan for each construction phase.
- d. Divert Water. Divert "clear" water flowing through the construction site away from disturbed areas.
- e. Contain Silt. Intercept and contain silt close to its source.
- f. Contain Sediment. Contain all project-related sediment at the project site.

Additionally, the following procedures should be used for field reviews at the project's work site:

- Inspect all disturbed areas, existing erosion control measures, vehicle access sites, and all other areas subject to erosion at least once every 7 days and within 24 hours of the end of each 0.5 in (13 mm) or greater rainfall or equivalent snowfall.
- Document the findings of these inspections using the Erosion Control Inspection Report. By copy of the form, the contractor will be directed to perform any repairs, maintenance, or implementation of additional measures determined necessary.
- Note the dates of corrective action taken by the contractor in response to the inspection report on the form.
- If a local agency at any time observes a failure of any of the erosion and sediment control measure, the resident engineer/technician will complete and submit to IEPA an Incident of Non-Compliance (ION) within 5 days of the time the violation was identified. The information on the form must describe the cause of non-compliance, actions taken to prevent any further non-compliance, environmental impact resulting from the non-compliance, and actions taken to reduce the environmental impact resulting from the non-compliance.
- The contractor must complete permanent erosion control measures as soon as practical after the completion of grading. Temporary measures must be installed and maintained until permanent measures are established. The intent is to provide quick coverage to exposed areas to prevent erosion problems before they occur.

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- When all permanent erosion control measures are in place with 70% establishment rate of vegetation, the local agency will complete and send the Notice of Termination (NOT) to IEPA.

The information required to satisfy the erosion control requirements is summarized in Figure 13-4B.

13-4.06 Mobilization

Mobilization is a payment made at the beginning of a project to compensate contractors and subcontractors for work done in preparation of the contract work. The Bureau of Construction requires that all state let contracts pay the prime contractor mobilization according to the Standard Specifications for Road and Bridge Construction. Furthermore, all prime contractors receiving a mobilization payment are required to pay their subcontractors mobilization. Mobilization payments are optional on local let projects.

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FORM	RESPONSIBILITY	WHEN	WHERE TO SEND
Storm Water Pollution Prevention Plan (SWPPP) or Erosion Control Plan (on ALL projects)	Designer/Resident ⁽¹⁾	During Design/Construction	Submit with plans or Special Provisions. Keep in Project Erosion Control File.
Contractor Certification Statement ⁽²⁾	Contractor and all subcontractors involved in Erosion Control	At Preconstruction Meeting	Submit with plans or Special Provisions. Keep in Project Erosion Control File.
Notice of Intent (NOI) (WPC 623) ⁽³⁾	Resident ⁽⁴⁾	30 days before construction begins	Post at Job site. Send original by certified mail to IEPA. Include copy in Project Erosion Control File.
NPDES/Erosion Control Inspection Report (BC 2259) (REQUIRED on ALL projects)	Resident/Inspector	Weekly and after more than 0.5 in. (13 mm) rainfall	Keep in Project Erosion File. Provide copy to Contractor.
Incidence of Non-Compliance (WPC 624) ⁽³⁾	Resident ⁽⁴⁾	Within 5 days	Original by certified mail to IEPA. Project Erosion Control File.
Notice of Termination (NOT) (WPC 621) ⁽³⁾	Resident ⁽⁴⁾	Final Stabilization ⁽⁵⁾	Send original by certified mail to IEPA. Include copy in Project Erosion Control File.

Notes:

- (1) *This form must be signed by the local agency representative.*
- (2) *Resident portion of the Report should be completed before the actual construction starts.*
- (3) *Can be found in the IDOT Construction Manual.*
- (4) *Contractor should be given a copy of the NPDES Permit.*
- (5) *Final stabilization is defined at 70% viable vegetative growth.*

EROSION AND SEDIMENT CONTROL REQUIREMENTS

Figure 13-4B

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13-5 FINAL ACCEPTANCE AND PROJECT CLOSEOUT

13-5.01 Construction

13-5.01(a) Certification of Materials

When an MFT or State funded construction project is completed, the district is required to certify that all materials incorporated into the contract work were in close conformity with the approved plans and specifications. Material certification requirements are discussed in PPG.

The following is a brief overview of the key steps involved in the materials acceptance process:

- a. Inspection of Materials. Physical testing or visual inspection of the materials for compliance with the specifications.
- b. Evidence of Materials Inspection. The minimum proof that Method of Acceptance sampling and testing has been performed.
- c. Documentation of Inspection. Documentation that the materials received on the job site were accompanied by adequate Evidence of Materials Inspection as described in step (b) above. Include this documentation as part of the project files.
- d. Input into MISTIC. Input of assigned material quantities into MISTIC by district.
- e. Project Materials Certification Review. The District Materials Section compares the quantities on the final payment estimate with the inspection reports on file with IDOT.
- f. Project Acceptance. Upon completion of the materials certification review, the district proceeds with all actions necessary to accept the project.

Material certification (Steps 4 through 6) is not required for MFT special maintenance projects.

Additional information is found in PPG.

13-5.01(b) Final Inspection

Upon completion of all project work, the local agency should contact IDOT to schedule a final inspection of the project. A final inspection is required for day labor construction and contract construction projects and is recommended for contract maintenance projects. Representatives of the local agency and the contractor will conduct an inspection. IDOT will do a final inspection after the Engineer's Final Pay Estimate is received.

The purpose of a final inspection is to ensure IDOT that the project was constructed essentially according to the approved plans and that all restoration and cleanup required has been satisfactorily completed. During the final inspection, the contractor will note any visible

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deficiencies or irregularities for correction. The final inspection is also an opportunity for all parties to discuss any problems that may have occurred and to mediate any outstanding disagreements between the contractor and the local agency.

Any outstanding deficiencies noted during the final inspection must be corrected prior to final acceptance. Once these deficiencies have been corrected, IDOT will formally notify the local agency that the project has been inspected and found to be acceptable.

13-5.01(c) Final Acceptance

IDOT will issue final acceptance, providing the following conditions have been met:

- a. Final Inspection. Representatives of the local agency, contractor, and the district will perform the final inspection of the project. Deficiencies found will be corrected to the satisfaction of the local agency and the district before final payment is made to the contractor.
- b. Pay Items and Quantities. The different items of work have been measured and requests for change in plans (Form BLR 13210), making final adjustments in quantities, and as-built plans, have been submitted and approved by IDOT; see Section 13-2.03(c).
- c. Affidavits and Releases. The contractor has furnished all the affidavits and releases showing that bills for major items of work have been paid; see Section 13-2.04(c).
- d. Material Certification. Inspection reports indicating all materials incorporated in the improvement were inspected and found to comply with the specifications and are on file with the local agency.
- e. Engineer's Final Payment Estimate. The district has approved the Engineer's Final Payment Estimate (Form BLR 13231).
- f. Final Report. Form BLR 13510 has been submitted to close out the MFT or State funded portion of the project.

13-5.01(d) Project Closeout

When an MFT or State funded project has been completed according to the approved plans and specifications, including any approved changes, the local agency will notify the district. Each MFT or State funded project or section must be closed out, and have a final accounting of all funds authorized for expenditure. This final accounting will call attention to either the need for additional authorization of funds, or the need for a credit of excess funds to the unobligated balance. After the necessary steps have been completed, the project can be closed out. The following steps are required to close out the project:

- final inspection and initial acceptance by the local agency and IDOT,

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- Final Payment Estimate (Form BLR 13231) submitted by the local agency and approved by IDOT,
- Final Report (Form BLR 13510) submitted by the local agency and approved by IDOT, and
- credits of any balances to MFT Unobligated Balance or TBP Balance.

If a construction project is abandoned prior to the construction phase, form BLR 13510 will be submitted to account for any MFT and/or State funds authorized to the project. For MFT and TBP projects, any unused funds will be credited to the MFT Unobligated Balance or TBP Balance.

13-5.02 Preliminary and Construction Engineering

Funds authorized and expended for preliminary and construction engineering by local agency forces or consulting engineers are to be accounted for on form BLR 13510 upon completion of the project. If the engineering has been performed by a consulting engineer, the local agency should ensure that all terms and conditions of the engineering agreement have been fulfilled and that all services to be performed under the agreement have been completed and a satisfactory final report has been submitted to the district before making final payment.

13-5.03 Right of Way

Funds authorized and expended for land acquisition and associated costs are to be accounted for on the Final Report (Form BLR 13510) upon completion of the project.

13-5.04 Utilities

When utility adjustments or relocations have been completed, the local agency should ensure that all of the work has been accomplished according to the approved agreement, plans, and estimate. All deficiencies should be corrected and the work accepted by the local agency prior to submitting the final bill to the district for approval. A detailed final bill is not required if payment is to be made on an agreed lump sum basis and is under \$25,000. Funds authorized and expended for utility work will be accounted for on the Final Report (Form BLR 13510) upon completion of the project.

13-5.05 Railroads

When the railroad work has been completed, the local agency should ensure that all of the work has been accomplished according to the approved agreement, plans, and estimate. All deficiencies should be corrected and the work accepted by the local agency prior to submitting

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the final bill to the district for approval. Funds authorized and expended for railroad work will be accounted for on the Final Report (Form BLR 13510). If the project consists of railroad work only, submit form BLR 13510 after the final payment to the railroad to close out the project.

When Grade Crossing Projection Funds are involved in the railroad work, the railroad will notify the Central BLRS upon completion of its work. The Central BLRS will then request the district to inspect the site. After receiving this notification, the district will schedule a final inspection of the crossing surface, approaches, signal, and circuitry work with representatives of the local agency.

When Grade Crossing Protection Funds are involved, the railroad will send its final bill to the Central BLRS. The Central BLRS will review the final bill, arrange for the necessary audit, and advise the local agency when to pay its share of the railroad work.

13-5.06 Special Assessment and Bond Issue Projects

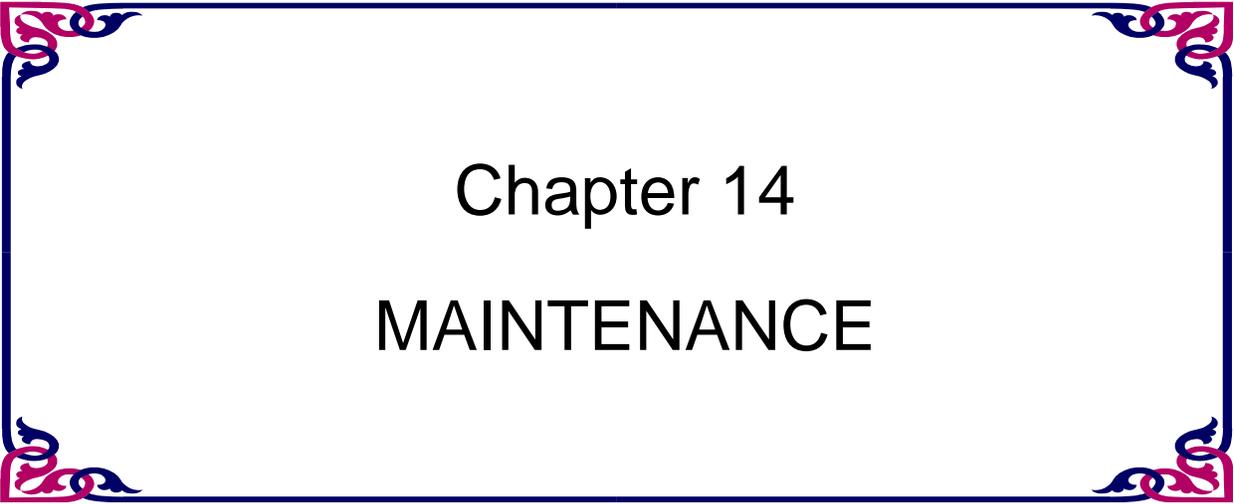
A local agency may use special assessment proceedings or bond issues to assist in the financing of a construction project. However, this does not alter the procedures for MFT projects. Final inspection is still required along with all the other items discussed in Section 13-5.01. Any necessary change in plans along with the Engineer's Final Payment Estimate should be processed and approved by the district. The Final Report (Form BLR 13510) shall be submitted as soon as practical after the final payment estimate has been paid. This applies even though no MFT funds may have been authorized for expenditure and disbursed for the project up to that time.

The financial statement portion of form BLR 13510 will show all MFT expenditures as of the date of its preparation. If there are MFT payments for construction, engineering, right of way, etc., they will be shown as authorized just like a regular MFT improvement. Likewise, those funds authorized for obligation retirement (e.g., public benefit assessments, bond issue payments) will be shown as authorized for obligation retirement and expended as such.

On special assessment projects only, if MFT funds have not been authorized at the time of submittal of form BLR 13510, a copy of form BLR 15410 should accompany the final documentation. This will expedite the approval of the subsequent obligation retirement resolutions.

13-6 CONTRACTOR'S PERFORMANCE REPORT

The local agency is responsible for keeping IDOT informed of any delay on the part of the contractor in starting the work, unsatisfactory work, or poor progress. This will permit IDOT to consider these issues when the contractor applies for a new work rating. Form BC-1777 is to be prepared annually at the end of each construction season for each project completed during the year. Send the completed form BC-1777 to the district by the first of each year with copies to the contractor. Although submittal of form BC-1777 is voluntary for the local agency, it is the agency's opportunity to formally apprise IDOT of the work performed. This form is available on IDOT's website.



Chapter 14

MAINTENANCE

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Chapter 14
MAINTENANCE - MFT

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Chapter 14

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14-1 MAINTENANCE OPERATIONS

The *Illinois Highway Code* defines maintenance as “the performance of all things necessary to keep a highway in serviceable condition for vehicular traffic” ([605 ILCS 5/2-214](#)). There are several sections of the *Illinois Highway Code* that permit the use of Motor Fuel Tax (MFT) funds for maintenance of the local highway system.

The phrase “to keep a highway” refers to an existing highway. If proposed work is to qualify as a maintenance operation, it must not involve upgrading the geometrics or the design characteristics of the roadway. Maintenance may involve the repair or restoration of the existing cross section of an existing highway item, facility, or appurtenance, but may not involve the complete replacement, widening, or expansion of any of these elements. Only work properly classified as maintenance may be included in the maintenance program for local public agencies (LPAs).

This Chapter discusses the general maintenance program.

14-1.01 Maintenance Administration

14-1.01(a) Publication of Notice of Letting

The cost to locally publish the notice of letting for maintenance work is an acceptable maintenance operation eligible for the use of MFT funds. When using MFT for advertising, it is included as part of maintenance engineering. The Illinois Department of Transportation (IDOT) publishes a free weekly Notice to Contractors Bulletin, see [Section 12-3](#) for more details.

14-1.01(b) Maintenance Engineering

Engineering services required for a LPA to complete its maintenance is an acceptable maintenance operation. This includes both preliminary engineering and engineering inspection. These services are to be performed by the LPA’s staff under the direction of a licensed professional engineer or by securing the services of a licensed professional engineer. It is also permissible to include certain limited engineering services not directly related to a construction project (e.g., bridge inspections, traffic counts) as part of maintenance engineering, see [Section 5-5](#) for more details.

14-1.01(c) Maintenance Supervision

Maintenance supervision is an eligible MFT maintenance operation. Maintenance supervision is defined as the services of one or more persons who act as foremen, have general charge of maintenance work, or provide technical assistance in preparing maintenance papers not requiring a licensed professional engineer. It may be considered as a separate maintenance operation or

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included in the various day labor maintenance operations. The cost of these services must be based on the hourly rate of the employees providing the services.

14-1.01(d) Maintenance Operations

Figure 14-1A provides a summary of various maintenance operations eligible for MFT funds and Sections 14-1.02 thru 14-1.07 provides further explanation. If you are unsure of a maintenance operation not listed, contact your District Bureau of Local Roads and Streets (BLRS) office.

14-1.02 – Maintenance of Roadway Surface	<ul style="list-style-type: none"> (a) Pavement Patching and Joints (b) Aggregate Surfaces (c) Dust Palliative (d) Bituminous Surface Treatments (e) Slurry Seals (f) Micro-Surfacing (g) Hot In-Place Recycling (h) Cold In-Place Recycling (i) Bituminous Surface Plant Mix (j) Hot Mix Asphalt (HMA) or Warm Mix Asphalt (WMA)
14-1.03 – Maintenance of Drainage Features	<ul style="list-style-type: none"> (a) Bridges (b) Culverts (c) Curb and Gutter (d) Storm Sewers <p>Miscellaneous – Bridge inspections, bridge deck patching, minor bridge repairs, debris removal, minor scour repair, end sections, riprap including bedding, minor scour protection, ditch cleaning, repair and replacement of inlets / manholes / catch basins, and repair structural failure of storm sewer.</p>
14-1.04 – Maintenance of Traffic Control Devices	Pavement Markings, Signs, Traffic Signals, and Traffic Signal Software
14-1.05 – Maintenance of Transportation System Appurtenances	<ul style="list-style-type: none"> (a) Bicycle Paths (b) Existing Street Lighting System (c) Motor Vehicle Safety Inspection Lanes (d) Parking Facilities (Municipalities) (e) Sidewalks
14-1.06 – Maintenance of Safety Items	<ul style="list-style-type: none"> (a) Roadside Barriers (b) Snow and Ice Control (c) Tree Trimming
14-1.07 – Miscellaneous Maintenance	County garages, grade separations, mowing of roadway ROW, salt storage facilities, state highways, and hauling for MFT eligible maintenance operations.

MAINTENANCE OPERATIONS SUMMARY

Figure 14-1A

14-1.02 Maintenance of Pavements

The maintenance responsibility of street and side road approaches that intersect State highways is defined in the IDOT Bureau of Operations *Maintenance Policy Manual*.

14-1.02(a) Pavement Patching

Pavements may be patched and joints repaired as a maintenance operation.

14-1.02(b) Aggregate Surfaces

Aggregate surface material may be placed as a maintenance operation provided the material placed is limited to a maximum loose thickness of 8 in (200 mm). Approved placement methods are based on the aggregate type and are as follows:

1. Aggregate Surface Course, Type A. The IDOT [Standard Specifications for Road and Bridge Construction](#) (*Standard Specifications*) require aggregates used for surface courses to be placed by means of a spreader and to be compacted with a roller. Tailgate spreading is an unacceptable method for the placement of Aggregate Surface Course, Type A.
2. Aggregate Surface Course, Type B. Tailgate spreading of Aggregate Surface Course, Type B, is permitted if a Special Provision allowing tailgate spreading is included in the bid proposal or request for quotations.

14-1.02(c) Dust Palliative

Dust palliatives may be specified on an aggregate surface as a maintenance operation. Any liquid asphalt, road oil, or emulsified asphalt used for prime coats may be specified. The application of any approved dust palliative including salt, calcium chloride, or lignum sulfanate may be specified.

14-1.02(d) Bituminous Surface Treatments

Bituminous patching material may be used to fill potholes. Bituminous surface treatments may be applied on existing earth, aggregate, and bituminous surface treatments as a maintenance operation. The following conditions will apply:

- Scarifying and adding aggregate base material as necessary to replace existing aggregate bases is acceptable.
- Bituminous patching material may be placed to repair an existing base. This includes placement of hot mix asphalt (HMA) at intermittent locations.
- Bituminous materials must be placed in accordance with the [Standard Specifications](#). If a particular bituminous material is desired, it must be specified in a Special Provision.
- The LPA may specify the type of aggregate for bituminous surface treatments for cover and seal coat aggregate, and for blotter aggregates. A Special Provision is required specifying the type of aggregate for which bids will be received. If a specific gradation is desired, the gradation must be specified in a Special Provision.

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- The application of Bituminous Surface Treatment Class A-1, A-2, or A-3 is permitted.
- Due to environmental concerns, the general use of cutback asphalts will not be permitted between May 1 and September 30. However, the use of SC-70, MC-30, MC-70, and RC-70 in prime coat applications will be allowed.
- The work may be done by contract, with day labor forces, or spread and applied by a materials supplier.

14-1.02(e) Slurry Seals

See [Section 45-6](#).

14-1.02(f) Micro-Surfacing

See [Section 45-6](#).

14-1.02(g) Hot In-Place Recycling

See [Section 46-6](#).

14-1.02(h) Cold In-Place Recycling

See [Section 46-6](#).

14-1.02(i) Bituminous Surface Mixture (Class B)

Bituminous Surface Plant Mix up to a thickness of 2 in (50 mm), plus material needed to fill depressions and to correct crown deficiencies may be placed as a maintenance operation. [LR 400-2](#) BITUMINOUS SURFACE MIXTURE (CLASS B) should be used.

14-1.02(j) Hot Mix Asphalt (HMA) or Warm Mix Asphalt (WMA)

A HMA/WMA surface course up to 2 in (50 mm), plus leveling binder to fill depressions and to correct crown deficiencies, may be placed over existing pavements as part of maintenance. The milling of a pavement to any depth and replacing this material with HMA/WMA up to the same thickness as milling plus up to 2 in (50 mm) HMA/WMA may also be classified as maintenance.

The following conditions apply:

1. The work shall be completed by contract or by day labor forces.
2. For work done by contract and estimated to cost \$50,000 or more, prequalification of bidders shall be required.
3. Resurfacing shall be a minimum of one lane in width. The length of a segment shall be at least 300 ft (91 m).
4. Curb ramps shall be installed and/or updated to comply with requirements in [Section 41-6](#) to the maximum extent practicable.

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5. Minimum lift thickness shall be according to [Section 44-1](#).
6. The HMA/WMA resurfacing shall be no wider than the existing surface in order to avoid the breakup of the pavement edges by traffic.
7. There should not be evidence of extensive structural failure on the existing pavement. Subgrade/base failures shall be repaired prior to resurfacing. If more than ten percent of the total project pavement area will be patched, other rehabilitation techniques should be considered.
8. An area reflective crack treatment or a strip reflective crack control treatment may be included as part of the maintenance project.
9. Only drainage corrections to restore the road cross section or to correct drainage problems within the eligible segments shall be allowed. This includes replacement/repair of crossroad culverts beneath the roadway and into the foreslopes, damaged curb and gutter, inlets, catch basins, and manholes. Minimal ditch work at the crossroad pipe culverts will be allowed to ensure adequate drainage. Efforts should be made on curb and gutter sections to retain the flow line of the gutter and adequate curb height.
10. High crash locations are not intended to be addressed as a maintenance project. Highways on the state or local 5% Safety Report or other locations experiencing higher than expected fatal and serious injury crashes for the traffic volume, geometric characteristics, and/or posted speed limit should be improved according to [Chapter 32](#) or [33](#).

14-1.03 Maintenance of Drainage Features

14-1.03(a) Bridges

Routine bridge maintenance can be done as part of the general maintenance program. This includes such items as bridge inspection expenses, debris removal, minor scour repair, deck patching, and minor repairs. More extensive repairs, especially those requiring the review of the Bureau of Bridges and Structures (BBS), should be done as individual projects.

MFT funds may be used for the maintenance of movable bridges, but cannot be used for the wages of the operator or the cost of energy used in the operation of bridges.

14-1.03(b) Culverts

Culverts may be replaced as a maintenance operation. All installations should be adequately sized to efficiently accommodate the runoff and provide adequate protection to the highway and abutting property. Proper documentation of this sizing should be retained for installation of culverts with a diameter greater than 36 in (900 mm) or combined openings greater than 7 ft² (0.65 m²). The LPA is responsible for coordinating with the District BLRS office for completing environmental coordination, submitting a preliminary bridge design and hydraulic report, and obtaining permits, when applicable. Give consideration to clear zone requirements and planned future improvements to the roadway, especially for larger sized culverts. Rather than including the replacement of large culverts in the general maintenance program, it is recommended that

these replacements be done as individual projects, especially for those being replaced by contract.

The initial installation of entrance culverts and the cleaning of existing culverts are also allowed as a maintenance operation.

14-1.03(c) Curb and Gutter

Intermittent deteriorated curb and gutter can be replaced as necessary as a maintenance operation. Complete curb and gutter replacement cannot be classified as maintenance.

14-1.03(d) Storm Sewers

Storm sewers along streets and highways can be maintained with MFT funds. This includes such items as cleaning sewer lines, inlets, manholes, and catch basins; repairing and replacing inlet, manhole, and catch basin frames, grates, and lids; and repairing structural failures between adjacent manholes. [605 ILCS 5/7-202.7](#) provides specific conditions for municipalities. For counties and road districts, this is an eligible expense provided the storm sewers are for roadway drainage.

14-1.04 Maintenance of Traffic Control Devices

MFT funds may be used for the maintenance and operation of warranted traffic control devices. These traffic control devices may include, but are not limited to, traffic signals, beacons, signs, and pavement markings. Traffic control devices can only be installed where the [Illinois Supplement to the Manual of Uniform Traffic Control Devices \(ILMUTCD\)](#) warrants have been met and where the devices are maintained in accordance with the provisions of the [ILMUTCD](#). This includes software necessary for traffic signal maintenance or programming.

14-1.05 Maintenance of Transportation System Appurtenances

14-1.05(a) Bicycle Paths

Municipalities may use MFT funds to maintain bicycle paths, bicycle parking facilities, and signs/markings within the municipality.

Counties over 500,000 population may use MFT funds to maintain bicycle path and signs/markings. Townships may only use MFT funds to maintain signs and markings on bicycle paths.

14-1.05(b) Existing Street Lighting System

Municipalities may use MFT funds for the maintenance and operation of existing lighting systems that meet the following conditions:

- the street lighting is on an improved municipal street, county highway, or State highway; and

- the system is in satisfactory condition.

This includes the payment of rental charges for facilities owned by a utility. The lighting must be for street purposes and provide relatively uniform lighting levels on the section of street on which MFT funds are being used.

14-1.05(c) Motor Vehicle Safety Inspection Lanes

Municipalities may maintain motor vehicle safety inspection lanes with MFT funds when the lanes are of a permanent nature and in operation on a regular basis throughout the year.

14-1.05(d) Parking Facilities (Municipalities)

MFT funds may be used for the maintenance of parking facilities provided MFT funds were used in their construction, see [Section 4-3](#). Any revenue obtained from the use of these facilities must be used for maintenance before MFT funds can be used.

14-1.05(e) Sidewalks

Road districts and counties can use MFT funds to maintain or repair existing sidewalks.

Municipalities may maintain and repair existing sidewalks with MFT funds ([605 ILCS 5/7-202.15](#)). Short gaps on existing sidewalk systems may also be filled in as part of a maintenance operation provided there are no problems with sidewalk grades or cross slopes and the work can be done within the existing right-of-way and meet the requirements of the *Americans with Disabilities Act* (ADA) or *Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way* (PROWAG).

14-1.06 Maintenance of Safety Items

14-1.06(a) Roadside Barriers

See [Section 35-4](#).

14-1.06(b) Snow and Ice Control

MFT funds can be used for snowplowing and for snow and ice control materials. Establishment of material purchase prices will be permitted for the entire winter season, even if this extends over two maintenance periods. The estimate of maintenance cost for the 1st maintenance period may be used to cover the purchase during the 2nd maintenance period. This must be noted on the estimate of maintenance cost and on any proposal required per Section 14-2.07. The purchase is charged to the maintenance period in which the purchase took place. Using this procedure may result in material purchases reported on the maintenance expenditure statement as being paid at two different unit prices.

14-1.06(c) Tree Trimming and Removal

In general, it is not permissible to use MFT funds to pay for the cost of tree trimming or tree removal as a maintenance operation except for the following:

- the trimming of limbs or the removal of dead trees that are in imminent danger of falling, thereby endangering vehicular traffic;
- the removal of limbs or trees that have fallen onto streets or roads;
- the trimming or removal of trees that obscure traffic signals, street lights, or traffic signs;
or
- the trimming or removal of trees to eliminate highway safety hazards.

An area wide tree treatment or removal project, involving the removal of trees on a wholesale basis, may not be paid with MFT funds except for the treatment or removal of Ash trees due to the Emerald Ash Borer (EAB) infestation. If removing Ash trees, or performing a cost effective EAB treatment for Ash trees the following criteria shall be met, if using MFT funds:

- the LPA is located in the EAB quarantined zone published by the Illinois Department of Agriculture;
- the Ash trees are located on the public right-of-way or are a potential hazard to vehicle travel; and
- the Ash trees to be treated or removed are shown in a detailed inventory; and
- MFT funds are not used to plant replacement trees.

14-1.07 Miscellaneous Maintenance

[Section 4-3](#) provides reference to both the Statutes and BLRS determinations on MFT eligibility. Items listed under this section is for only the maintenance of:

- county garages;
- grade separations;
- mowing of roadway ROW;
- salt storage facilities;
- state highways;
- hauling of MFT materials.

If the MFT eligibility of a maintenance operation is unknown, contact the District BLRS office.

14-2 MAINTENANCE INITIATION

14-2.01 Methods of Performing Maintenance

14-2.01(a) Day Labor Maintenance

Maintenance operations performed by LPA employees using publicly owned equipment is classified as day labor maintenance. The use of non-publicly owned equipment may be permitted, see [Section 12-1](#). When a LPA elects to do maintenance work by day labor, sufficient publicly owned equipment and personnel must be available to do the work. The LPA should also demonstrate, by past performance, that the work to be done by day labor will be satisfactory and cost effective. If these provisions cannot be met, day labor maintenance will not be permitted.

Furnishing and spreading materials on the road by a material supplier without specialized equipment may also be considered day labor maintenance. See [Section 12-1](#) for information for obtaining approval to perform this work using day labor for work which typically would fall under Contract Maintenance.

A material proposal, deliver and install proposal, or request for quotations is used for the taking of bids for materials necessary to perform day labor maintenance operations.

14-2.01(b) Contract Maintenance

Maintenance operations which will require a formal contract; if the bidder is requested to do more than furnish the material, spread it on the road or street, roll aggregates, or do a small amount of base repair, see [Section 12-1](#). Maintenance operations which require the bidder to provide specialized equipment and personnel to manipulate materials into a finished product must be done by contract. This includes the placement of bituminous plant mixture, except for intermittent resurfacing.

A contract proposal is used for the taking of bids for contract maintenance.

14-2.02 Maintenance Period

IDOT has designated 12 or 24 months as the accounting period for LPA MFT maintenance programs. This period starts January 1 and ends December 31. The LPA may use different starting and ending dates with IDOT approval, contact the District BLRS office for guidance.

14-2.03 Maintenance Resolution

A maintenance resolution is required for a county or municipality to appropriate MFT funds to be used for maintenance operations contemplated during the maintenance period. Form [BLR 14220](#) is provided for maintenance resolutions. The appropriation for all general maintenance work for the maintenance period may be included in one maintenance resolution. The resolution must be submitted to the district for approval prior to the incurring of any expenses to the MFT funds for the maintenance period covered by the resolution. Should the actual cost of maintenance exceed

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the total amount of MFT funds appropriated, the LPA must adopt a supplement resolution appropriating the additional funds, if MFT funds are to be used for the overage.

Counties and municipalities have the option of submitting a copy of their approved budget with the corresponding resolution, instead of a MFT maintenance resolution. The submittal shall include the approved resolution for the budget and only the pages from the budget showing the MFT funds. The line item(s) for MFT shall indicate it as maintenance with the amount. If the budget year differs from the maintenance period, a minimum of two line items will be required.

Example:

If the budget year is May 1, 2018 thru April 30, 2019 and the maintenance period is January 1 to December 31, then the budget line items would appear similar to:

MFT Maintenance	\$48,000
May 1 to December 31 – 2018 MFT Maintenance	\$32,000
January 1 to April 30 – 2019 MFT Maintenance	\$16,000

Maintenance appropriations may not exceed the sum of a LPA’s current unobligated balance plus estimated MFT allotments for the remainder of the maintenance period. A LPA may not commit MFT allotments for any succeeding year to be used for payment of bills incurred during the current maintenance period. If a proposed maintenance program exceeds the amount of MFT funds estimated to be available, the source of the additional funds to be provided should be shown.

Road districts do not pass resolutions; therefore, to appropriate MFT funds for general maintenance; submit Form [BLR 14222](#) “Estimate of Maintenance Cost/Maintenance Expenditure Statement” or Form [BLR 09150](#) “Request for Expenditure/Authorization of Motor Fuel Tax Funds” to IDOT for approval. The forms shall be signed by the county engineer and township highway commissioner for each road district. Either of these are considered to be the appropriation of MFT funds for road district general maintenance.

MFT funds will not be authorized until a MFT maintenance resolution is submitted; for road districts either Form [BLR 14222](#) or Form [BLR 09150](#) must be submitted with signatures from the road commissioner and the county engineer. The amount of MFT funds authorized is limited to the lesser amount of either MFT funds appropriated in the maintenance resolution, Form [BLR 14222](#), Form [BLR 09150](#), or the amount of MFT funds estimated to be available during the maintenance period.

14-2.04 Section Designation

For general guidance on MFT section numbers, see [Section 2-4](#).

Use the following procedure to assign section numbers for general maintenance programs:

1. Year. Use the last two digits of the calendar year or LPA fiscal year of the program.
2. Agency Sequence. For counties and municipalities, use 00000. For road districts, the first two digits would be the road district code number followed by three zeros.

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3. Subsection. All day labor maintenance work may be included under one subsection, usually 00. Each maintenance contract for the same maintenance period must be identified with a separate subsection. The appropriations for all work may be included in one resolution under one section number usually subsection 00.
4. Section Type. General Maintenance (GM) section type designations will be used for the annual maintenance program.

14-2.05 Maintenance Engineering Categories

All maintenance operations on Form [BLR 14222](#) for the estimate of maintenance costs, shall require one of the following maintenance engineering category designations. The maintenance category always falls to the lowest applicable category, see Figure 14-2A.

1. Category I. Services purchased without a proposal such as electrical energy or materials purchased from Central Management Services' Joint Purchasing Program (www.purchase.state.il.us) or another joint purchasing program that has been approved by the District BLRS office or Central BLRS (CBLRS).
2. Category II-A. Maintenance items that do not require competitive sealed bids according to [Section 12-1](#) or a local ordinance/resolution and do not fall into Category I.
3. Category II-B. Maintenance items that require competitive sealed bids according to [Section 12-1](#) or a local ordinance/ resolution. Routine maintenance includes all items in the following work categories: snow removal, street sweeping, lighting and traffic signal maintenance, cleaning ditches or drainage structures, tree trimming or removal, mowing, crack sealing, pavement marking, shoulder maintenance, limited amounts of Concrete Curb & Gutter (CC&G repair), scour mitigation, pavement patching, and minor drainage repairs.
4. Category III. Maintenance items that are not covered by Category IIB and require competitive bidding with a material proposal or a delivery and install proposal.
5. Category IV. Maintenance items that are not covered by Category IIB and require competitive bidding with a formal contract proposal.

14-2.06 Estimate of Maintenance Costs

Form [BLR 14222](#) is for use by all LPA types at the beginning of the maintenance period for the preparation of an estimate of maintenance cost and again at the end of the maintenance period for preparation of the maintenance expenditure statement, see Section 14-3.04. Form [BLR 14222](#) is designed to allow the estimate of maintenance cost to be updated with actual quantities used and costs, along with the addition of other maintenance operations as discussed below.

An estimate of maintenance cost must include all known maintenance operations to be funded with MFT funds. If other maintenance operations are added during the maintenance period which would require the operation to seek competitive sealed bids, see [Section 12-1](#); a revised estimate is required. Any other maintenance operations, not included on the estimate of maintenance costs or revised estimate, are required to be included individually on the maintenance expenditure statements. All estimate of maintenance costs must be submitted to the district for

approval within 120 days after the start of the maintenance period or after the submittal of the resolution, whichever is later and prior to seeking competitive sealed bids for a maintenance operation, see [Section 12-1](#).

The estimate of maintenance costs must be signed by the named official on the form or other authorized individual. See [Section 2-3](#) for additional information.

14-2.06(a) Maintenance Engineering

The estimated cost of engineering services to be paid in connection with a LPA's MFT maintenance program must be set forth separately on the estimate of maintenance costs as "Maintenance Engineering." The amount counties may charge road districts is determined by resolution passed by the county board. A copy of the resolution must be submitted to the appropriate IDOT district.

List maintenance engineering as a separate item on the estimate. The fees paid for maintenance engineering should not exceed the schedule of maximum fees on Form [BLR 05520](#) "Maintenance Engineering to be performed by Consulting Engineers". The cost for other services (e.g. materials testing, advertising, bridge inspections) would be in addition to the normal maintenance engineering fees.

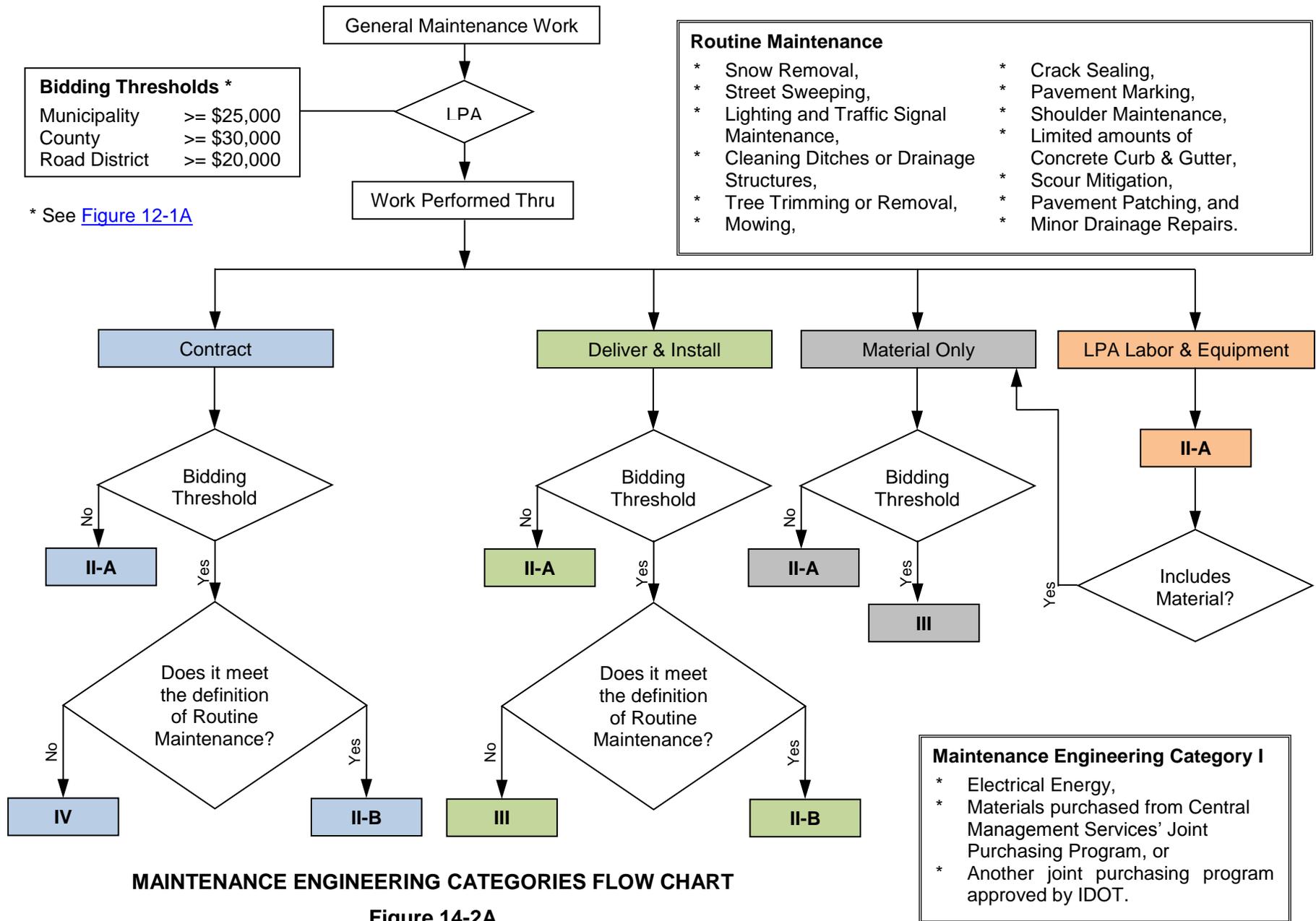
If additional maintenance operations are added during the maintenance period, but not included in the estimate of maintenance costs and additional engineering services are needed, the additional maintenance engineering costs will be listed separately on the maintenance expenditure statement.

MFT funds for "Maintenance Engineering" may be initially authorized under "Maintenance", however; "Maintenance Engineering" must be accounted separately by the LPA. When the maintenance expenditure statement is submitted, the district will make revisions as needed to show the final authorization for "Maintenance" and "Maintenance Engineering".

14-2.06(b) Listing of Material, Labor, and Equipment

LPAs should use Form [BLR 14222](#) to prepare an estimate of maintenance cost for both day labor and contract maintenance operations. For each day labor operation, estimate the cost of material categories (aggregate, bituminous material, culvert, etc.), along with the total estimated cost of material for each maintenance operation. LPAs may provide a total estimated LPA's labor cost and a total estimated of LPA's equipment cost for their their entire maintenance program or list the LPA's labor and LPA's equipment estimated costs for each maintenance operation. If a consultant is utilized, the LPA's labor and LPA's equipment costs fall under Maintenance Engineering Category II-A.

Each maintenance contract should be indicated as a separate maintenance operation listing the type of work in each contract and the total estimated cost of the contract.



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Figure 14-2A

14-2.06(c) Equipment Ownership Expenses

LPA's planning to use MFT funds to reimburse locally owned equipment used for maintenance operations must meet the requirements discussed in [Sections 12-1](#) and [15-1](#). The submittal of the required documentation as discussed in [Section 12-1](#) must be submitted with the estimate of maintenance costs for approval.

14-2.06(d) Non-MFT Items

The LPA may include maintenance work not funded with MFT funds in their maintenance program; however, it should be identified as non-MFT on the maintenance estimate.

14-2.07 Maintenance Letting**14-2.07(a) Bidding Proposals**

Proposals for day labor maintenance and contract maintenance need to be prepared in the same manner as for construction projects. See [Section 12-2](#) for information on contract proposal, material proposal, delivery and install proposal, and request for quotations.

Prequalification of bidders is optional for maintenance contracts and material proposals except for bituminous resurfacing contracts greater than \$50,000 for which prequalification is required. If prequalification is required, it must be indicated in the letting advertisement.

The scope of a maintenance proposal should be identified so all work is completed or all material is delivered by the end of the maintenance period. It is imperative an award be made at an early date to allow this work to be completed by the end of the maintenance period. Include a Special Provision in the material proposal specifying that all materials must be furnished and spread by a designated termination date no later than the end of the maintenance period.

Material proposals for the purchase of salt or other ice control measures may be for an entire winter period even if it extends over two maintenance periods. If the purchase of salt or other ice control measures will occur in the 2nd maintenance period, a resolution will need to be submitted and approved. When appropriate, the LPAs may solicit quotes from material suppliers rather than taking formal bids. See [Section 12-1](#) for more information.

A maintenance contract must contain either a number of working days or a completion date no later than the end of the maintenance period. When working days are used, the allowable number of working days should typically not exceed the average number of working days remaining in the maintenance period. Approval of IDOT is required when a maintenance contract must continue beyond the end of the maintenance period.

It is permissible to award contracts for lighting, traffic signals, and other contracts only involving equipment and labor with minor replacement materials for a period not exceeding three years. This is allowed because it is not always feasible for a contractor to increase the work force to provide the necessary services for a short period. A separate subsection is set up for each contract for the first year of the contract; see Section 14-2.04. The cost for the remaining years

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of the contract may be included in the same subsection as the day labor maintenance work (usually a 00 subsection) each year.

14-2.07(b) Letting and Award

The requirements for bidding and for advertising to receive bids are the same as for construction and can be found in [Section 12-3](#).

14-3 RECORD KEEPING

14-3.01 General

14-3.01(a) Expenditures

The expenditure of MFT funds for maintenance may not exceed the lesser of the approved appropriation resolutions or the amount authorized by IDOT. MFT funds may not be expended for items to be bid or quotations obtained, see [Section 12-1](#) until the estimate of maintenance costs and other documentation is approved, see Sections 14-2.03, 14-2.06 and 14-2.07.

MFT funds authorized for expenditure for a maintenance period must be accounted for in that period. Outstanding bills not paid by the end of the maintenance period will still be charged to the maintenance period in which the bills were incurred. All costs incurred as part of a maintenance contract will be charged to the maintenance period in which the contract that was awarded even if it was necessary to extend the contract beyond the end of the maintenance period. An exception is for multi-year contracts for lighting and traffic signal maintenance that extend beyond the maintenance period. The costs for these operations apply to the maintenance period in which they actually occur.

14-3.01(b) County Maintenance

Maintenance operations may be performed by counties either on a countywide basis or on a section basis or patrol basis. Resolutions appropriating MFT funds for the work may be lump sum, covering all sections or patrols, or may be in separate amounts with a separate appropriation for each section or patrol. Likewise, authorization for the expenditure of MFT funds for the work will be in one amount if the appropriation is a blanket one or in separate amounts if an appropriation is made for each section or patrol. Actual cost records must be kept accordingly (i.e., whichever way it is set up).

14-3.01(c) Road District Maintenance

Maintenance operations on township and road district roads may be performed either on a district-wide basis, section basis, or patrol basis. Authorization for the expenditure of MFT funds for this work may be lump sum or for each section and/or patrol, as requested by the county engineer.

14-3.01(d) Municipal Maintenance

Resolutions that appropriate MFT funds for municipal maintenance work and authorization of the expenditure of MFT funds may be lump sum for all streets to be maintained. Cost records, however, should be kept by maintenance operation as established on the estimate.

14-3.02 Overruns**14-3.02(a) Day Labor**

For day labor maintenance operations, the following will apply if:

1. Additional maintenance operations not included in the approved estimate of maintenance costs will require the submission of a revised estimate of maintenance cost, when the operation is required to be bid or request for quotations obtained, see Section 14-2.06.
2. The total cost of overruns of a maintenance operation is \$10,000 or less, no additional IDOT approval is necessary. If the maintenance operation includes multiple bid groups, the \$10,000 or less will apply to the individual bid groups.
3. The total cost of overruns of a maintenance operation exceeds \$10,000 ([720 ILCS 5/33E-9](#)), a written request is required for IDOT's approval justifying the increase. If the maintenance operation includes multiple bid groups, the exceeds \$10,000 will apply to the individual bid groups. IDOT's approval of this request should be documented in the district's file.

14-3.02(b) Contract Maintenance

For contract maintenance operations, prepare Form [BLR 13210](#) "Request for Approval of Change in Plans" when required by the criteria presented in [Section 13-2](#). See [Section 9-1](#) for when MFT funds are authorized.

14-3.03 Material Inspection for Maintenance

Material inspection for maintenance consists of the following steps:

1. Inspection of Materials. Conduct physical testing or visual inspection of the materials to ensure compliance with the [Standard Specifications](#) in accordance with the [Project Procedures Guide \(PPG\)](#).
2. Evidence of Materials Inspection. Ensure there is proof that the required material sampling and testing has been performed in accordance with the [PPG](#).
3. Documentation of Inspection. Document the fact that the materials received on the job site were accompanied by adequate evidence of material inspection as described in Step 2 and include the documentation as part of the project files.

The LPA may request assistance from IDOT, as needed. The LPA will maintain the documentation of inspection for a minimum of three years after the completion of the contract for a possible review.

14-3.04 Maintenance Expenditure Statements (MES)

After the end of the maintenance period, the LPA shall submit the Maintenance Expenditure Statement (MES), Form [BLR 14222](#) to IDOT within three months after the end of the maintenance period. After this time, all outstanding bills should have been paid. Maintenance resolutions and

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estimates of maintenance costs submitted for future maintenance periods after that date may not be processed until the delinquent MES has been submitted.

The MES should include lump sum costs for labor, equipment, and maintenance engineering costs. Material costs and maintenance contract costs should be shown for each day labor operations. LPAs may provide a total actual labor cost and a total actual equipment cost or list labor and equipment actual costs for each maintenance operation. The MES shall also include all other maintenance operations listed separately which were paid using MFT funds, but were not included in the estimate of maintenance costs, see Section 14-2.06.

After the receipt of a LPA's MES, IDOT will ensure adequate MFT funds have been appropriated and authorized and will credit any funds not expended to the LPA's unobligated balance.

IDOT's documentation review of MFT funds will determine if all maintenance expenditures were made in accordance with approved estimates of maintenance costs, approved contracts and award of materials, and the equipment rate schedule; see [Chapter 15](#).

Whenever IDOT determines MFT funds have been used to pay for maintenance operations not approved or otherwise has been improperly expended, the LPA will be given an opportunity to document the acceptability of the unapproved items or improper expenditure. If it is determined that the expenditure is not proper, the LPA will be required to refund the expenditure to their MFT account from a separate non-MFT account as a permanent transfer.

14-4 MAINTENANCE INSPECTION (COUNTIES AND ROAD DISTRICTS)

Roads constructed with Federal funds is discussed in [Section 25-2](#).

[605 ILCS 5/5-702](#) and [5/6-702](#) require that IDOT withhold MFT funds from individual counties, townships, and road districts when proper maintenance is not being performed on MFT funded construction projects.

The districts should review the quality of maintenance of MFT construction projects on county, township, and road district roads through their design life of 15 to 20 years. The method of accomplishment will be left to the districts. The districts should work closely with the county engineer to determine if township and road district roads are maintained in a manner satisfactory to IDOT and the county. However, all county, township, and road district projects should be observed at least once every five years. Efforts should be documented when problems are found, and again when they have been corrected.

14-4.01 Items of Inspection

The district should conduct maintenance inspections that include the following:

- name of county or county and road district;
- section number;
- date of inspection;
- surface type;
- condition of surface, shoulders, ditches, structures, traffic control, and guardrail;
- type of maintenance being performed during the year:
- routine (e.g., mowing, patching);
- extraordinary (e.g., placement or removal of large amounts of materials, seal coats); and
- recommended maintenance work to bring the section up to a serviceable condition for vehicular traffic.

14-4.02 Notification

The district will inform the county engineer of all needed maintenance corrections noted during the inspection. If a maintenance correction is essential to provide for safe operation of vehicular traffic, the district will advise the LPA immediately.

14-4.03 Bridge Inspection

LPAs are required to provide periodic inspections of bridges in accordance with the *National Bridge Inspection Standards (NBIS)* and report their findings to IDOT; see [Section 6-3](#).

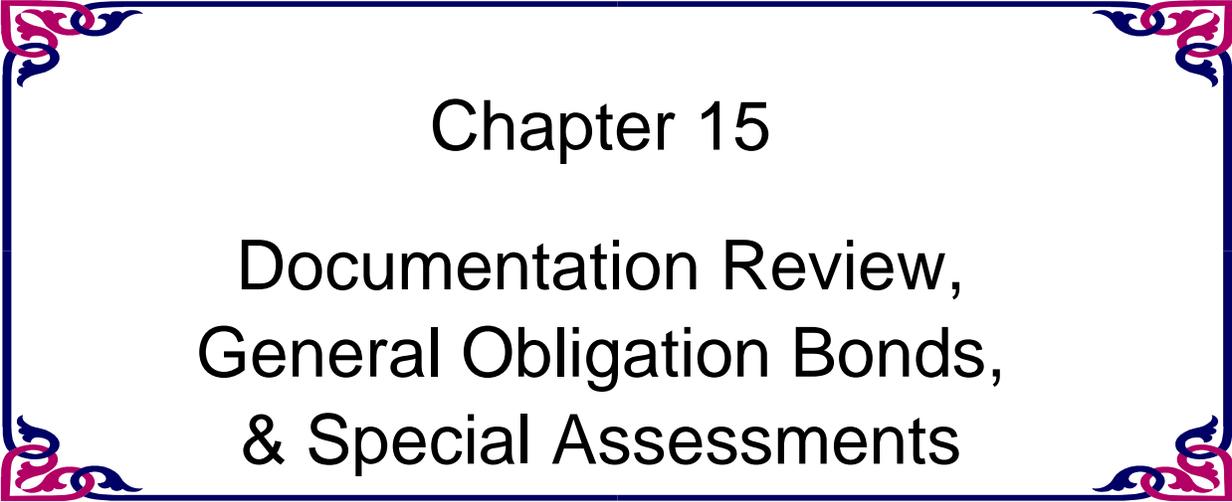
14-5 ACRONYMS

This is a summary of the acronyms used within this chapter.

ADA	<i>Americans with Disabilities Act</i>
BBS	Bureau of Bridges and Structures
BLRS	Bureau of Local Roads and Streets
CBLRS	Central Bureau of Local Roads and Streets
CC&G	Concrete Curb & Gutter
EAB	Emerald Ash Borer
GM	General Maintenance
HMA	Hot Mix Asphalt
IDOT	Illinois Department of Transportation
ILCS	<u>Illinois Compiled Statutes</u>
ILMUTCD	<u>Illinois Supplement to the Manual of Uniform Traffic Control Devices</u>
LPA	Local Public Agency
MES	Maintenance Expenditure Statement
MFT	Motor Fuel Tax
NBIS	<i>National Bridge Inspection Standards</i>
PPG	<u>Project Procedure Guide</u>
PROWAG	<i>Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way</i>
ROW	Right of Way
WMA	Warm Mix Asphalt

14-6 REFERENCES

1. *Maintenance Policy Manual*, IDOT
2. [Illinois Compiled Statutes](#)
3. [Illinois Supplement to the Manual of Uniform Traffic Control Devices](#), IDOT, June 2014.
4. [Project Procedures Guide](#), IDOT, April 2018
5. [Standard Specifications for Road and Bridge Construction](#), IDOT



Chapter 15

Documentation Review, General Obligation Bonds, & Special Assessments

BUREAU OF LOCAL ROADS AND STREETS MANUAL

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Chapter 15
DOCUMENTATION REVIEW,
GENERAL OBLIGATION BONDS, & SPECIAL ASSESSMENTS

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Chapter 15

DOCUMENTATION REVIEW, GENERAL OBLIGATION BONDS, & SPECIAL ASSESSMENTS

15-1 DOCUMENTATION REVIEWS

The local public agency (LPA) should be familiar with the various Illinois Department of Transportation (IDOT) policies, procedures, and instructions that have been set forth in this *Manual*. The LPA is responsible for tracking Motor Fuel Tax (MFT) funds, such as receipts, credits, authorizations for expenditures, and the expenditures. The LPA is responsible for submitting the required documents for review and/or approval by IDOT also contained in this *Manual*. If you have questions, please contact the District Bureau of Local Roads and Streets (BLRS) office.

The District BLRS office is responsible to periodically review each LPA's MFT account, which is accomplished by a MFT Documentation Reviewer (reviewer) of the District BLRS office. Reviews are conducted primarily as cash receipt and disbursement reviews of the LPA's MFT fund. Reviews are also performed to discover any improper or unapproved uses or expenditures not in accordance with Illinois law. The reviewer will review based on state law, IDOT policy, and approved document submittals.

LPA's may also be contacted by IDOT's Bureau of Investigations and Compliance (BIC) to perform an audit. This audit is performed in accordance with generally accepted government auditing standards (GAGAS) and is done completely autonomous from the BLRS.

15-1.01 Record of Receipts and Disbursements

The LPA should use a ledger as a master record to show monthly receipts of MFT funds and credits and authorizations of expenditures to individual section accounts as a best practice. The ledger should also be used as an individual accounting record for each of the authorized expenditure of MFT funds. BLRS has developed an MFT computer software package that may be used by the LPA for these purposes. This software package can be downloaded from the [IDOT website](#) under the "Databases" tab.

A complete record of the receipts and disbursements of MFT funds must be kept by the LPA in accordance with the requirements of the Illinois Local Records Acts ([50 ILCS 205](#)). When the LPA requests to destroy records with the Secretary of State (SOS), the LPA should notify the District BLRS. If there is a need by IDOT to place a hold on the destruction of certain records by the LPA, IDOT will need to file their request with the SOS prior to the destruction. IDOT should notify the LPA of this request. LPA officials should retain the following supporting information:

- all cancelled checks (or images – front & back sides), monthly bank statements,

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- electronic payments,
- records of investment of MFT funds,
- all necessary data to support payment for labor and equipment rental,
- vendor's invoices,
- payment estimates, and
- all other claims to support expenditures and receipts to/from this fund.

The LPA shall preserve all claims, warrants, records, and resolutions pertaining to the receipt and disbursement of MFT funds for review by IDOT. Records should be retained using the following procedures:

1. Unobligated Balance, Authorizations and Credits. IDOT publishes a monthly statement indicating the month's starting unobligated balance, allotment for the month as well as showing the authorizations and/or credits issued since the last statement, and the ending unobligated balance for the LPA. This statement can be found on the [IDOT website](#) under the "Distribution" tab. The unobligated balance is the funds that IDOT has not given the LPA permission to expend. The LPA is given an authorization by IDOT for the use of funds for the various projects. Once authorized these funds are now considered obligated. MFT funds that are authorized to an LPA for a specific purpose are not to be transferred and used for any other purpose. A credit is issued for surplus funds and for interest earned. Authorizations are subtracted from the unobligated balance and credits are added to the unobligated balance. An annual summary of all the LPA's transactions is available from the District BLRS office.

2. Deposits. All MFT funds received by the LPA from the State are recorded and must be deposited into a bank account. No warrants received from the State shall be endorsed and turned over to a contractor or anyone else.

When the LPA has a "dedicated" MFT account, all funds deposited into this account become MFT funds. When other funds are erroneously deposited into the MFT fund; the reviewer will report this in the Documentation Review comments.

If the LPA has a co-mingled account, other funds may be deposited into this account as long as accounting procedures provide for keeping a separate balance for the MFT funds and any interest earned on these funds. The LPA must note non-MFT deposits and withdrawals from this account.

3. Disbursements. MFT disbursements are evidenced by a series of claims and warrants. Each claim is sequentially numbered. The MFT section number should be included on each invoice and on each claim to which it is charged. Each claim should be signed by the party filing it.
4. Reimbursements to the MFT Account. When MFT funds are expended for construction or maintenance projects and then reimbursed by property owners, corporate funds, State funds, Federal funds, or any other source; the reimbursement shall be attributed to the MFT section account from which the payment was made. Any payments not eligible for MFT participation shall be reimbursed to the account from which they were paid.

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5. Materials, Equipment, Labor Claims. Claims for materials or equipment in connection with day labor construction (see [Section 12-1](#)) or maintenance (see [Section 14-2](#)) should be documented. If the claim involves material purchased that is incorporated directly into a MFT project, a copy of the vendor's invoice shall be attached to the claim. For payments to contractors for contract construction or maintenance, a copy of the engineer's payment estimate shall be attached to each claim. When an LPA uses MFT funds to reimburse a corporate account for labor and/or equipment expenses, it shall maintain adequate records to substantiate the charges. For labor, the LPA shall base the accounting system on daily time records and identify the type of work involved on the daily time records along with the wage rates and hours. For equipment rental, the LPA shall show items of equipment; the hourly rates and numbers of hours used for each piece of equipment and identify the labor rates and hours, and MFT section number or location used.

The total costs accumulated from these daily records shall be transferred to payment bills and ultimately to the Final Report of Improvement Constructed under the Illinois Highway Code (Final Report – Form [BLR 13510](#)) or the Estimate of Maintenance Costs/Maintenance Expenditure Statement (MES) (Form [BLR 14222](#)). The LPA shall ensure that daily time records are available for IDOT's documentation review for verification of charges. The practice of assigning a percentage of the public works or highway department payroll as an MFT expense is not an acceptable method of documentation without having other documentation to support the percentage. If there is an intergovernmental agreement on how payment for work performed by one LPA is to be reimbursed by another LPA; the agreement needs to be made available. For payment of MFT eligible personnel in connection with day labor construction or maintenance, a properly documented payroll supported by daily time records will constitute a claim. Payment shall be made by a separate warrant for each individual shown on the payroll, except where a payroll clearing account is in use. When the compensation is on an LPA hourly, daily, or monthly basis, the LPA may pay the employee from the fund from which the employee is regularly paid. The LPA fund may be reimbursed from the MFT fund for the time spent on the MFT job. The LPA must keep complete records of the dates and times LPA employees are engaged on MFT work. Reimbursements in this manner from MFT funds should be made promptly and periodically. See [Section 4-3](#) for MFT eligibility for salaries and expenses.

6. Payments to Other LPAs. Payments from MFT funds to another LPA fund for reimbursement are made in the same manner as any other payment. A claim should show the date, project or section and the same documentation as listed above in Item 5 if payment is for labor and/or equipment. A warrant is then drawn against the MFT fund in favor of the fund that is being reimbursed. If desired, all employees working on that project/section during the period covered by the claim may be shown on one claim and reimbursement made by one warrant.

15-1.02 No Disbursement – Memorandum Documentation Review

A regular receipt and disbursement documentation review is not necessary for any calendar year in which a LPA receives MFT funds but makes no disbursements. In this case, the

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reviewer will prepare the appropriate portion of the documentation review package addressed to the District Local Roads Engineer (DLRE) stating no disbursements were made by the LPA during the period indicated, therefore; no regular MFT documentation review is necessary.

The reviewer will include in the package:

- the allotments and other funds, including interest received by the LPA;
- the previous documentation review balance;
- the total MFT funds invested or on deposit at the bank at the end of the calendar year; and
- supporting documentation of the MFT fund bank balances agreeing with the Memorandum Documentation Review.

The period covered by this type of review shall always be included in the regular receipt and disbursement documentation review of the first year following the LPA's disbursement of MFT funds.

15-1.03 Request for Records

When scheduling a documentation review, the reviewer will contact the LPA and may request the following records be made available:

- MFT fund ledger and/or account book;
- claim register, if any;
- cancelled checks or images (front and back of checks) and monthly bank statements;
- paid invoices, bills, vouchers, etc.;
- electronic payments;
- payroll and equipment usage records;
- section files including resolutions, contract and material awards, final reports, and maintenance expenditure statements;
- minutes of board or council meetings, where necessary;
- any other information relative to the time frame being reviewed (e.g., Certificates of Deposits, passbooks, money market statements);
- documentation to support expenditures of MFT funds; and
- documentation to support receipts to the MFT funds other than monthly allotments.

15-1.04 Detail of Disbursements

For small LPA's, the reviewer may find it convenient to review all disbursements. For large LPAs, the reviewer may use a sampling technique.

15-1.05 Review of Warrants

The reviewer will determine if claims issued against the MFT fund have been approved by the LPA prior to issuance of the warrant. Cancelled warrants will also be examined for proper warrant date, number, payee, and amount and then compared to the monthly bank statements and the LPA's MFT fund ledger. Paid invoices, LPA bills, vouchers, and any other necessary documentation may also be examined. The extensions and amounts are compared with the amount disbursed.

The LPA officials will be asked to explain any disbursements questioned by the reviewer or any discrepancies found. The documentation review report will address these findings with appropriate comments, explaining the particular facts found and what action, if any, needs to be taken.

15-1.06 Formal Contracts Required to be Bid

When reviewing contract projects, the reviewer will check each payment against the Engineer's Payment Estimate (Form [BLR 13230](#)). The reviewer will verify the Engineer's Payment Estimate (Form [BLR 13230](#)), marked as "Final" has been approved by IDOT prior to final payment to the contractor unless the LPA is under agreements of understanding for the project.

15-1.07 Day Labor

Items of labor, material, equipment usage, and miscellaneous, whether they apply to a construction account or a maintenance account, must be examined and checked as follows:

1. Labor. MFT fund for labor expenses may be paid in the following manner:
 - a. Direct Payment. When the LPA pays the employee directly from the MFT fund, the LPA must keep adequate records of employment on the MFT funded project by the employee (e.g., hours, dates). Payment is made by an MFT warrant payable directly to the employee. See [Chapter 9](#) for guidance on payment of labor with MFT funds.
 - b. Local Funds. When the LPA pays the employee from the LPA fund from which the employee is regularly paid, the LPA fund may be reimbursed by an MFT warrant payable directly to the LPA fund. The LPA must keep adequate records on which the employee is engaged in MFT work (e.g., hours, dates, locations, sections). For maintenance, location and sections are not required. Payment from the MFT fund to another LPA fund for reimbursement of the above is made periodically, preferably each month, and must be made the same as any other MFT payment. It is not necessary to have individual claims for each employee for a section. All employees working on a particular section during the period covered by the claim may be covered by one warrant.
2. Materials. Payment for materials purchased directly with MFT funds should be substantiated by the vendor's invoice, which should be checked for proper unit prices, extensions, and totals. Materials taken from LPA stock cannot be charged at more than cost. Accurate records must be kept of the quantities and dates used.

3. Equipment Usage. When a LPA desires to claim MFT funds for the use of its own equipment for MFT work, the hourly rate claimed for each piece of equipment it desires to use cannot exceed the rate provided by IDOT's [Schedule of Average Annual Equipment Ownership Expense](#) (under the "LPA Resources" tab) including the index factor or Equipment Watch. Adequate records must be kept by the LPA (e.g., hours, dates, equipment, section numbers). The equipment must be listed on the Equipment Rental Schedule (Form [BLR 12110](#)) and approved by IDOT.

15-1.08 Miscellaneous Receipts and Disbursements

Occasionally, the reviewer will encounter situations that vary from the routine documentation review. In these cases, the reviewer will set up the necessary accounts to record the receipts and disbursements of the particular account. The reviewer will also make the necessary remarks in the documentation review comments to address the situation. Some of these situations are discussed in the following subsections.

When these types of funds are reimbursed to the MFT fund, they are identified in the documentation review report under the documentation review comments as "other receipts." The section number, source, purpose, and amount must be shown.

15-1.08(a) Authorizing Disbursements and Crediting Reimbursement for a Specific Section in the MFT System

The following will apply:

1. Active or Open Sections. The authorization or reimbursement is credited to the section account as identified in the documentation review.
2. Closed Sections (In the MFT System). If the section is closed, it is reopened to include the disbursement or receipt, as indicated by the documentation review, including comments (e.g., source, purpose). Final paperwork is corrected. Once this action is completed, the section must be closed again.
3. Closed Sections (Purged from the MFT System). If the section is closed and purged from the database, the disbursement or receipt of funds is entered as category "other" and in the memo area the original section designation is entered. The source and purpose shall be identified. The purging of data is no longer allowed.

15-1.08(b) Authorizing Disbursements and Crediting Reimbursement Not Identified by a Section

Any other reimbursement that cannot be assigned to an existing section must be entered as category type "other" and identified with an explanation in the memo field. The source and purpose of the reimbursement or disbursement plus the documentation review report number shall be identified.

15-1.08(c) Crediting Earned Interest

The Attorney General of the State of Illinois has set forth a ruling which, in general, states that interest must follow the fund. Any earned interest on the investment of the LPA's MFT funds must be accounted for in the documentation review. Upon receipt, these funds must be deposited in the LPA's bank account and credited to the "Unobligated Account."

The accounting of monies earned on the MFT fund investment is reviewed during the course of the documentation review made on the LPA.

Any earned interest (and only earned interest) on LPA's fund must be accounted for in the documentation review under a section titled "Interest" with a line designated for each year of interest. Each annual total of earned interest will be credited as category "interest" in the MFT system and in the memo field the documentation review report number shall be identified along with year in which the interest was earned.

15-1.08(d) Crediting Surplus Off-Street Parking Revenue Funds

When a municipality has used MFT funds to construct a revenue-producing off-street parking facility, its parking revenue account must be made available to IDOT for documentation review purposes. A section number to track this revenue must be assigned as follows:

1. Separate Accounts. When a LPA chooses to maintain accounts for each parking facility constructed, the construction section must be closed and the final MFT participation is determined. To account for revenues, new MFT sections must be established as in the following example:

Revenue reimbursements for a parking lot built as section 02-00076-00-PK is accounted for by using section 02-R0076-00-PK. The original MFT participation in the project is entered in the database as "the amount appropriated." The receipts are credited to the Unobligated Account annually, and the total credited accumulation is maintained in the far-right column on Form [BLR 15106s](#) of the documentation review. Once the amount appropriated has been achieved, the section is closed.

2. Single Account. When the LPA has several revenue-producing parking facilities but maintains one parking revenue account, the original construction sections are closed and the total MFT participation in all projects is determined.

The new section number is established as (year of 1st reimbursement)-R0000-00-PK. The total participation in all sections must be entered into the database as the amount appropriated. If additional parking projects are built, the MFT participation for those lots is added to the appropriation amount. Annual credits for parking receipts are treated as separate accounts.

15-2 TOWNSHIP BRIDGE PROGRAM DOCUMENTATION REVIEWS

The Township Bridge Program (TBP) account of each county is reviewed periodically by the MFT documentation reviewer of the District BLRS office. This documentation review usually takes place at the same time as the MFT documentation review.

15-2.01 Record of Receipts and Disbursements

The county shall preserve all claims, warrants, records, and resolutions pertaining to the receipt and disbursement of Township Bridge Program funds for review by IDOT. Warrants shall be deposited in a separate account to facilitate an efficient accounting during the documentation review.

The county must use a ledger to show receipts of TBP funds and expenditures from individual section accounts. BLRS has developed a TBP computer software package that can be downloaded from the [IDOT website](#) under the “Databases” tab.

A complete record of receipts and disbursements of TBP funds must be kept by the LPA similar to what is required for MFT funds; see Section 15-1.01. Procedures similar to those for MFT should be used. Additionally, the TBP funds received by the county from the State are recorded and deposited into a bank account, which will identify TBP funds and interest earned on these funds separately from other funds. Disbursements are made from the account when pay estimates are received from the contractor, or invoices from consultants are received for preliminary or construction engineering. Funds not needed for a project for which they were obligated must remain in the account until applied to a future project.

15-2.02 Request for Records

When scheduling a documentation review, the reviewer will contact the LPA and request records similar to those listed in Section 15-1.03 be made available.

15-2.03 Documentation Review

The reviewer will review all receipts and disbursements to and from the TBP account similar to the review of MFT funds discussed in Section 15-1. The reviewer will ensure that any funds paid to a county by the State for a TBP project but not needed to complete the project remain in the TBP account to be used on future projects and that interest earned on the TBP account is credited to the account. To balance completed projects, the reviewer will record any credits to or debits from the unobligated balance in the documentation review report. The reviewer will also check to ensure that only the allowable percentage of TBP funds is expended, with the remaining balance coming from the LPA’s local funds and/or from MFT funds.

15-3 GENERAL OBLIGATION BOND AND DOCUMENTATION REVIEW

An LPA's may use MFT funds to reimburse bonds (e.g., General Obligation Bonds (GOB), MFT Fund Bonds) to finance highway improvements, but must follow the requirements of Section 15-3.01. Whenever MFT funds are used for the retirement of bonds by the LPA, it is necessary for IDOT to review the LPA books. The purpose is to determine the existence and amount of indebtedness that is eligible for MFT participation.

15-3.01 General Obligation Bond Procedures

15-3.01(a) MFT Reimbursement for Bond Issues Procedures

[Section 4-4](#) discusses an LPA's use of bonds (e.g., General Obligation Bonds (GOB), MFT Fund Bonds) to finance highway improvements. The following discusses procedures for initiating and processing a bond issue project, which is approximately the same for each type of bond when MFT funds will be used to pay all or part of the bond issue.

1. Resolution of Intent (Municipality and County). When an LPA proposes to finance a project with the proceeds of a bond issue and later requests MFT funds to retire the indebtedness, the LPA must submit a resolution stating its intent to IDOT. Assign a section number to the resolution for the project (see [Section 2-4](#)) and adequately describe the location, the proposed widths of the roadway, and type of the proposed improvement. For a GOB issue, the Resolution of Intent (Form [BLR 09112](#)) requires IDOT approval prior to submitting the proposition to the voters, if voters' approval is required.

When the entire cost of the project is paid with proceeds of the bond issue, there is no need to appropriate any MFT funds at the time the Resolution of Intent (Form [BLR 09112](#)) is passed. However, if the LPA wants to pay any eligible portion of the total project cost directly with MFT funds, a resolution (Form [BLR 09110](#)) to appropriate the necessary MFT funds must be submitted to IDOT for approval.

2. Direct Payment of Project Costs. Do not include any project costs that are paid directly with MFT or other funds in the bond issue. When the cost of engineering is not part of the bond issue and is paid with MFT funds, make payments from the MFT account directly to the persons performing the engineering work. Do not deposit MFT funds in, or disburse from, the bond issue account. MFT funds cannot be used to pay engineering costs on GOB issue projects until the bond issue has been passed by referendum.
3. Procedures for Road District Bond Issues. In general, the county engineer, acting in cooperation with or for the highway commissioner, will submit the general plan of improvement to IDOT for approval prior to the submission of the proposition to the voters, if voters' approval is required.

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4. Bond Ordinance — GOB Projects Only. Subsequent to the passage of the referendum, the LPA (e.g., county board or corporate authorities) must file an ordinance with the county clerk certifying the results of the vote and the issuance of the bonds ([605 ILCS 5/5-605](#), [5/6-513](#), and [65 ILCS 5/8-4-4](#)). The LPA should submit two certified originals of the bond ordinance to IDOT.

For road districts, a register of all issues of these bonds is filed with the county clerk by the road district clerk. Submit two originals to IDOT ([605 ILCS 5/6-510](#)).

5. Allowable Miscellaneous Expenses. Legitimate miscellaneous expenses incurred in connection with an approved road or street bond issue improvement (e.g., attorney fees (see [Section 4-3](#)), engineering costs) may be included as part of the improvement cost, and MFT funds may be used to retire the bonds. Voting costs in connection with issuance of bonds are not considered legitimate MFT expenses.

6. Obligation Retirement Resolution. To retire the obligation with MFT funds, submit to IDOT an Obligation Retirement Resolution (Form [BLR 15411](#)) appropriating the funds required each time an obligation becomes due. If a road district wants to retire the obligation with MFT funds, the county must submit a County Request for Road District Motor Fuel Tax Funds to be Used to Retire Indebtedness (Form [BLR 09130](#)) to IDOT indicating the outstanding amount needed for payment.

For GOB issue projects, the county clerk must sign Certification of Cancellation of Tax Levy (Form [BLR 15314](#)), if required. It certifies that the tax levy, which would have produced funds to pay the indebtedness, has been cancelled and not extended. This must accompany the Obligation Retirement Resolution (Form [BLR 15411](#)).

If the bond issue improvement includes work not eligible for MFT participation, the amount of MFT funds to retire the bonds and interest must reflect the percentage of the project that is eligible for MFT participation.

15-3.01(b) Records

Subsequent to passage of the referendum, two certified copies of the bond ordinance must be submitted to IDOT.

For road districts, two copies of a register of all issues of these bonds must be submitted to IDOT pursuant to the Illinois Highway Code, [605 ILCS 5/6-510](#).

As soon as the bonds have been sold, the proceeds must be deposited by the LPA's treasurer in a bond account(s) as directed by the bond ordinance, not the MFT account. Two forms should be completed by the clerk and submitted to the appropriate District BLRS office. These forms are:

1. Description, Ordinance, and Bond Issue:
 - Use Form [BLR 15310](#) if the bond issue is a general improvement bond issue.
 - Use Form [BLR 15312](#) if the bond issue is a refunding or refinancing bond issue.
2. Schedule of Tax Levies and Retirement Schedule:

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- Use Form [BLR 15311](#) for a general improvement bond issue.
- Use Form [BLR 15313](#) if it is a refunding or refinancing bond issue.

15-3.02 Documentation Review of General Obligation Bonds

15-3.02(a) Accounts

When it is anticipated that a bond issue will be repaid with MFT funds, whether in whole or in part, IDOT is required to conduct a documentation review of the bond issue accounts.

When the LPA receives the proceeds from the bond (Form [BLR 15310](#)) and retirement schedule (Form [BLR 15311](#)), both forms need to be submitted to the District BLRS. The District BLRS will schedule an initial documentation review at this time. The final documentation review is conducted upon completion and final acceptance of the project(s).

When IDOT has approved the Engineer's Payment Estimate (Form [BLR 13230](#)) marked as "Final" and all other bills for the project have been paid, the LPA will submit the Final Report – Notice of Completion and Acceptance (Form [BLR 13510](#)). The Final Report will contain a detailed summary of all costs associated with the project and an indication of whether these costs were paid from the bond fund or from another source. If there are several projects under the same bond issues, a Final Report will need to be completed for each project. After receiving the Final Report (Form [BLR 13510](#)), IDOT will perform the final documentation review. Any project costs that are not eligible for MFT participation will be determined during the final documentation review, and the MFT-eligible portion of the repayment schedule will be revised accordingly.

If the bond issue to be repaid with MFT funds is a refunding or refinancing bond issue, the initial documentation review and the final documentation review are the same.

15-3.02(b) LPA Records

The reviewer will request the various LPA records relative to the bond issue. A copy of the bond ordinance should be included with the documentation review report.

During preparing the documentation review report, the reviewer may need to examine the following LPA records:

- minutes of the LPA's meetings;
- special election data;
- LPA legal and construction files;
- LPA documents kept by the treasurer (e.g., bills, invoices, bank statements, electronic payments);
- bond ordinance;
- MFT fund; and

- other LPA funds.

15-3.02(c) Costs Over and Above the Amount of the Bond Issue

Typically, this type of documentation review arises when the LPA finds that the proceeds received from the sale of the bonds and earned interest are insufficient to cover all costs on the project being improved. The LPA requests the use of MFT funds to cover the costs over and above the amount of the bond issue. A documentation review is requested to determine the actual MFT funds necessary to complete final payment of all costs on the project.

This is essentially a final documentation review. The reviewer accounts for all monies received from the sale of the bonds, earned interest, and any MFT funds that may have already been authorized to the LPA. The reviewer takes into consideration all outstanding bills necessary to complete final payment of all costs on the section applicable to MFT funds.

15-3.02(d) Miscellaneous Information Regarding Bonds

A copy of the LPA resolution should be given to the reviewer. This resolution may contain the pertinent data relative to the issuance of the bonds and certain options for bond retirement the LPA may exercise. Whenever this occurs, the reviewer must cover the options in the documentation review comments and prepare any appropriate schedules as needed.

Whenever there is a partial abatement (cancellation) of taxes, the Cancellation of the Tax Levy Certificate (Form [BLR 15314](#)), which is certified by the county clerk, should show the actual amount of taxes that have been abated or cancelled. The amount shown as being extended and the amount shown as being cancelled should equal the tax levy for that particular year.

When a LPA sells a portion of the authorized bond issue and then finds it necessary to sell any or all of the remaining unissued bonds, the reviewer prepares a supplementary bond documentation review. For this supplementary sale of bonds, the reviewer prepares a regular bond documentation review following the general procedure already outlined. The reviewer accounts for only the proceeds from the sale of the supplementary sale of bonds. This is necessary because the issuance dates usually differ from that of the original partial offering, which affects the amount of accrued interest received by the LPA. The reviewer must obtain a copy of the supplementary ordinance for inclusion in the documentation review report.

The LPA will need to complete Form [BLR 15411](#) (Obligation Retirement Resolution) for repayments of bond and interest from the MFT account. The authorization and payments will show in the regular MFT documentation review.

15-4 SPECIAL ASSESSMENT AND DOCUMENTATION REVIEW

A municipality may use MFT funds to retire the indebtedness to finance a special assessment project and must follow the requirements of Section 15-4.01. When the municipality desires to retire the public benefit portion of a Special Assessment (SA) Project, IDOT must conduct a documentation review to determine that the work was eligible for the use of MFT funds and that the amount of MFT funds used did not exceed the public benefit portion.

15-4.01 Special Assessment Procedures

15-4.01(a) Resolution of Intent

When a municipality proposes to finance a project by special assessment and later requests MFT funds to retire the indebtedness, the corporate authorities are responsible for submitting a resolution (Form [BLR 09113](#)) to IDOT stating their intent. Assign a section number to the resolution for the project (see [Section 2-4](#)) and adequately describe the location and type of proposed improvement.

15-4.01(b) Direct Payment of Project Costs

Any portion of a project (e.g., right-of-way, engineering expenses) may be paid directly with MFT or other funds. If the municipality chooses to pay a portion of the project directly, exclude all costs related to that portion from the assessment. All project costs that will be paid directly should not be included in the final project cost that is submitted to the circuit court for the determination of the assessment. When MFT funds will be used for direct payment of eligible project costs, the Resolution of Intent may include the necessary appropriation of MFT funds.

The use of MFT funds to pay engineering costs directly on special assessment projects that have not been confirmed by the court is not allowed unless prior approval of resolutions of intent have been secured.

Payments from the MFT account must be made directly to the entities performing the engineering work. MFT funds shall not be deposited in and disburse from the local improvement account or bond issue account.

15-4.01(c) Obligation Retirement Resolution

If a municipality wants to retire the public benefit assessments with MFT funds, it should submit an Obligation Retirement Resolution (Form [BLR 15411](#)) to IDOT, appropriating the funds required each time an obligation comes due. The municipality may request MFT authorization to retire all, or any remaining installments, of the public benefit assessments at one time.

Pertinent information showing the total private and public benefit assessments and project costs should accompany the first Obligation Retirement Resolution. The project costs should be the latest costs available for all right-of-way, engineering, construction, legal fees, and court costs associated with the project. Estimated costs may be used if the final costs for a phase are not known when preparing the resolution. For the Board of Local Improvements to collect the assessments, both public and private, they are required to file a certificate of issuance of first voucher in the circuit clerk's office in which the assessment was confirmed. File this certificate within 30 days after issuance of the first voucher for construction and show the amount and date of the first voucher.

It is necessary to furnish all the preceding information to IDOT for documentation review purposes. Special Assessment (Description, Court, Legal, and Financial Data) (Form [BLR 15410](#)) and Public Benefit Retirement Schedule (Form [BLR 15312](#)) are available for this purpose and will be furnished upon request. After the construction contract has been awarded and approved, the Obligation Retirement Resolution will be approved by IDOT along with authorization to expend MFT funds.

Form [BLR 15312](#) is not required when the total public benefit will be returned in one lump sum.

15-4.01(d) Miscellaneous Information

The following provides additional information regarding special assessments.

1. Public Benefit Assessment Payments. An LPA may use MFT funds to pay the first installment or all ten installments of public benefit assessments, without interest, provided that all other court data is in order and the Court has confirmed the assessment roll.
2. Interest. The following apply to interest on special assessments:
 - a. Start Date. Interest begins to accrue 60 days from the issuance date of the first voucher for work, except where the taking and damaging of property is involved. In this case, interest begins to accrue 60 days from the date that the Warrant for Collection is delivered to the LPA by the Circuit Court. The taking and damaging of property occurs when condemnation proceedings for right-of-way are involved in the special assessment. Interest is always computed 60 days from the date the first voucher is issued and not from the date the first voucher is recorded in court.
 - b. Assessment. Interest is computed on the total amount of all public benefit assessments (10 installments). It is always computed 60 days from the issuance date of the first voucher or the date of the Warrant for Collection to January 2nd of the following year.
 - c. First Payment. If the first voucher has been issued and the LPA is requesting the use of MFT funds for payment of interest, the first voucher must be recorded in court before IDOT will authorize payment of interest with MFT funds.

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- d. Corrections. When the interest dates and/or amounts are incorrectly shown on the LPA's Obligation Retirement Resolution, the interest should be correctly computed 60 days from the date of issuance of the first voucher or the date of the Warrant for Collection to January 2nd of the following year. Appropriate comments must be made when dates or amounts are incorrectly shown by the LPA.
3. Principal. The first installment of principal is due on January 2nd of the year following the issuance of the first voucher except when the acquisition or damaging of property is involved. In this case, the first installment immediately becomes due and payable upon delivery of the Warrant for Collection to the LPA.
4. Installments. The following will apply:
 - a. Request for Less than the Resolution. If the LPA requests less interest and/or principal on their Obligation Retirement Resolution than what is actually due, the LPA will only receive authorization for the lesser amount requested.
 - b. Request for More than the Resolution. If the LPA requests more interest and/or principal on their Obligation Retirement Resolution than is actually due, the LPA will only receive authorization for the actual amount due as shown by the schedule on Form [BLR 15411](#).
 - c. Payments. Special Assessment Bonds can only be issued against collections on any or all of installments two through ten. Special Assessment Bonds cannot be issued against collections of the first installment. The first installment is paid to the contractor by warrant only.
 - d. Other Funds. If the LPA pays a special assessment installment by borrowing from another LPA fund, with the intention of reimbursing the borrowed funds with certified MFT funds, a Notice of Interest must be passed by the LPA board and recorded in the minutes. Prior to payment of the special assessment installment with borrowed funds, the LPA must record their intent to repay the borrowed funds with MFT funds when authorization is received. Otherwise, there is no obligation due, and the LPA must not use any MFT funds for payment of this particular installment.
 - e. Interest. The second to tenth installments of principal bear interest from January 2nd to January 1st, inclusive, of the following year except where the acquisition or damaging of property is involved. In this case, it is recommended that the documentation reviewer review the statute for the applicable provision ([65 ILCS 5/9-2-48](#)).

15-4.01(e) Records

LPAs are required to furnish the District BLRS with the following:

1. Statement of Financing of Local Improvement Project. The LPA will complete Form [BLR 09140](#) and submit to the District BLRS.

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2. Municipal Resolution of Intent for Special Assessment. The LPA shall pass a resolution of their intent (Form [BLR 09113](#)) and submit to the District BLRS.
3. Preliminary Court Information. The LPA must submit Form [BLR 15410](#) (i.e., description, court, legal and financial data). Additionally, the following is required:
 - the court approval of the special assessment, both public and private;
 - the LPA's estimate used to determine the assessment; and
 - the date of the first voucher, if issued.
4. Schedule of Installments. The LPA must indicate the due dates, installment numbers, principal due, interest due, and the total amount of each installment on Form [BLR 15311](#).
5. Obligation Retirement Resolution. The LPA shall use Form [BLR 15411](#) as a formal request to use MFT funds for a particular debt. A description of the debt must be shown in sufficient detail to identify the public benefit assessment and the individual payment due.
6. Special Assessments (Public Benefit Retirement Schedule). The LPA shall submit Form [BLR 15411](#) when they retire the special assessment, unless it is paid in one lump sum.

15-4.02 Documentation Review of Special Assessments

15-4.02(a) Procedure

When final papers are submitted by the LPA, the District BLRS initiates a final documentation review. The reviewer should request that the various LPA records, relative to the special assessment, be made available for examination. The reviewer reviews Form [BLR 09113](#) and Form [BLR 15410](#) which are submitted by the LPA, by examining the Circuit Clerk's files. The reviewer should secure all court, legal, and financial data relative to the special assessment.

The reviewer reviews the following information on the assessment roll confirmed by the court:

- the total public and the total private assessments,
- the number of installments,
- amount of each installment,
- the breakdown between public and private assessments in each installment, and
- the assessment roll portion that covers the costs paid in the form of special assessments against private property owners and the LPA as public benefits.

After securing all the necessary information from the Circuit Clerk's files, the reviewer will review the District BLRS files and compare the information secured from the Circuit Clerk's file against the information originally submitted by the LPA. Any differences will be noted. The reviewer will also request an explanation from the LPA regarding any differences. This is necessary because, prior to the documentation review, any MFT funds already authorized for payment of obligations as part of this special assessment have been based on information furnished by the

LPA. If the assessments exceed the final cost, IDOT will prorate the excess public benefit assessment over the remaining installments or deduct it from the final installments, whichever the LPA requests. If all installments are paid, a refund to the MFT account for the excess amount is required.

The final documentation review should contain schedules listing all vouchers and/or bonds issued for payment of construction, engineering, legal, and court costs. These costs are considered the total actual costs of the improvement. These costs do not include any amount shown in the Statement of Financial Cost as “amount estimated to pay accruing interest on bonds and/or vouchers.”

The total of the above items is the “total actual cost” as shown in the Statement of Final Cost. This total should agree with the “total assessment” as shown on the assessment roll as confirmed by the court. Any differences should be noted by the appropriate comments.

After securing all relative information and after the finances have been balanced, the documentation review comments are prepared.

15-4.02(b) Costs Over and Above the Amount of the Special Assessment

Typically, this type of documentation review arises when the LPA underestimates the actual cost of the improvement and finds that collections on the special assessment are insufficient to pay the vouchers and/or bonds issued. The LPA requests authorization for MFT funds to cover the costs over and above the amount of the special assessment. A documentation review is requested to determine the actual amount of MFT funds needed by the LPA.

This is essentially a final documentation review. The documentation review accounts for the total actual cost as compared to the total assessment to provide the actual amount of MFT funds needed by the LPA to pay any costs over and above the amount of the special assessment.

15-5 POST DOCUMENTATION REVIEW PROCEDURES

15-5.01 Documentation Review Approval by the District

Upon the completion of the MFT documentation review of the LPA, the draft copy along with pertinent findings, comments, and/or recommendations are given to the DLRE for review, resolution, and approval. Upon receipt, the DLRE reviews the documentation review and the comments with respect to the following:

- documentation review completeness and consistency with established MFT format,
- agreement with the MES (Form [BLR 14222](#)) and/or the Final Report (Form [BLR 13510](#)), as appropriate,
- need for a LPA credit(s) and/or authorization(s),
- conformance with IDOT policy and State Statutes,
- validity of citations and noted irregularities, and
- the satisfactory disposition of all findings.

15-5.02 Potential Criminal Action

If the documentation review findings have the potential for criminal action, Central BLRS must be notified immediately. The matter is referred to BIC, if appropriate.

15-5.03 Disposition of Findings

Findings refer to the discovery of irregularities and/or issues during the documentation review. If there are findings to be resolved that require the cooperation of the LPA, the District BLRS must contact the appropriate LPA official and relate the documentation review findings to be resolved. The District BLRS must document the discussion with written correspondence to the appropriate LPA official and reiterate the actions required to resolve the finding(s) with a copy being sent to the CBLRS. The District BLRS should then approve the documentation review and release it for further processing. Written documentation to the appropriate LPA official may not be required if the necessary measures were taken immediately and do not require council or board action by the LPA.

The following presents the calendar day schedule for unresolved findings, at every stage the CBLRS will need to be informed:

1. 45 Days. Once written documentation is sent and 45 calendar days pass and neither corrective action nor a positive response has been received from the LPA, the District BLRS must contact the LPA by phone and follow up with written documentation restating the previous findings and IDOT's position. At this time, the District BLRS should request a meeting with the appropriate LPA official to offer assistance in overcoming any disagreement or misunderstanding surrounding the findings.

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2. 75 Days. If the request for a meeting is rebuffed and 30 more calendar days pass without LPA action or response, the District BLRS must notify the LPA in writing that, effective immediately, approval of all MFT work will be withheld until all pending findings have been resolved in a manner satisfactory to IDOT.
3. 105 Days. If IDOT still does not receive written notification of LPA action and response within 30 more calendar days, the District BLRS must again notify the LPA in writing. The letter will state that unless all pending findings are immediately resolved in a manner satisfactory to IDOT, the Regional Engineer will recommend to the CBLRS and to the Director of Program Development further payment of MFT funds be withheld in accordance with [605 ILCS 5/5 - 702](#), [5/6 - 702](#), or [5/7-204](#), as appropriate.
4. 135 Days. If 30 more calendar days pass totaling 135 days without LPA action or written response, and all negotiation attempts by IDOT have been rebuffed, the CBLRS must notify the appropriate LPA official by registered mail. No further payment of MFT funds will be made as noted above until all findings are resolved. The CBLRS must coordinate this action with the Office of the Comptroller. The LPA must be notified each month that MFT payments will be resumed only when all MFT expenditures have been accounted for in a manner satisfactory to IDOT.

The District BLRS shall maintain a comprehensive listing of unresolved LPA documentation review findings which will allow close adherence to the above procedure.

15-5.04 Distribution

If no findings have been identified in the documentation review, the District BLRS approves the documentation review and releases it. The District BLRS retains IDOT's original of all documentation reviews. A copy of the documentation review is sent to the LPA.

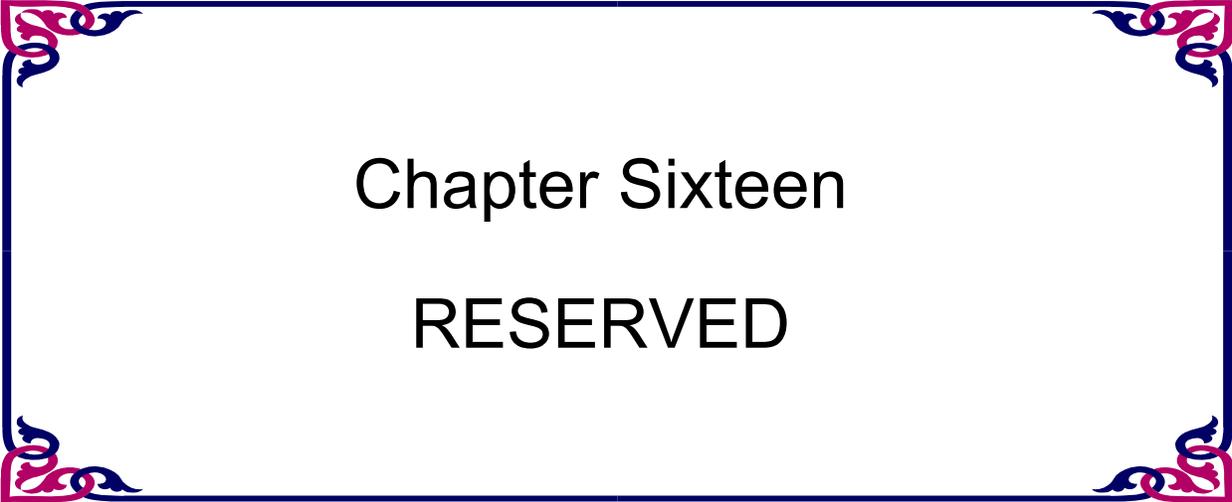
15-6 ACRONYMS

This is a summary of the acronyms used within this chapter.

BIC	Bureau of Investigation and Compliance
BLRS	Bureau of Local Roads and Streets
CBLRS	Central Bureau of Local Roads and Streets
DLRE	District Local Roads Engineer
Final Report	Final Report of Improvement Constructed Under the Illinois Highway Code (Form BLR 13510)
GAGAS	Generally Accepted Government Auditing Standards
GOB	General Obligation Bonds
IDOT	Illinois Department of Transportation
ILCS	Illinois Compiled Statutes
LPA	Local Public Agency
MES	Maintenance Expenditure Statement
MFT	Motor Fuel Tax
Reviewer	MFT Documentation Reviewer
SA	Special Assessments
SOS	Secretary of State
TBP	Township Bridge Program

15-7 REFERENCES

1. [Illinois Compiled Statutes](#)



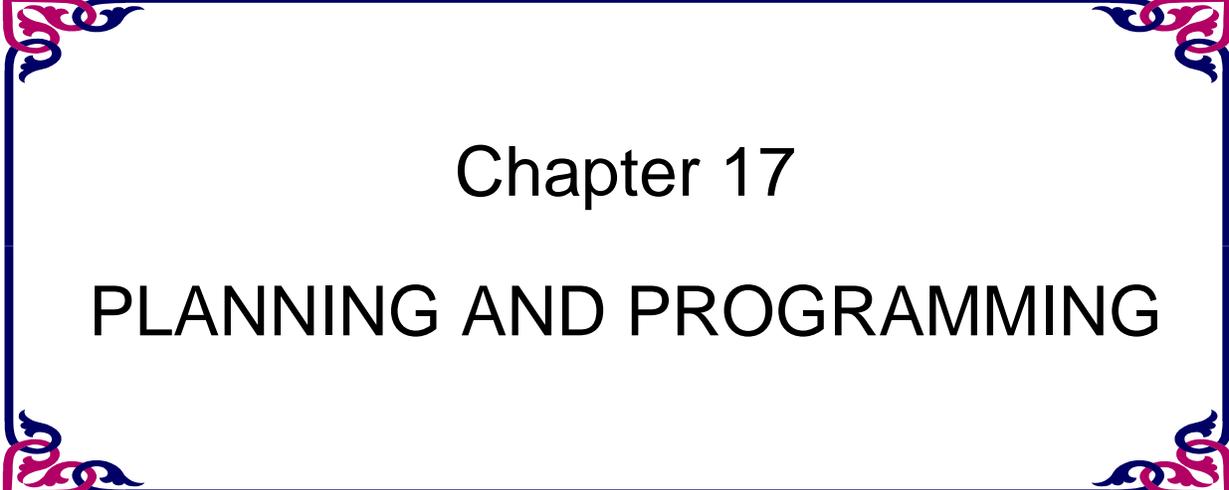
Chapter Sixteen

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Chapter 17

PLANNING AND PROGRAMMING

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Chapter 17
PLANNING AND PROGRAMMING – Federal Funds

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Chapter 17

PLANNING AND PROGRAMMING – Federal Funds

17-1 STATE PROPOSED HIGHWAY IMPROVEMENT PROGRAM

17-1.01 Multi-Year Highway Improvement Program

The Office of Planning and Programming (OPP) is responsible for development of the multi-year highway program. OPP works with the nine highway districts to develop priorities for specific improvement projects that meet Illinois Department of Transportation's (IDOT) overall accomplishment goals. This collective set of candidate projects from throughout the State is then analyzed further to develop multi-year programs within the fiscal limitations of projected revenues and which best meet IDOT's goals. Through these efforts a Multi-Year Highway Improvement Program is developed and published in April each year.

Federal funds are made available to local public agencies (LPA) through IDOT for use on various construction programs. Part of the Illinois apportionment is allocated to LPAs based on accepted distribution formulas. Included in the Multi-Year Highway Improvement Program are LPA Federally-funded projects scheduled for the first four years of the Multi-Year Program.

OPP works through the Central Bureau of Local Roads and Streets (CBLRS) to identify these projects. Each District BLRS office is given a program mark based on anticipated allocations of Federal funds. The District BLRS office then works with the LPAs to identify projects to be included in the program. During the early stage, the LPA should determine whether the project would be accomplished using one or several contracts. This decision is based on the complexity of the project, project costs, and the availability of Federal funds. Each LPA analyzes its priorities and available Federal funds plus the necessary matching funds. This enables the LPA to prepare its multi-year program. The LPA should check with the appropriate District BLRS office for the individual requirements on program submission. The District BLRS office categorizes and reviews all program requests to ensure that the total program costs fall within funding restraints. The District BLRS's program is then submitted to the CBLRS. The CBLRS reviews all programs for statewide funding restraints and then coordinates the District BLRSs' submittals with OPP.

17-1.02 Annual Highway Improvement Program

17-1.02(a) Development

Projects in the multi-year program that are scheduled within the current fiscal year become part of the Annual Highway Improvement Program. The Annual Program may include only a portion of the entire project (e.g., engineering, land acquisition, utility adjustments, and construction). When Federal funds are used for any of these items, the item is identified as a separate line item in the Annual Program. Any non-participating cost to be included in a State contract must be included in the program cost. The preliminary program for the upcoming fiscal year is

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furnished to the State legislature in April. During the following month, the annual element of the multi-year program is finalized and is published in July each year.

17-1.02(b) Annual Program Revisions

A number of substantial increases in project cost estimates may have occurred on local projects between the time of their inclusion in the Annual Highway Improvement Program and the time of joint agreement development. These cost increases have an impact on the State appropriation available for accomplishment of the Annual Program.

In an effort to minimize the effect of cost increases on the Annual Program, the LPA should provide the District BLRS office with revised cost estimates as soon as practical in order to avoid delaying projects from letting. It is very important that the District BLRS office maintain the most current cost estimates. The District BLRS office should submit program revisions as soon as practical to the CBLRS for the following types of projects:

- projects less than \$200,000, programmed amount must be within \$10,000 of the funding agreement amount; or
- projects \$200,000 or greater than, programmed amount must be within 5% of the funding agreement amount.

The Program revision request should include program deletions to accommodate the cost increases. If the programming costs of other projects are being reduced to accommodate the increased program estimates, submit a brief explanation for the other project's changes so that the reduction in cost can be included. Requests should be submitted a minimum of thirteen weeks before the scheduled letting.

When it is determined that a project in the Annual Program will not be accomplished during the fiscal year, a request by the District BLRS office to substitute another project should be made as soon as practical.

17-2 FEDERAL PLANNING REQUIREMENTS

The planning process involves the development of projects, decisions on funding, and the determination of construction priorities. The CBLRS and District BLRS offices assist LPAs with project coordination.

17-2.01 Statewide Transportation Improvement Program (STIP)

The *Federal Transportation Funding Act* requires that a State establish a minimum four-year Statewide Transportation Improvement Program (STIP) for highway and transit projects that are federally funded or require Federal action. This program is updated every year. Projects that are not considered of significant scale for individual identification may be grouped by function, work type, and/or geographic area.

The first three annual elements of IDOT's Multi-Year Highway Improvement Program are used as a basis for the development of the highway portion of the STIP. The portion of the STIP for projects located in urbanized areas is developed in cooperation with the Metropolitan Planning Organizations (MPOs). Section 17-2.02 gives additional details of the MPO requirements. The State and the affected local officials select other projects. The responsible party for highway planning work at the local level is dependent on the type of area in which the project is located. The following presents the appropriate local official for each area type:

1. Rural. The chairman of the appropriate county board or designated representative, typically the county engineer, is responsible for the planning. The appropriate local official and the district formulate and establish the need and priority of construction projects.
2. Urban. A committee composed of county, city, and district representatives typically conducts planning for an urban area.

IDOT must provide citizens, affected agencies, and other interested parties a reasonable opportunity to comment on the proposed STIP. The STIP is published with reasonable notification of its availability. Upon completion of the public involvement review process, the STIP is submitted to the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) for approval. Approval of the STIP allows IDOT to proceed with the authorization of Federal funds for highway and transit projects. Projects not included in the federally approved STIP will not be eligible for Federal funding.

Projects included in the STIP can be advanced to or deferred from the first annual element without additional action or approvals. Projects being added to or deleted from the STIP that are of significant scale for individual identification are considered amendments and will require an opportunity for public review and comment and approval by the FHWA and FTA. The implementing LPA will be responsible for public involvement on the STIP amendment.

17-2.02 Metropolitan Planning Organizations (MPOs)

23 USC 134 requires that an MPO be designated for each urbanized area and the metropolitan area has a continuing, cooperative, and comprehensive (3-C) transportation planning process

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that results in plans and programs that consider all transportation modes and support metropolitan community development and social goals. Areas with populations over 200,000 are called transportation management areas (TMAs). The Governor has designated an MPO for each urbanized area. Figure 17-2A lists the MPO for each urbanized area. The MPO is responsible, along with IDOT, for administering the 3-C process. This type of planning results in transportation improvement plans and programs consistent with the planned development of the urbanized areas and assists in determining the transportation modal choice. For additional information, see OPP's publication [MPO Cooperative Operations Manual](#).

URBANIZED AREA (population 200,000 and under)	METROPOLITAN PLANNING ORGANIZATION (MPO)
Beloit	State Line Area Transportation Study (SLATS)
Bloomington / Normal	McLean County Regional Planning Commission (MCRPC)
Carbondale / Marion	Southern Illinois Metropolitan Planning Organization (SIMPO)
Cape Girardeau	Southeast Metropolitan Planning Organization (SEMPO)
Champaign / Urbana	Champaign / Urbana Urban Area Transportation Study (CUUATS)
Danville	Danville Area Transportation Study (DATS)
Decatur	Decatur Urbanized Area Transportation Study (DUATS)
DeKalb / Sycamore	DeKalb / Sycamore Area Transportation Study (DSATS)
Dubuque	Dubuque Metropolitan Area Transportation Study (DMATS)
Kankakee	Kankakee Area Transportation Study (KATS)
Springfield	Springfield Area Transportation Study (SATS)

URBANIZED AREA (population over 200,000)	METROPOLITAN PLANNING ORGANIZATION (MPO) (TRANSPORTATION MANAGEMENT AREAS (TMA))
Chicago	Chicago Metropolitan Agency for Planning (CMAP)
Peoria / Pekin	Peoria / Pekin Urban Area Transportation Study (PPUATS)
Quad Cities	Bi-State Regional Planning Commission
Rockford	Rockford Metro Agency for Planning (RMAP)
St. Louis	East-West Gateway Council of Governments

**METROPOLITAN PLANNING ORGANIZATIONS AND
TRANSPORTATION MANAGEMENT AREAS**

Figure 17-2A

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IDOT provides fund estimates (program marks) to the MPOs. These estimates can be used in developing the metropolitan Transportation Improvement Program (TIP) using the MPO's procedures for actions/approvals. The TIP must cover a period of not less than three years. The TIP may be modified at any time consistent with the procedures established for its development and approval. While the TIP does not need to be approved by the FHWA or FTA, copies of any new or amended TIP must be provided to both agencies. The TIP is included without modification into the STIP by reference.

The first year of the TIP constitutes an "agreed to" list of projects for project selection. No further project selection action is required to proceed with these projects. If a LPA wants to proceed with a project in the second or third year of the TIP, the project must be added to the annual element in accordance with the MPO's selection and amendment procedures.

17-2.03 Value Engineering (VE)

Value Engineering (VE) is the systematic application of recognized techniques by a multi-disciplinary team not directly involved with the planning and development phase of a project to identify the function of a product or service, establish a worth for that function, generate alternatives through the use of creative thinking, and provide the needed functions to accomplish the original purpose of the project, reliably and at the lowest life-cycle cost, without sacrificing safety, necessary quality, and environmental attributes of the project.

17-2.03(a) Applicability

VE is applicable to all highway projects on the National Highway System receiving Federal assistance with an estimated cost of \$50 million or more, all bridge projects on the National Highway System receiving Federal assistance with an estimated cost of \$40 million or more, and any project the FHWA determines to be appropriate.

17-2.03(b) Project Selection

Each district identifies applicable projects during the preparation of the multi-year program. Due to the complexity and scope of large projects, more than one VE study may be desirable. Other projects not meeting the definition may be selected for this program. The District shall notify the CBLRS and FHWA of the identified projects as part of the multi-year plan development.

17-2.03(c) Project Cost

Costs associated with environmental studies, preliminary engineering, final design, land acquisition and construction should be used in determining the selected project's cost. The project cost includes state, LPA, and federal-aid highway funds.

17-2.03(d) Scope of Studies

1. Initiation of VE Study. Local projects utilizing VE should be coordinated with the District VE Coordinator at the initiation of the project. Schedule VE studies in such a manner so as not to cause delay of the project. For a Phase I report with multiple construction contracts, develop a plan for conducting the VE study(s) based on the Phase I

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considerations and the nature and complexity of the work type, (e.g., one VE study may cover alike construction projects). A single VE study should cover as many construction contracts under the single Phase I report as practicable and beneficial. The VE study should be initiated as close to the completion of the Phase I report as possible. Initiate the VE study no later than the time the construction plans are 30% complete and to allow for the implementation of the recommendations without delaying the project. The VE study should be, at the least, scheduled when the Phase I report is completed.

2. Team Makeup. The VE team, selected by the district, consists of individuals not personally involved in the design of the project. The team leader should have attended the National Highway Institute (NHI) course on Value Engineering or have equivalent experience in the preparation of VE studies. When making up the team, take into account the following:

- Draw team members from either the district or central office;
- Consider individuals from specialty areas depending on the project scope;
- Assign personnel from construction, maintenance, and studies and plans (as applicable);
- Include representatives from environment, operations, and land acquisition as necessary;
- Include individuals from the public and other agencies when in the public interest;
- Participation by FHWA members is encouraged where feasible;
- Participation by the central office is encouraged; and
- Invitation of IDOT personnel from nearby districts should be considered.

Qualified consultants may be retained to conduct VE studies provided the consultant has not worked on the subject project or the consultant maintains an independent VE study team.

3. Process. To best accomplish the goals of Value Engineering, the districts have considerable latitude in determining the type, size, and complexity of a VE study. Value engineering studies should follow widely recognized problem solving principles.
4. Final Report. Each Study concludes with a formal VE report, which outlines the decisions and recommendations and is presented to the Deputy Director/Regional Engineer or his/her representative. FHWA should be invited to all VE closeout meetings. Each district establishes a procedure for prompt review and implementation of the approved recommendations. When any recommendation is a major change to an approved Design Report or is a design exception to policy, the recommended change is coordinated through the appropriate central bureau.
5. Monitoring. Each district appoints a VE coordinator who is knowledgeable in VE studies and trained in VE procedures. The VE coordinator's responsibilities include monitoring each VE study from initiation through the final report, reviewing the report, and assisting in the implementation of the findings. As there may be local projects meeting this threshold, the district VE coordinator will be responsible for coordinating both state and

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local roads administered projects. During the month of October, each year, the district VE coordinator sends the Bureau of Design and Environment's (BDE) VE coordinator a list, which itemizes the total number of VE studies conducted over the past year and the estimated cost savings for each study. BDE will summarize the information and forward it to the FHWA. The BDE VE coordinator will compile an annual list of approved recommendations from all VE studies completed within that year.

17-2.03(e) Constructability Reviews

Constructability reviews are a useful tool for complex or unusual projects and are encouraged as a cost or time saving measure. These reviews may include the use of IDOT personnel, unassociated with the project, or consultant/contractor teams that would not be bidding on the project. These reviews would not typically be making complex design change recommendations as would be expected in a full VE study. The constructability review would focus upon staging issues, work staging areas, field expedient procedures or methods, and similar activities focused upon accelerating or enhancing the proposed design.

17-3 CLEARINGHOUSE COORDINATION**17-3.01 Policy**

Clearinghouse coordination was established after Federal Executive Order 12372 revoked the Office of Management and Budget's (OMB) Circular A-95. It offers States and LPAs the opportunity to initiate and establish their own review procedures and priorities. Under the Executive Order, States can decide which activities to review and how they should be reviewed. The Executive Order encourages States to establish a single point of contact, through which all reviews can be focused. In Illinois, the Illinois Department of Commerce and Economic Opportunity is the approval agency for the Regional Planning Commission Act ([50 ILCS 15/0.01 and 15/1](#)). The Regional Planning Commissions serve as the Substate Clearinghouses for regional reviews in all but four counties in the State. The FHWA is obligated to cooperate with the State-established process and must provide an explanation if State clearinghouse comments are not accommodated.

17-3.02 Substate Clearinghouses in Illinois

Because coordination with Substate Clearinghouses varies, this *Manual* does not discuss their coordination requirements. It is the LPA's responsibility to submit the request for Substate Clearinghouse review to the appropriate clearinghouse. The Substate Clearinghouse should be contacted to determine which projects require submittal.

Figure 17-3A lists the Substate Clearinghouses and corresponding counties currently recognized in Illinois.

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Bi-State Regional Commission	Henry	Mercer *	Rock Island		
Blackhawk Hills Regional Council	Carroll Whiteside	Jo Daviess	Lee *	Ogle	Stephenson
Boone / Belvidere Regional Planning Commission	Boone				
Champaign County Regional Planning Commission	Champaign Piatt	Douglas * Vermillion	Ford	Iroquois	Livingston
Chicago Metropolitan Agency for Planning	Cook McHenry	DuPage Will	Kane	Kendall	Lake
Coles County Regional Planning and Development Commission	Clark	Coles	Cumberland	Edgar *	Moultrie
Greater Egypt Regional Planning & Development Commission	Franklin	Jackson	Jefferson	Perry	Williamson
Greater Wabash Regional Planning Commission	Crawford Wayne	Edwards White	Lawrence	Richland	Wabash
Kankakee County Regional Planning Commission	Kankakee				
Logan County Regional Planning Commission	Logan				
Macon County Regional Planning Commission	Macon				
McLean County Regional Planning Commission	McLean				
Morgan County Regional Planning Commission	Cass	Morgan	Scott		
North Central Illinois Council of Governments	Bureau Putnam	DeKalb Stark	Grundy	LaSalle	Marshall
South Central Illinois Regional Planning & Development Commission	Clay	Effingham	Fayette	Jasper	Marion
Southeastern Illinois Regional Planning & Development Commission	Gallatin	Hamilton	Hardin	Pope	Saline
Southern Five Regional Planning District & Development Commission	Alexander	Johnson	Massac	Pulaski	Union
Southwestern Illinois Metropolitan & Regional Planning Commission	Bond St. Clair	Clinton Washington	Madison	Monroe	Randolph
Springfield-Sangamon County Regional Planning Commission	Sangamon				
Tri-County Regional Planning Commission	Peoria	Tazewell	Woodford		
Two Rivers Regional Council of Public Officials	Adams	Brown	Pike	Schuyler	
West Central Development Council	Calhoun Montgomery	Christian Shelby	Greene	Jersey	Macoupin
Western Illinois Regional Council	Fulton Warren	Hancock	Henderson	Knox	McDonough

Notes: DeWitt, Mason, and Menard Counties have no designated regional planning commission.
 Winnebago County has a Planning and Economic Development Department.
 Counties with a * may be served by a secondary regional planning commission.

SUBSTATE CLEARINGHOUSES

Figure 17-3A

17-4 ACRONYMS

This is a summary of the acronyms used within this chapter.

BDE	Bureau of Design and Environment
CBLRS	Bureau of Local Roads and Streets
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
IDOT	Illinois Department of Transportation
ILCS	<u>Illinois Compiled Statutes</u>
LPA	Local Public Agency
MPO	Metropolitan Planning Organization
NHI	National Highway Institute
OMB	Office of Management and Budget's
OPP	Office of Planning and Programming
STIP	Statewide Transportation Improvement Program
TIP	Transportation Improvement Program
TMA	Transportation Management Areas
USC	United State Code
VE	Value Engineering

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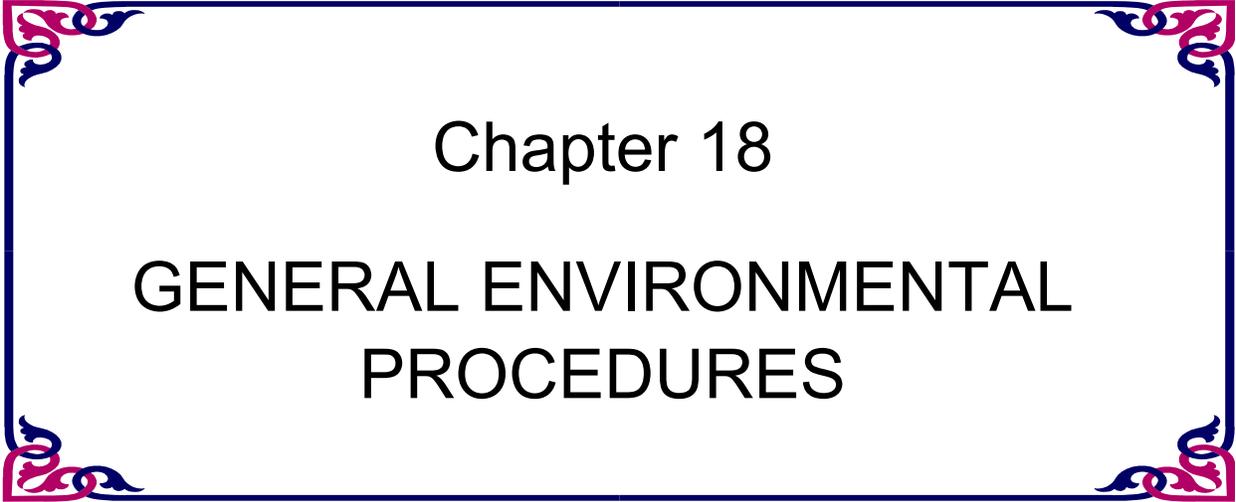
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17-5 REFERENCES

1. [Illinois Compiled Statutes](#), Illinois General Assembly by the Legislative Information System.
2. [MPO Cooperative Operations Manual](#), IDOT, July 2017

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Chapter 18

**GENERAL ENVIRONMENTAL
PROCEDURES**

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GENERAL ENVIRONMENTAL PROCEDURES - Federal Funds

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All projects funded through the Illinois Department of Transportation (IDOT) must meet applicable Federal and State laws and regulations requiring identification and evaluation of the project's environmental impacts. In aggregate, Chapters 18 through [20](#) of the *Bureau of Local Roads and Streets (BLRS) Manual* describe the applicable environmental procedures for local public agency (LPA) Federally funded projects. Chapter 18 presents information that has a general application to all LPA Federally funded projects. This includes environmental documentation, coordination, and general National Environmental Policy Act (NEPA) compliance procedures. The subsequent Chapters discuss more specific applications of the environmental procedures (e.g., Categorical Exclusions). See [Section 10-1](#) for environmental requirements for other LPA projects.

Chapters 18 through [20](#) have been developed based on Part III, "Environmental Procedures," of the *Bureau of Design and Environment (BDE) Manual*. The procedures in the *BDE Manual* are applicable to IDOT's program of projects on the State highway system, which are typically more complex than LPA projects; therefore, the *BLRS Manual* has been modified as appropriate. For a more in-depth discussion on environmental procedures, see the *BDE Manual*. Chapters 18 through [20](#) provide references to several Federal documents that have a special prominence in the implementation of environmental procedures (e.g., *Council on Environmental Quality (CEQ) Regulations*, 23 CFR 771). See [Appendix A](#) of Part III of the *BDE Manual* for a copy of these documents. For a quick reference to environmental coordination see Figure 18-1A.

18-1 DEFINITIONS

[Appendix B](#) of the *BDE Manual* presents an extensive list of definitions typically used for environmental procedures. The following presents the definitions of the more common terms used in this Chapter:

1. *National Environmental Policy Act (NEPA)*. The NEPA of 1969, as amended, is a Federal environmental statute that requires the consideration of environmental factors through a systematic, interdisciplinary approach before committing to a course of action. Procedures for the course of action or actions set forth in the CEQ regulations and 23 CFR Part 771.
2. *Council on Environmental Quality (CEQ)*. The CEQ is composed of three members appointed by the President. It maintains a quality awareness of the nation's environmental resources. The CEQ oversees the implementation of NEPA by issuing regulations (i.e., 40 CFR Parts 1500-1508) to guide all Federal agencies.
3. *23 CFR 771 (Environmental Impact and Related Procedures)*. This regulation is contained in the *Code of Federal Regulations (CFR)*, and prescribes the policies and

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procedures of the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) for implementing NEPA, as amended, and the regulations of the CEQ (i.e., 40 CFR Parts 1500 – 1508). This regulation sets forth all FHWA, FTA, and Department of Transportation (DOT) requirements under NEPA for the processing of highway and urban mass transportation projects.

1. Action. For purposes of 23 CFR 771, an “action” is a highway project proposed for FHWA funding. It also includes activities such as joint and multiple-use permits, changes in access control, etc., which may or may not involve a commitment of Federal funds. For Federal flood plain regulations, “action” is any highway construction, reconstruction, rehabilitation, repair, or improvement undertaken for Federally funded/regulated projects.
2. Categorical Exclusion (CE). (For purposes of 40 CFR 1500, *CEQ Regulations*.) A category of actions that do not individually or cumulatively have a significant effect on the human environment and for which, therefore, neither an Environmental Assessment (EA) nor an Environmental Impact Statement (EIS) is required.
3. Class of Action. There are three classes of action that prescribe the level of documentation required in the NEPA process. These actions are:
 - Categorical Exclusion (CE),
 - Environmental Assessment (EA), and
 - Environmental Impact Statement (EIS).
4. Cooperating Agency. Any Federal agency, other than a lead agency, that has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment. A State or LPA of similar qualifications may, by agreement with the lead agency, become a cooperating agency.
5. Environmental Assessment (EA). A concise public document for which a Federal agency is responsible that serves to briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a Finding of No Significant Impact (FONSI).
6. Environmental Impact Statement (EIS). A detailed written statement, prepared for major Federal actions significantly affecting the quality of the human environment. The EIS must discuss the environmental impact of the proposed action, any adverse environmental effects that cannot be avoided should the proposal be implemented, alternatives to the proposed action, the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented.
7. Finding of No Significant Impact (FONSI). A document by a Federal agency briefly presenting the reasons why an action, not otherwise excluded, will not have a significant impact on the human environment, and for which an EIS, therefore, will not be prepared.

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8. Lead Agency. The agency or agencies preparing or having assumed primary responsibility for preparing the environmental document.
9. Record of Decision (ROD). A FHWA document, prepared after the publication of the Final EIS, which presents the following conclusions:
 - basis for the decision (i.e., the selected alternative);
 - mitigation measures that will be incorporated into the project; and
 - documents any required Section 4(f) approval.
10. Scoping. An early and open process for determining the scope of issues to be addressed in EISs or EAs and for identifying potentially significant issues related to the proposed action. Scoping is intended to focus the study effort on issues that are significant and avoid the collection of needless detailed information on insignificant issues.

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Type of Review	Scope	Coordinating Agency	BLRS Manual Reference
Biological	Wetlands	BDE (ESR)	(Section 20-8)
	No Wetlands Anticipated	BDE (ESR)	(Section 20-8)
	T&E Species	BDE (ESR)	(Section 20-9)
	In-Stream Work	BDE (ESR)	(Sections 20-8 and 20-9)
	New ROW or Easements	BDE (ESR)	(Sections 20-8 and 20-9)
Cultural	Structures (> 50 years) Potential Adverse Effect	BDE (ESR)	(Section 10-1)
	Historical District and Buildings > 50 years (HARGIS)	BDE (ESR)	(Section 10-1)
	New ROW or Easements	BDE (ESR)	(Section 10-1)
Section 4(f)	Significant publicly owned public park, recreation area, wildlife and waterfowl refuge, or any land from an historic site of national, state, or local significance.	FHWA	(Section 20-3)
Section 6(f) (LAWCON)	Lands purchased and developed by using Land and Water Conservation (LAWCON) funds will be used for highway purposes.	IDNR NPS	(Section 20-4)
State Special Waste	Work on State ROW Plans by the State ROW in name of State	BDE (ESR)	(Section 20-12)
Local Special Waste	Excavation as defined in Manual	Screening & PESA by LPA/Consultant	(Section 20-12)
Flood Plain	Significant flood plain encroachment	IDNR	(Sections 20-7 and 7-2)
Farmland Conversion	Conversion of farmland to non-farm uses	IDOA NRCS	(Sections 20-10 and 10-1)
Permits	In-Stream Work (401)	IEPA	(Section 7-3)
	In-Stream Work (404)	USACE	(Section 7-4)
Noise	Type I Project	BDE	(Section 20-6)
Air	Air Analysis	IEPA	(Section 20-11)

**ENVIRONMENTAL COORDINATION FOR LPA PROJECTS
FEDERAL FUNDS (ADMINISTERED BY IDOT)
(EXAMPLES: CE, EIS, EA)**

Figure 18-1A

18-2 GENERAL NEPA REQUIREMENTS

This Section discusses general requirements that Federal-aid projects must follow to satisfy NEPA.

18-2.01 Purpose/Policy

The CEQ established regulations governing the effects of highway transportation projects on human health and the environment. 40 CFR 1500.1 defines the purpose of *NEPA*. The following excerpts highlight some of its key provisions:

- *NEPA establishes policy, sets goals, and provides means for carrying out the policy.*
- *NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken.*
- *NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail.*
- *The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.*

40 CFR 1500-1508 sets forth the policy for compliance with NEPA. The policy provides that Federal agencies shall to the fullest extent possible:

- *Implement procedures to make the NEPA process more useful to decision makers and the public; to reduce paperwork and the accumulation of extraneous background data; and to emphasize real environmental issues and alternatives.*
- *Use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions on the quality of the human environment.*
- *Encourage and facilitate public involvement in decisions that affect the quality of the human environment.*
- *Use all practicable means ... to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment.*

For FHWA transportation projects, compliance procedures are found in 23 CFR 771 *Environmental Impact and Related Procedures*.

18-2.02 Application

The FHWA will be the lead agency for most Federally funded LPA transportation projects subject to the NEPA process. IDOT and the LPA normally serve as joint lead agencies with the

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FHWA. Other agencies with jurisdiction by law or with special expertise may serve as cooperating agencies.

NEPA procedures apply to all Federally regulated projects, including Motor Fuel Tax (MFT) or other State funded projects that require an individual Section 404 permit and an environmental report to comply with NEPA for the Federal action granting the permit. In this example, the FHWA is not involved in the project; therefore, the flow of information and activities would be processed through the US Army Corps of Engineers (USACE), which would serve as the lead agency.

18-2.03 Purpose and Need

[Section 22-6](#) of the *BDE Manual* provides guidance for the “Purpose and Need” section of environmental documents. This guidance was prepared by the FHWA’s Washington Office of Environmental Policy and was issued on September 18, 1990. The guidance emphasizes the importance of the “Purpose and Need” discussion in establishing a sound basis for evaluating alternatives and environmental impacts. The LPA should consider this guidance when preparing environmental documents for its highway projects.

18-2.04 Alternatives

The LPA must document and clearly discuss reasonable alternatives under consideration and those other alternatives that were eliminated from the detailed study as part of the preliminary design process. The following provides a range of alternatives to consider when determining the reasonable alternatives:

1. “No-Action” Alternative. The “no-action” alternative normally includes short-term minor restoration types of activities (e.g., safety, maintenance improvements) that maintain continuing operation of the existing roadway.
2. Transportation System Management (TSM) Alternative. The TSM alternative includes those activities that maximize the efficiency of the present system. Possible subject areas to include in this alternative are fringe parking, ridesharing, high-occupancy vehicle (HOV) lanes on existing roadways, and traffic signal timing optimization. This limited construction alternative is usually relevant only for major projects proposed in urbanized areas over 200,000 in population.
3. Mass Transit. This alternative includes those reasonable and feasible transit options (e.g., bus systems, rail) even though they may not be within the existing FHWA funding authority. It should be considered on all proposed major highway projects in urbanized areas over 200,000 in population. Consideration of this alternative may be accomplished by reference to the regional or area transportation plan where that plan considers mass transit or by an independent analysis during early project development.
4. Build Alternatives. Both improvement of existing highways and alternatives on new location should be evaluated. A representative number of reasonable alternatives must be presented and evaluated in detail in the draft EIS (40 CFR 1502.14(a)). For most major projects, there is a potential for a large number of reasonable alternatives. Where

there are a large number of alternatives, only a representative number of the most reasonable examples, covering the full range of alternatives, must be presented. The determination of the number of reasonable alternatives in the draft EIS, therefore, depends on the particular project and the facts and circumstances in each case.

Each alternative should be briefly described using maps or other visual aids (e.g., photographs, drawings, sketches) to help explain the various alternatives. The material should provide a clear understanding of each alternative's termini, location, costs, and the project concept (e.g., number of lanes, right-of-way requirements, median width, access control). Where land has been or will be reserved or dedicated by LPAs, donated by individuals, or acquired through advanced or hardship acquisition for use as highway right-of-way for any alternative under consideration, the draft EIS should identify the status and extent of this property and the alternatives involved. Where these lands are reserved, the EIS should state that the reserved lands will not influence the alternative to be selected.

18-2.05 Proposed Action

The LPA must properly define the proposed action to ensure a meaningful evaluation of the reasonable alternatives and to avoid commitments to transportation improvements before they are fully evaluated.

The proposed action may include complete and/or incomplete portions of a highway section and one or more future highway projects. Avoid segmenting a proposed improvement into separate environmental reports. The proposed action should include the total length of highway between logical termini, even if only a short length is proposed for construction within the multi-year and long-range program. Section 18-2.06 briefly summarizes the principles of logical termini. See [Section 22-6](#) of the *BDE Manual* for a more complete discussion. The environmental report should clearly identify the length of the proposed action and furnish any available information on long-range possibilities of future improvements for the proposed action.

18-2.06 Logical Termini

[Section 22-6](#) of the *BDE Manual* provides guidance in determining logical project termini for proposed actions. This guidance provides several working examples to illustrate the factors involved in choosing termini. These factors are then applied to issues such as project purpose and need, environmental impacts, and avoidance of segmentation.

18-2.06(a) Introduction

In developing a project concept that can be advanced through the stages of planning, environment, design, and construction, the project sponsor must consider a "whole" or integrated project. This project should satisfy an identified need (e.g., safety rehabilitation, economic development, capacity improvements) and should be considered in the context of the local area socioeconomic and topography, the future travel demand, and other infrastructure improvements in the area. Without framing a project in this way, proposed improvements may miss the mark by only peripherally satisfying the need or by causing unexpected side effects

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that require additional corrective action. A problem of “segmentation” may also occur where a transportation need extends throughout an entire corridor, but environmental issues and transportation needs are inappropriately discussed for only a segment of the corridor.

The FHWA regulations outline three general principles in 23 CFR 771.111(f) that are used to frame a highway project:

- (1) *Connect logical termini and ensure they are of sufficient length to address environmental matters on a broad scope;*
- (2) *Have independent utility or independent significance (i.e., be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made); and*
- (3) *Do not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.*

The aim of this guidance is to discuss criteria that can be used to select logical termini for the development of a project.

18-2.06(b) A Definition of Logical Termini

Logical termini for project development are defined as (1) rational end points for a transportation improvement, and (2) rational end points for a review of the environmental impacts. The environmental impact review frequently covers a broader geographic area than the strict limits of the transportation improvements. In the past, the most common termini have been points of major traffic generation, especially intersecting roadways. This is due to the fact that in most cases traffic generators determine the size and type of facility being proposed. However, there are also cases where the project improvement is not primarily related to congestion due to traffic generators, and the choice of termini based on these generators may not be appropriate.

Choosing a corridor of sufficient length to look at all impacts need not preclude staged construction. Therefore, related improvements within a transportation facility should be evaluated as one project, rather than selecting termini based on what is programmed as short-range improvements. Construction may then be “staged” or programmed for shorter sections or discrete construction elements as funding permits.

It is important to obtain the concurrence of the FHWA in the logical termini for a project early in the project development.

18-2.07 Scoping

Scoping is an early and open process for determining the scope of issues to be addressed in EISs or EAs and for identifying potentially significant issues related to the proposed action. Scoping is intended to focus the study effort on issues that are significant and avoid the collection of needless detailed information on insignificant issues.

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For an environment review, a scoping process may or may not be necessary. This depends, in part, on the number and magnitude of issues potentially involved and the probability that the proposed action may involve significant issues. Part 1501.7 of the *CEQ Regulations* further discusses the scoping process.

18-2.08 Significance of Environmental Impacts

In evaluating the significance of environmental impacts, the LPA must consider the nature of the changes that may be caused by the action and the magnitude and importance of those changes. It is important to contact agencies that have special expertise or jurisdiction by law and individuals and/or organizations directly affected by the proposal to fully assess project impacts. Documentation of these contacts and those concerning the resolution of identified problems must be included in the appropriate environmental document.

18-2.09 Ensuring Validity of Environmental and Design Documents

LPAs and the BLRS have a primary responsibility to ensure that singular or cumulative changes in projects under development or the affected environment do not impair the validity of environmental and design documents and mitigation commitments. This responsibility is operative at all times, irrespective of the stage of environmental and engineering documents, through construction and maintenance. If circumstances arise that may affect the validity of project documents and commitments, the Central Bureau of Local Roads and Streets (CBLRS) should be contacted for specific guidance.

18-3 ENVIRONMENTAL DOCUMENTATION

18-3.01 Introduction

The primary purpose of environmental documentation is to ensure that the policies and goals defined in NEPA are incorporated into the ongoing programs and actions of IDOT and the LPAs. Environmental documentation is intended to accomplish more than mere disclosure; it will be used in conjunction with other relevant material to plan actions and to make decisions.

18-3.02 Classes of Action and the Selection of the Environmental Document

On Federal-aid projects, the appropriate environmental documentation is determined by the project's potential to have significant environmental impacts. The class of action is one of the following three types:

1. Categorical Exclusion (CE). Projects that are Federally funded and qualify for a CE will document the appropriate environmental documentation in the Project Development Report (PDR). See [Chapter 19](#) for additional guidance.
2. Environmental Assessment (EA). Projects that are Federally funded and for which the significance of the environmental impact is unclear require the preparation of an EA. Based on the EA's finding, one of the following will occur:
 - No Significant Impact. Projects that are Federally funded and are found to have no significant impact to human health and the environment are documented with a FONSI. See [Chapter 24](#) of the *BDE Manual*.
 - Significant Impact. Projects that are Federally funded and are found to have significant impact to human health and the environment require an EIS.
3. Environmental Impact Statement (EIS). An EIS is required for all Federally funded highway projects determined to likely cause significant impacts to human health and the environment. A ROD is prepared to document the basis for the decision. See [Chapter 25](#) of the *BDE Manual*.

18-3.03 Special Environmental Studies

Environmental studies provide the technical data and information necessary to identify and evaluate the nature and extent of environmental impacts of a proposed action, and associated mitigation measures that may be appropriate.

The environmental studies are typically conducted in conjunction with actions for which an EIS will be prepared. They also will be performed for actions processed as an EA or a CE, if necessary, to address specific substantive issues. The environmental studies will be used for the following situations:

- to determine the type of environmental processing (i.e., EIS, EA, CE) to be prepared for a specific project;
- as the basis for scoping decisions;

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- to determine the significance of project impacts; and
- as the basis for discussions in reports.

[Chapter 20](#) discusses procedural aspects of the environmental studies.

18-4 CONCURRENT NEPA/404 PROCESSES**18-4.01 Background**

A [Statewide Implementation Agreement](#) (SIA) is in effect for Federal-aid highway projects in Illinois and provides for concurrent NEPA and Section 404 processes. The purpose of the SIA is to ensure appropriate consideration of the concerns of the USACE, the US Environmental Protection Agency (USEPA), and the US Fish and Wildlife Service (USFWS), especially regarding compliance with the Section 404(b)(1) Guidelines, as early as practical in highway project development. The intent is also to involve these agencies, and the US Coast Guard (USCG), the Illinois Environmental Protection Agency (IEPA), and the IDNR, at key decision points early in project development to minimize the potential for unforeseen issues during the Section 404 permit review. A copy of the [SIA](#) is included in [Appendix A](#) of the *BDE Manual*.

18-4.02 Applicability

All Federally funded LPA projects (through BLRS) needing FHWA action under NEPA (e.g., projects requiring an EIS or an EA) and a standard Individual Permit from the USACE under Section 404 of the *Clean Water Act* are eligible for processing under the NEPA/404 SIA. Decisions on whether to process specific eligible projects under the concurrent NEPA/404 procedures will be made in accordance with Part III of the SIA. The procedures that follow apply to all projects processed under the concurrent NEPA/404 process described in the SIA.

18-4.03 Procedures

See [Section 22-4](#) of the *BDE Manual* for the procedures to comply with this process.

18-5 COORDINATION

The primary objective of coordination is to emphasize cooperative consultations among agencies, organizations, and the general public before the final environmental report (or discussion) is prepared. This is intended to avoid the submission of adverse comments on a completed document. This Section discusses policies and practices on coordination for all Federally funded LPA highway projects. The necessary coordination for a CE project is discussed in [Chapter 19](#). The coordination required for an EA or EIS project is discussed in [Chapters 24](#) and [25](#) of the *BDE Manual*, respectively.

18-5.01 General

18-5.01(a) Policy

Every reasonable effort should be made in project development to inform and solicit the aid of agencies, organizations, and those who have an interest in the project, or who have information or expertise on environmental factors relevant to the project. Special efforts should be made to begin coordination as early as practical in project development and to use procedures that will encourage and allow public participation in constructing the value judgments necessary to select wisely among project alternatives.

18-5.01(b) Coordination Activities

The following describes various forms of coordination to be used:

1. District Coordination Meetings. Agencies, organizations, and those who have special expertise or jurisdiction by law for any environmental impact of a proposed project should be invited to attend the regularly scheduled coordination meetings held by the involved district. This will allow these entities to receive early notification and firsthand information and knowledge on relevant environmental issues. Other coordination-type meetings should be scheduled and undertaken, as needed, to resolve potential environmental problems as early as practical in project development. Information provided and received at all meetings should be documented for potential use in decision-making and in environmental reports or PDRs.
2. Scoping Meetings. If practical, the regularly scheduled coordination meetings discussed in Item 1 should also serve as scoping meetings, where appropriate. Where scoping occurs, either at the regular coordination meetings or in a specially convened meeting, these should be especially well documented, including who participated, what information was provided and received, what decisions were made, and who agreed and who dissented with specific determinations.
3. Public Involvement. [Chapter 21](#) discusses public involvement in detail.
4. Correspondence. Correspondence is a key element in coordination activities. Correspondence received on an environmental issue should be acknowledged. If the correspondence is in response to a request for comments on a public involvement activity or an environmental document, the correspondence should be acknowledged as

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described in the procedures for public involvement discussed in [Chapter 21](#). For other correspondence on environmental matters, the appropriate form of written acknowledgment may be an individual response letter. Substantive comments should be addressed in sufficient detail to allow the commentor to obtain a clear understanding of the status of the issue and its disposition.

18-5.01(c) Commitments

Coordination activities often result in commitments. For example, once a project undergoes proper coordination activities, IDOT and the LPAs may be committed to provide measures to mitigate the adverse impact of a project. A highway agency's ability to interact effectively with other entities is based on its record and credibility for fulfilling its past commitments. Past performance may affect negotiations, approvals, and processing for many other projects.

As commitments are made throughout the different phases (e.g., design, construction, maintenance) of the project, add them to a cumulative commitment list. Document commitments made during the earlier phases in the Environmental Survey Request (ESR), PDR, and/or environmental document. When applicable, flag the commitments in the project agreements and contract documents, and document those commitments on the commitment list, which should be included in the plan submittal. The LPA should maintain a commitment file for each project that includes all the appropriate documentation. If the LPA is under an MFT Agreement of Understanding (AOU), they must provide the district with a copy of their commitment file along with the rest of the project file.

On Federal projects, when a coordination meeting with the FHWA is held, any known commitments should be discussed to ensure that all affected parties are aware of the nature and scope. When a preconstruction conference is held, commitments should be discussed to ensure awareness and understanding of any special considerations affecting construction and to emphasize the importance of follow-through as construction proceeds. Other parties affected by the commitments may be invited to the preconstruction conference.

If at any point in the project development, implementation, or maintenance operation, a previous commitment will be impacted by subsequent project decisions or commitments, the affected parties will be contacted prior to making a final decision on the previous commitment. Update the commitment list and provide documentation of coordination with the affected parties and ultimate decision on the proposed changes to previous commitments in the commitment file.

Include documentation in the commitment file for each commitment that has been fulfilled.

At the final inspection after the project is completed, provide the district with a copy of the Commitment List. The district will forward a copy of the finalized Commitment List to CBLRS.

18-5.02 Projects Involving Federal Lands (USFWS Coordination)**18-5.02(a) Background**

USFWS has requested early notification in planning for projects with any involvement of Federal lands, primarily those areas in the Shawnee National Forest. The purpose of the notification is to provide USFWS an early opportunity to evaluate potential uses of and impacts on such land, which may or may not be subject to Section 4(f); see [Chapter 20](#). This notification is in addition to coordination with the USFWS that otherwise may be required (e.g., because of involvement with Federally listed threatened and endangered species).

18-5.02(b) Applicability

The following procedures are applicable to Federally funded LPA projects processed through the CBLRS that involve any Federal lands.

18-5.02(c) Procedures

As part of early project planning studies, the LPA should evaluate whether projects may involve the use of any Federal lands. If yes, contact the appropriate office of the USFWS. The preferred method of notification is to mention the potential involvement in the agenda for a regularly scheduled district coordination meeting; see Section 18-5. USFWS personnel will determine whether to attend the coordination meeting or request additional information to address concerns on the potential involvement. The information included in the agenda should identify the Federal lands involved and, as practical, should briefly describe the nature and extent of the potential involvement.

The district and LPAs must ensure that the appropriate office of the USFWS is provided coordination meeting agendas and associated meeting minutes when projects involving Federal lands are addressed.

18-5.03 Coordination with US Army Corps of Engineers (USACE)

IDOT and USACE have developed special coordination procedures to provide the USACE with the proper opportunity to participate in the project development process.

18-5.03(a) Project Meetings

USACE offices should be afforded advance notice of meetings at which their attendance would be necessary or desirable. For concurrence point meetings associated with the concurrent NEPA and Section 404 procedures, the notification will be as described in the procedures; see [Chapter 22](#) of the *BDE Manual*. For other meetings, the district or LPA should provide the following information to the appropriate USACE office and should send an informational copy to the CBLRS:

- proposed location and date for meeting,

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- purpose of the meeting,
- explanation of the reason for USACE involvement, and
- sufficient information on the details of the project or issues involved to enable USACE representatives to prepare for the meeting.

18-5.03(b) USACE As Cooperating Agency

When it is determined that USACE should be a cooperating agency for a specific project, the request to USACE should be made by the district or LPA as early as practical in project development, preferably before preparation of the draft environmental document. Note that USACE does not need to be a cooperating agency for projects in which only nationwide permits are necessary. The notice should include the best available information on the proposed undertaking (e.g., project scope, alternatives, and any pertinent issues that have been identified).

18-5.03(c) Environmental Reports and Section 404 Permits

Section 18-4 discusses environmental documentation and coordination with the USACE on the concurrent NEPA/404 process. [Chapter 7](#) provides additional guidance on Section 404 permits.

18-5.04 Coordination with US Department of the Interior (USDOI)

18-5.04(a) Background

USDOI has provided guidance concerning contacts for environmental and other project document reviews and requests for early coordination and consultation in project planning. This Section implements the USDOI guidance for applicable LPA projects.

18-5.04(b) Applicability

The following procedures are applicable to Federally funded LPA projects processed through the CBLRS that involve lands under the jurisdiction of USDOI.

18-5.04(c) Procedures

All project-related contacts with USDOI should be directed to the appropriate USDOI field level bureau. This includes contacts for early coordination and scoping requests.

USDOI encourages agencies to establish direct working relationships with its field offices. These relationships are important for early identification of issues and concerns and also for early resolution of environmental problems that would otherwise surface during formal reviews of environmental documents.

USDOI bureaus and offices with jurisdiction by law or special expertise on environmental quality issues are listed in [Appendix C](#) of Part III of the *BDE Manual*. LPAs should use [Appendix C](#) to

determine appropriate USDOT contacts for coordination during early planning, NEPA scoping, and other preliminary activities.

18-5.05 Coordination with the Illinois Department of Natural Resource (IDNR)

18-5.05(a) Interagency Memorandum of Understanding (MOU)

The MOU by and between IDOT and IDNR governs coordination with IDNR for highway projects. The MOU establishes a framework for early coordination on natural resource issues and for follow-up coordination as necessary for compliance with statutory and regulatory requirements under the jurisdiction of IDNR.

The following Sections discuss the key provisions of the IDOT/IDNR MOU as it applies to Federally funded LPA projects.

18-5.05(b) General Principles of Coordination

Coordination with IDNR is initiated through the ESR. See [Chapter 20](#) for more detail for non-federal funded projects see [Chapter 10](#). The ESRs will be the mechanism for BDE to initiate the evaluation of potential natural resource impacts and for coordination with IDNR as appropriate.

The IDNR Division of Ecosystems and Environment (E&E) is the primary contact for coordination of highway project information by BDE. The IDNR E&E is responsible for ensuring that appropriate offices within IDNR receive highway project information for review in response to identified resource involvements. The IDNR E&E is also responsible for notifying BDE of any additional information needed for IDNR to complete its review. The BDE contact is responsible for supplying IDNR with the information necessary to complete the review of a project, including the initial information for threatened and endangered species, and additional information for projects required to be submitted for a more thorough review. The LPA may be requested to provide some of this information.

All official comments, recommendations, and responses by either IDNR or BDE will be in writing, except verbal responses may be allowed for urgent situations, with a written response due within five days following the action taken.

IDNR's review process must include an examination of the potential impacts to natural resources in general and to ensure compliance with the *Interagency Wetland Policy Act of 1989*, the *Endangered Species Protection Act*, and the *Illinois Natural Areas Preservation Act*. Upon completion of the review for a project, IDNR will provide documentation to confirm compliance with these State laws. The review conducted by IDNR is valid for three years from the date upon which BDE and IDNR conclude formal coordination necessary to address resources covered by the IDOT/IDNR MOU. If the project has not commenced (i.e., been advertised for bid letting) in that time, it must be resubmitted for IDNR review.

The natural resources that may be impacted include the following:

- wetlands;

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- streams;
- the bisecting of a forest or the removal of a significant number of trees;
- prairie/savanna areas;
- IDNR properties;
- nature preserves/natural area inventory sites;
- sites on the Register or Land and Water Reserves; and
- threatened and endangered species, including previously documented occurrences of which BDE is aware and the occurrences identified through the Natural Heritage Database.

For forests and trees resources, the project will be submitted to IDNR for completion of the natural resource review process, if any of the following apply:

- a project on new alignment involving impacts to a block of trees equal to or greater than 20 acres (8 ha);
- the removal of trees that would bisect or fragment a 20 acre (8 ha) or greater block of trees not associated with a stream corridor; or
- within a stream corridor:
 - + a project on new alignment on any stream segment, or
 - + a project on existing alignment.

Work involving the removal of dead and diseased trees for safety reasons need not be coordinated with IDNR for review.

18-5.05(c) Review Process

The LPAs should use the following steps for the review process:

1. Determining Need for IDNR Review. BDE will review proposed projects using maps, aerial photos, the Natural Heritage Database, and field surveys to determine if they potentially involve any of the resource issues discussed in Section 18-5.05(b).

If BDE determines based on its review that a project does not involve any issues of interest to IDNR, project submittal to IDNR is not required for review.

If IDNR recommends surveys during the pre-screening process, BDE will provide copies of the survey results to IDNR. If the surveys were not conducted as recommended, BDE will provide documentation to support this decision. When any of the resources in Section 18-5.05(b) are determined to occur in the area the proposed project may affect, BDE will determine whether the resources are covered by a MOU between IDOT and IDNR for avoidance and mitigation of impacts. If the resources are covered by this type

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of MOU and the project will comply with the agreed terms, no further coordination with IDNR is necessary.

2. Coordinating with IDNR for Project Review. If identified resources involved with a project are not covered by a MOU, or if BDE is unable to comply with the terms of this MOU, BDE will prepare and submit to the IDNR E&E a Biological Resources Review (BRR). The BRR shall indicate the results of fieldwork conducted and shall describe efforts made to avoid or minimize adverse impacts to the identified resources. If the translocation of a listed species is proposed, BDE will provide sufficient information in the BRR to enable IDNR to evaluate the likelihood of success.

The IDNR E&E will review the BRR and supporting documentation and will coordinate with appropriate staff to determine whether further analysis or recommendations are required. After the review and within 90 days of receipt of the BRR, IDNR will submit one of the following responses to BDE:

- a. Acceptance. IDNR accepts the conclusions/proposals contained in IDOT's BRR and provides a form indicating successful closure of the threatened and endangered species consultation process and compliance with the *Interagency Wetland Policy Act*. If it appears that the proposed project may result in the killing or injuring of an Illinois-listed animal species, IDNR may include a recommendation that IDOT should obtain an incidental taking authorization prior to proceeding with project construction. In this case, IDNR will close consultation upon receipt of an acknowledgement from IDOT indicating that it will apply for an incidental taking authorization prior to commencing any construction that would result in the killing or injuring of a listed animal species. The sign-off is valid for 3 years from the date of the Agency Action Report (AAR) or from the date of resource issue resolution, if other resources are involved.
- b. Non-Acceptance. IDNR does not accept the conclusions/proposals contained in IDOT's BRR and makes recommendations on how impacts might be avoided or further minimized. Both agencies have 45 days to resolve any differences that may remain upon which time IDNR shall provide IDOT a sign-off indicating compliance with both State Acts. If it appears that the proposed project may result in the killing or injuring of an Illinois-listed animal species, IDNR may include a recommendation that IDOT should obtain an incidental taking authorization prior to proceeding with project construction. In this case, IDNR will close consultation upon receipt of an acknowledgement from IDOT indicating that it will apply for an incidental taking authorization prior to commencing any construction that would result in the killing or injuring of a listed animal species. If resolution is not reached within the 45 day period, the process ends and is classified as having failed or partially failed to protect the resource involved; a decision is made to elevate the issue within each agency; or, upon mutual agreement by both parties, negotiations may continue.

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3. Follow-up Coordination and Reporting. The LPA is responsible for implementing the project and mitigation as agreed. Submit any reports required by the MOU to the IDNR E&E for review and coordination with other appropriate IDNR staff.

If, during development of a project, new information is obtained or the scope of the project changes to the extent that IDNR would have been involved initially, the LPA shall contact the district to discuss the need for further coordination. Also, if IDNR is concerned with a resource issue not reflected in Section 18-5.05(b) or if new information becomes available after the project review has been completed, IDNR may request that BDE submit the project for review.

On projects subject to coordination with IDNR pursuant to the IDOT/IDNR MOU, districts and LPAs must carefully monitor the progress of the project in relation to the timeframe for the validity of the original IDNR signature on the AAR (for pre-screening) or the IDNR response on resource issue resolution (if resource issues are involved). A valid IDNR response must be in place at key points in the project development and implementation process as described below.

For projects processed as CEs, a valid IDNR response on pre-screening against the Natural Heritage Database and, as applicable, on final resource issue resolution, must be in place when the project is submitted for CE approval and when the project is advertised for bid letting.

For adverse wetland impacts that are subject to coordination with IDNR as "Standard Review Actions" under the IDOT Wetlands Action Plan, IDNR approval of a conceptual wetland compensation plan will qualify as the "resource issue resolution" response on the wetlands aspect for purposes of the project environmental documentation. IDNR approval of a detailed wetland compensation plan will be required for "final resource issues resolution" prior to advertising "Standard Review Actions" for letting.

For impacts to State-listed endangered or threatened species, the Biological Opinion provided by IDNR in response to a Detailed Action Report will be the "resource issue resolution" response on the endangered species aspects for purposes of the project environmental documentation. If the project will involve an incidental taking of a State-listed species, an incidental taking authorization from IDNR will be required for "final resource issue resolution" prior to awarding the project.

When it becomes necessary to resubmit a project to IDNR to provide a valid response at the aforementioned processing points, the LPA should accomplish the submittal by sending a copy of the original AAR to the IDNR E&E with a request for renewal of the IDNR response.

18-6 ACRONYMS

This is a summary of the acronyms used within this chapter.

AAR	Agency Action Report
AOU	Agreement of Understanding
BDE	Bureau of Design and Environment
BLRS	Bureau of Local Roads and Streets
BRR	Biological Resources Review
BSC	Biological Stream Characterization
CBLRS	Central Bureau of Local Roads and Streets
CE	Categorical Exclusion
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DOT	Department of Transportation
E&E	Division of Ecosystems and Environment
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESR	Environmental Survey Request
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FTA	Federal Transit Administration
HOV	High-Occupancy Vehicle
IDNR	Illinois Department of Natural Resources
IDOT	Illinois Department of Transportation
IEPA	Illinois Environmental Protection Agency
INAI	Illinois Natural Areas Inventory
LPA	Local Public Agency
MFT	Motor Fuel Tax
MOU	Memorandum of Understanding
NEPA	<i>National Environmental Policy Act</i>
PDR	Project Development Report
ROD	Record of Decision
SIA	Statewide Implementation Agreement
TSM	Transportation System Management
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USDOI	United States Department of the Interior
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

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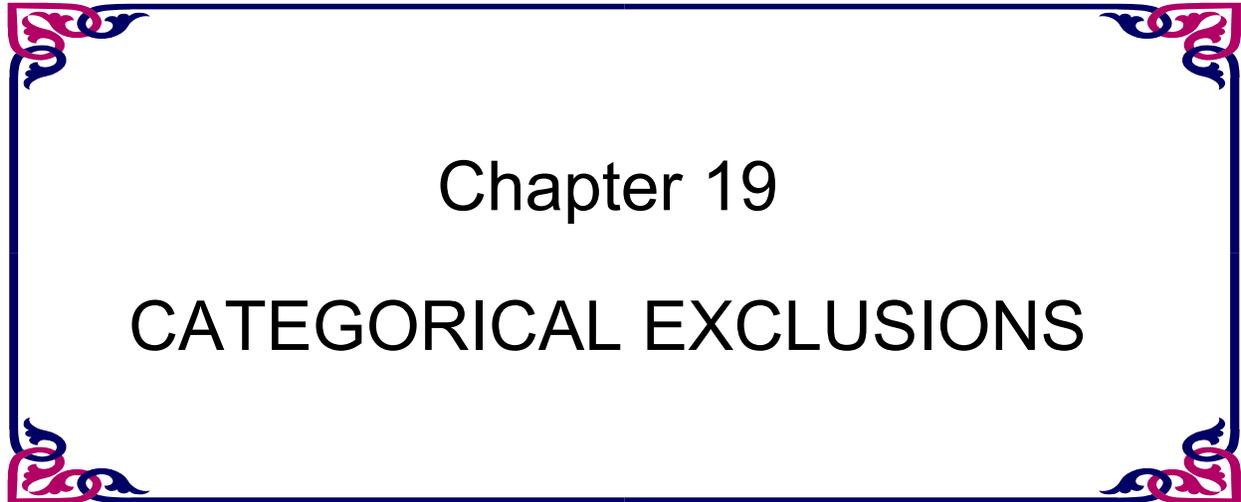
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18-7 REFERENCES

1. 23 CFR 771, *FHWA Environmental Impact and Related Procedures*.
2. 40 CFR 1500-1508, *CEQ Regulations for Implementing NEPA*.
3. FHWA Technical Advisory T6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*.
4. *Clean Water Act*, Section 404, *Concurrent NEPA/404 Processes for Transportation Projects in Illinois*.
5. Part III, "Environmental Procedures", *BDE Manual*, IDOT.
 - a. [Chapter 22](#) – General Environmental Procedures
 - b. [Chapter 24](#) – Environmental Assessments
 - c. [Chapter 25](#) – Environmental Impact Statements
 - d. [Appendix A](#) – Duplicated Regulations and Guidance
 - e. [Appendix B](#) – Acronyms/Glossary of Environmental Terms
 - f. [Appendix C](#) – Authority/Responsibilities
6. [Chapter 7](#) – Permits, *BLRS Manual*, IDOT.
7. [Chapter 10](#) – Project Development, *BLRS Manual*, IDOT.
8. [Chapter 20](#) – Special Environmental Studies, *BLRS Manual*, IDOT.



Chapter 19

CATEGORICAL EXCLUSIONS

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Chapter 19
CATEGORICAL EXCLUSIONS - Federal Funds

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Chapter 19

CATEGORICAL EXCLUSIONS - Federal Funds

19-1 GENERAL

Chapter 19 discusses local public agency (LPA) projects that may be classified as Categorical Exclusions (CE). Figure 19-1A is a pictorial representation of the decision making process to determine if a project meets the definition of a CE. The Code of Federal Regulations (CFR) in 23 CFR 771 defines “action” as any highway or transit project proposed for Federal Highway Administration (FHWA) funding, joint and multiple use permits, changes in access control, etc., which may or may not involve a commitment of federal funds.

A Programmatic Agreement (PA), herein referred to as “Programmatic Agreement”, has been developed in conformance with 23 CFR 771.117 to address the development and approval of CEs in a streamlined and efficient manner.

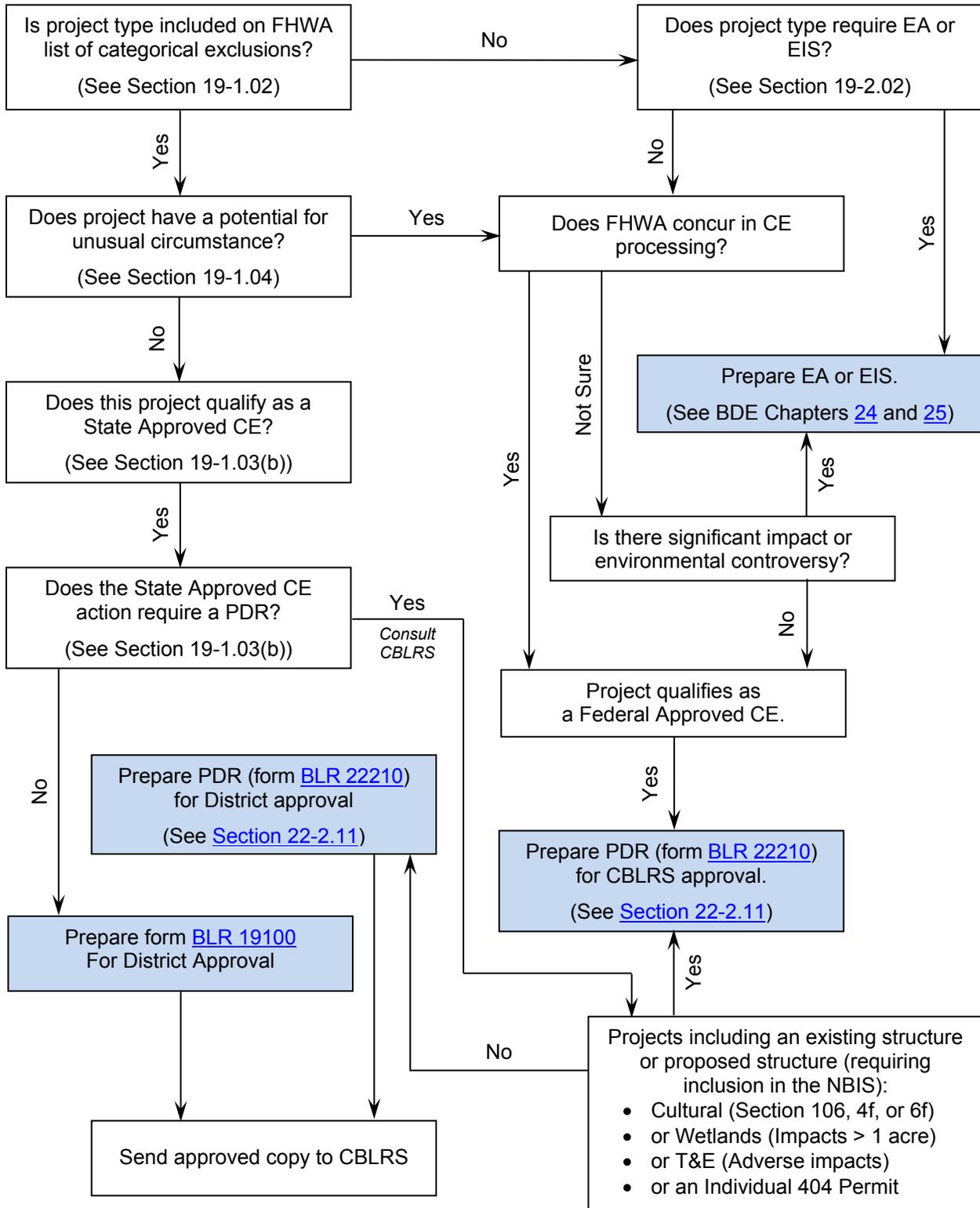
19-1.01 Definition

References: 40 CFR 1508.4 Categorical Exclusion Definition
23 CFR 771.115 Classes of Actions
23 CFR 771.117 Categorical Exclusions
Section 1 of FHWA Technical Advisory T6640.8a Categorical Exclusion

The FHWA environmental regulations (23 CFR 771) define “categorical exclusions” (CEs) as “Class II” actions which meet the definition as contained in 40 CFR 1508.4, and based on past experience with similar actions, do not involve significant environmental impacts. They are actions which:

- do not induce significant impacts to planned growth or land use for the area;
- do not require the relocation of significant numbers of people;
- do not have a significant impact on any natural, cultural, recreational, historic, or other resource;
- do not involve significant air, noise, or water quality impacts;
- do not have significant impacts on travel patterns;
- do not otherwise, either individually or cumulatively, have any significant environmental impacts

Therefore, CEs are excluded from the requirement to prepare an Environmental Assessment (EA) (see [Chapter 24](#) of the *BDE Manual*) or Environmental Impact Statement (EIS) (see [Chapter 25](#) of the *BDE Manual*). The FHWA has listed examples of Class II actions in 23 CFR 771.117. Most transportation projects developed by LPAs do not have significant environmental impacts and, therefore, qualify as CEs.



PROCESSING CE PROJECTS

Figure 19-1A

19-1.02 Applicable Federal Actions

References: 23 CFR 771.117(a) Characteristics of CE Projects
23 CFR 771.107(b) Definitions
Paragraph I.A of FHWA Technical Advisory T6640.8A, Documentation of Applicability

These procedures apply to any federal action, as defined in 771.107(b):

“A highway or transit project proposed for FHWA or FTA funding. It also includes activities such as joint and multiple permits, changes in access control, etc., which may or may not involve a commitment of federal funds.”

For example, a project may require an interstate access justification approval by FHWA, and the entire project would therefore be subject to all Federal requirements.

Federal actions approved as Categorical Exclusions do not require further compliance with the *National Environmental Policy Act* (NEPA) process. However, these actions may require compliance with other Federal environmental controls (e.g., Section 4(f), *Endangered Species Act*, Executive Order 11990 - Wetlands, Executive Order 11988 - Flood Plains, *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA)). See [Chapter 20](#) for further information on special environmental studies.

19-1.03 CE Procedures

19-1.03(a) CE “Groups”

Projects that normally qualify as a Categorical Exclusion are divided into the following two groups:

1. State Approved CE. State Approved CE projects do not have any potential for unusual circumstances, as described in the Programmatic Agreement (PA) between FHWA and Illinois Department of Transportation (IDOT) and do not require individual approval by FHWA as CEs. Certain State Approved CE projects do not require a Project Development Report (PDR); see Section 19-1.03(b) for determination of whether or not a PDR is required.
2. Federal Approved CE. Federal Approved CE projects have the potential for unusual circumstances as described in the PA between FHWA and IDOT and require individual approval by FHWA as CEs. A PDR is required for these projects see Section 19-1.03(c).

19-1.03(b) State Approved CE Projects

References: 23 CFR 771.117(c) Examples of projects which normally will be a State Approved CE

Paragraph I.A of FHWA Technical Advisory T6640.8A, Documentation of applicability for CE projects

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These projects must meet the definition of a CE in 23 CFR 771.117(a), and will be considered State Approved CE's if they do not involve any of the factors listed in Section 19-1.04 as indicators of potential for unusual circumstances. Documentation of determination that the project is a State Approved CE is required and should be included in the project files, including the date the determination was made and who is responsible for the decision. The following statement must be included:

"It has been determined that this project will not have any significant impacts on the human environment, or involve any unusual circumstances; therefore, it is a State Approved Categorical Exclusion.

IDOT has addressed all environmental requirements for this project and determined that it has met the following requirements of the CE Programmatic Agreement (approved October 14, 2015): (1) the scope is consistent with the project scope listed in Appendix A or B, and (2) none of the circumstances in Section V exist. Therefore, on behalf of FHWA, IDOT hereby approves this project as a CE."

This statement will be signed by the appropriate full time IDOT employee as indicated in the PA. To facilitate the documentation requirements and to comply with the PA, the State Approved CE determination shall be made using the form BLR 19110.

It is not required that State Approved CE projects be discussed at regularly scheduled FHWA/IDOT coordination meetings. However, State Approved CE projects may be discussed at a coordination meeting if any agency (LPA, IDOT, or FHWA) deems it necessary. Appropriate/adequate documentation should be retained by the LPA and respective district that documents the State Approved CE determination. FHWA or CBLRS may request to review State Approved CE documentation at any time. While a project may qualify as a State Approved CE action, other applicable federal and state requirements still must be satisfied (e.g. compliance with the National Historic Preservation Act, the Clean Air Act, etc.).

Actions that normally do not involve unusual circumstances and would qualify as State Approved CE actions include those listed in 23 CFR 771.117(c) and also include the actions listed below. Some actions will require preparation of a PDR (form [BLR 22210](#)) and others will not (form [BLR 19100](#)).

1. The following State Approved CE actions do not require a PDR; if constructed within the existing ROW. The LPA shall prepare form [BLR 19100](#) with the required attachments and submit to the district for approval.
 - traffic signal modifications and installation of new signals;
 - Local Agency Functional Overlay (LAFO) projects;
 - pavement resurfacing or milling and resurfacing (from face-of-curb to face-of-curb only for urban and the travel lanes only for rural);
 - signing;
 - pavement markings not affecting the number of through traffic lanes, lane width, lane usage or existing pavement marking configuration;
 - anti-skid treatments;
 - construction of sidewalks and/or ADA accessibility ramps;

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- curb and/or gutter repairs;
- historic preservation projects (except historic bridges) that do not have any potential for unusual circumstance as determined by the FHWA;
- lighting and electrical work including:
 - continuous and tower lighting,
 - tunnel lighting,
 - temporary lighting,
 - bridge lighting,
 - pedestrian lighting,
 - pumping station,
 - highway advisory radio,
 - control systems for changeable lanes,
 - traffic monitoring systems, and
 - changeable message signs
- bicycle racks/lockers;
- landscaping;
- sediment and erosion control work which may also include slope repair and reconstruction;
- storm sewer installations to eliminate open ditches (which do not reduce necessary urban runoff storage/retention);
- impact attenuator and glare screen installations and upgrading of safety features;
- highway/railroad grade crossing improvements with no roadway approach work:
 - repair/rehabilitation of crossing proper, and
 - upgrading of crossing protection;
- the following restoration-type projects:
 - retaining wall restoration,
 - fencing,
 - guardrail replacement and upgrading,
 - substantial pavement and shoulder patching/sealing, and
 - restoration of drainage structures;
- junkyard screening;
- the following bridge rehabilitation activities:
 - bridge rail replacement and upgrading,
 - bridge deck overlay and waterproofing,
 - expansion joint replacement and upgrading,
 - bearing replacement and upgrading,
 - substantial repairs to deck including partial or full-depth patches,
 - painting of all structural steel for a particular bridge,
 - stringer replacement for a portion of the superstructure, and
 - repairs to damaged rails, corroded or damaged structural steel members, and deteriorated areas of concrete elements including sidewalks, curbs, water tables, girders, and portions of the substructure above ground or water;
- approval of utility installations along or across a transportation facility;
- activities included in the highway safety plan developed pursuant to 23 USC 402;

- transfer of Federal lands pursuant to 23 USC 317 when the subsequent action is not an FHWA action;
- alterations to existing publicly owned buildings to provide for noise reduction and/or installation of noise abatement barriers; and
- emergency repairs under 23 USC 125 that do not substantially change the design of the facility, and which are initiated during or immediately after the occurrence of a declared national disaster;

The district will distribute the approved [BLR 19100](#) to the LPA and CBLRS for the project files.

2. The following types of projects typically require the preparation of a PDR (form [BLR 22210](#)). However, in consultation with the CBLRS, it may be determined form [BLR 19100](#) can be used:

- Projects listed in Item 1 above with minimal ROW and/or easements;
- Rural widening and resurfacing projects that require additional right-of-way and do not change the number of lanes;
- Bicycle, pedestrian, or shared use paths that do not have any potential for unusual circumstances;
- At-grade highway/railroad grade crossing improvements that includes roadway approach work;
- Projects that change the layout or function of the roadway such as, weaving lanes, turning lanes, or climbing lanes within the existing right-of-way, installation or removal of parking lanes;
- Any project that includes a bridge or structure requiring a structure number;
- Construction of additional lanes, including auxiliary turn lanes or through lanes;
- Projects that require additional ROW or easements;
- Projects that impact public property outside the existing ROW;
- Projects that require a jurisdiction transfer;
- Projects on a new horizontal alignment;
- Other projects that are determined to be State Approved CE by the FHWA at a coordination meeting.

The draft PDR (form [BLR 22210](#)) for these projects will be reviewed by the District prior to submittal to the CBLRS for review. After District and CBLRS comments have been addressed, the final PDR (form [BLR 22210](#)) may be submitted for approval. A decision will be made in consultation with the District and CBLRS for approval of the PDR. These types of projects may be a State Approved CE provided they do not have any potential for the unusual circumstances that are noted in Section 19-1.04.

19-1.03(c) Federal Approved CE Projects

The remainder of the CE-type projects is considered Federal Approved CE projects that require FHWA approval of CE determination and the preparation of a PDR (form [BLR 22210](#)) for approval by the CBLRS.

Early in project development the district may request concurrence of FHWA and CBLRS to process the project as a CE; however, for Federal Approved CE projects FHWA *must approve* the CE *determination after appropriate environmental analyses are completed*. Email approval from the FHWA ordinarily will be sufficient. Federal Approved CE may also be obtained at regularly scheduled district coordination meetings; see [Section 18-5](#). Minutes of the coordination meeting or an email to the file, as appropriate, shall document the discussions and approval by stating:

“This project will not have any significant impacts on the human environment; therefore, the FHWA approves the designation of this project as a Categorical Exclusion on [DATE].”

Sufficient information must be available to permit the FHWA/CBLRS to make an informed decision on the significance of any environmental effects involved. For projects that require the processing of an Environmental Survey Request (see [Section 20-2.02](#)), email CE approval may be requested only after the LPA has obtained the results of the Integrated Environmental Survey Process (for biological resources (e.g., threatened and endangered species, wetlands) and cultural resources (e.g., archaeological, historic)) and it has been determined there are no unusual circumstances. For projects that involve a site included on the CERCLIS, email approval may be requested only after the LPA has determined how the involvement with the CERCLIS site will affect the project. Occasionally, the FHWA may request an environmental study of a particular issue area (e.g., wetlands study) prior to giving email CE approval.

The FHWA will be provided with a copy of these coordination meeting minutes.

Documentation of the CE approval (email, coordination meeting minutes, or memorandum to file) must be included in the PDR (form [BLR 22210](#)).

19-1.04 Evaluation for Unusual Circumstances

References: 23 CFR 771.117(b)
Paragraph I.B of the FHWA Technical Advisory T6640.8A

Each project proposed as a Categorical Exclusion, whether State Approved CE or Federal Approved CE, must be evaluated for environmental factors that may involve unusual circumstances. This may require special studies or reports to be prepared to determine if the CE classification is appropriate. In evaluating proposed CE projects for unusual circumstances, all aspects of the project must be considered, including any detours and runarounds that the project will involve. A step in the evaluation for unusual circumstances, in certain projects, may be an on-site review, or field review, of the project area. The field review must be sufficient to identify whether there are obvious resource involvement(s) that could result in a significant impact or that will raise potential impact concerns sufficient to warrant the preparation of an EA or EIS. For projects processed through the environmental survey processes, the survey results will identify wetlands, biological resources, and cultural resources that may require special consideration and coordination. These and other environmental issues (e.g., farmland impacts, Section 404 permit requirements, noise) must be identified and appropriately considered in the evaluation of unusual circumstances.

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Unusual circumstances include: (1) significant environmental impacts; (2) substantial controversy on environmental grounds; (3) significant impact on properties protected by Section 4(f) of the DOT Act or Section 106 of the National Historic Preservation Act; or (4) inconsistencies with any Federal, State, or local law, requirement or administrative determination relating to the environmental aspects of the action (23 CFR 771.117(b)). If environmental studies result in the identification of a project's involvement of one of the above mentioned unusual circumstances, it may not be appropriate to classify the project as a CE.

FHWA and IDOT have agreed that activities that indicate the project could involve unusual circumstances include, but are not limited to, those that will:

1. Require one or more residential or business relocations and/or the acquisition of more than 10 acres total for a non-linear improvement (spot improvement, e.g. bridge, intersection) or the acquisition of more than 3 acres per mile;
2. Are defined as a "Type I project" per 23 CFR 772.5 and therefore requires a noise analysis;
3. Result in an "adverse effect" finding to a historic property, as defined in 36 CFR 800.16(1);
4. Require the use of properties as defined and protected by Section 4(f) of the Department of Transportation Act (49 U.S.C. 303) that cannot be documented with either an FHWA de minimis determination or a programmatic Section 4(f) evaluation;
5. Involve impacts that would require an Individual Section 404 Permit from the U.S. Army Corps of Engineers or involve stream channelization or stream relocations;
6. Through Section 7 of the Endangered Species Act consultation, result in a finding of "may affect, likely to adversely affect" a federally listed or candidate species, or proposed or designated critical habitat;
7. Through consultation with the Illinois Department of Natural Resources (IDNR) under the Illinois Endangered Species Act, an Incidental Take Authorization will be required;
8. Require substantial changes in access, access control, or travel patterns. IDOT will present such information to FHWA to determine if changes are substantial;
9. Require the use of a temporary road, detour or ramp closure, unless the use of such facilities satisfies the following conditions:
 - a. Provisions are made for access by local traffic and so posted,
 - b. Businesses dependent on through-traffic will not be adversely affected,
 - c. To the extent possible, there is no interference with any local special event or festival,
 - d. There is no substantial change to the environmental consequences of the action, and
 - e. There is no substantial controversy associated with such facilities.
10. Involve State designated Nature Preserves, areas listed on the Illinois Natural Area Inventory, Land and Water Reserves;
11. Exceed the IDNR threshold for an increase in 100-year flood water surface elevations, or has potential for a "significant encroachment" to floodplains, as defined in Executive Order 11988;

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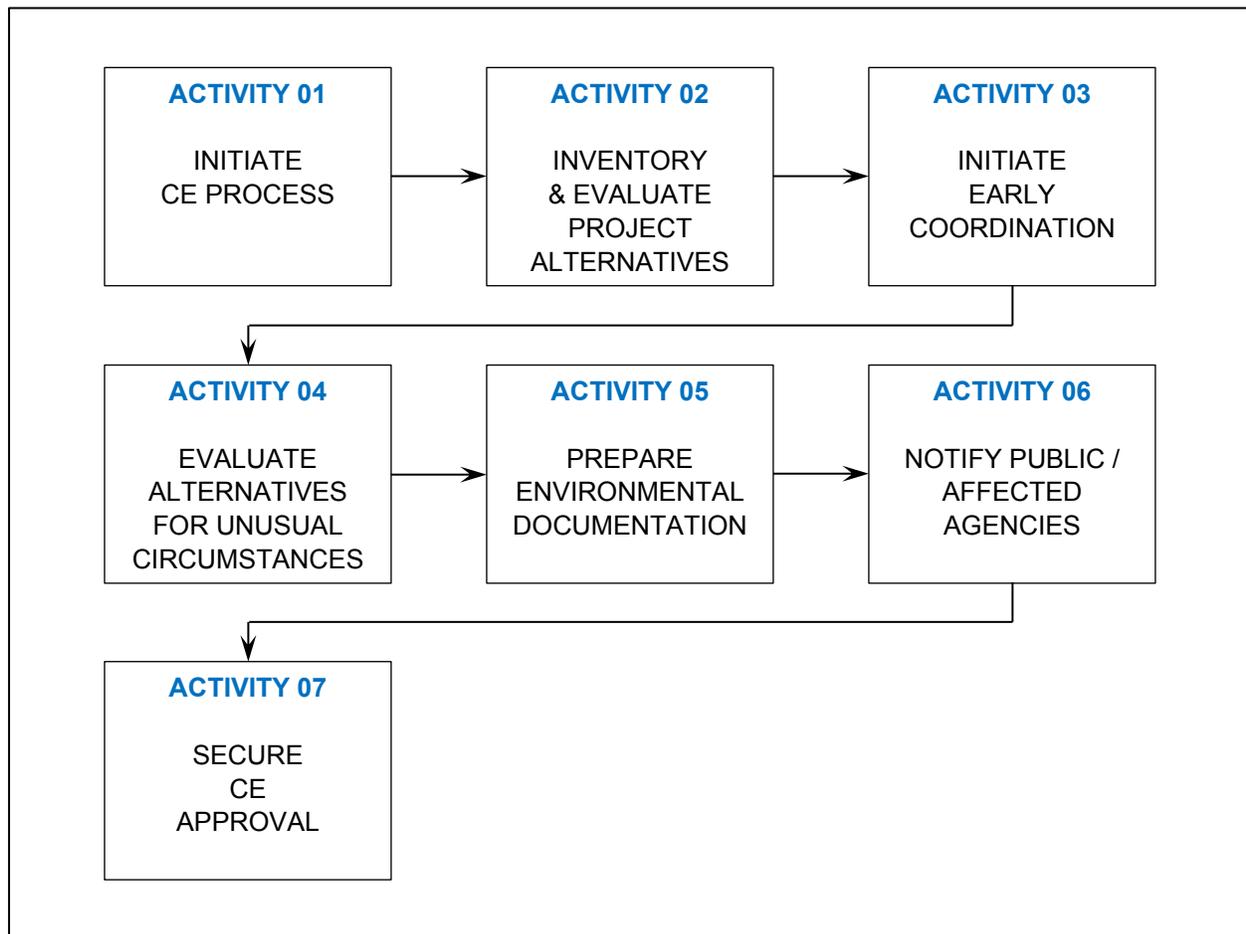
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12. Require a permit from U.S. Coast Guard under Section 9 of the Rivers and Harbors Act of 1899;
13. Require an individual Water Quality Certification from the Illinois Environmental Protection Agency;
14. Require the acquisition of lands under the protection of Section 6(f) of the Land and Water Conservation Act of 1965 or other unique areas or special lands that were acquired in fee or easement with public-use money and have deed restrictions or covenants on the property;
15. Involve impacts to a stream listed on the National Park Service's National Rivers Inventory;
16. Have potential for controversy on environmental grounds as determined by FHWA, or inconsistency with Federal, State, or local requirements relating to the environment or planning.

19-2 THE CATEGORICAL EXCLUSION (CE) PROCESS

Figure 19-2A presents a flowchart that graphically illustrates the general process for a Categorical Exclusion action. This is followed by a brief description of each activity. The user of Figure 19-2A should consider the following:

1. Lines of Communication. The rigid application of the flowchart would lead to predetermined, precise points at which communication occurs between responsible parties. This is neither realistic nor desirable. Communication between parties must be continuous.
2. Lead Agency. Figure 19-2A assumes that the FHWA is the lead agency for FHWA-funded projects. If another Federal agency is the lead agency, other procedures may be required.
3. Application. Figure 19-2A applies to all CE projects involving LPA projects.



PROCESS FOR CATEGORICAL EXCLUSION (CE)
(FHWA Lead Agency)

Figure 19-2A

Categorical Exclusion Process

Activity Title: Initiate CE Process
Activity No.: 01
Responsible Unit: Local Public Agency / District

Activity Description:

For actions that will ultimately be processed with a CE, this is often known at the time of project initiation. This process (Figure 19-2A) assumes that it is known at the time of project initiation that a CE will be required.

The LPA and the district will initiate the CE by discussing the project at a district coordination meeting. The LPA and the district will also assemble project information that may include:

- planning reports or studies,
- record plans (as-builts),
- letters/correspondence on the project,
- traffic data,
- documentation on any public or private meetings,
- original surveys,
- aerial photos,
- statistical data documenting need for improvement,
- scoping data providing recommended improvement,
- appropriate information from engineering databases,
- existing right-of-way, and
- results of the preliminary field check of project location.

References:

- 40 CFR 1501.2 *Early Application of NEPA*
- 23 CFR 771.115(b) *Definition of Class II (CE) Action*
- [Section 22-3.06](#) of the *BDE Manual, Proposed Action*
- Section 19-1 *General*

Categorical Exclusion Process

Activity Title: Inventory and Evaluate Project Alternatives

Activity No.: 02

Responsible Unit: Local Public Agency / District / CBLRS / BDE / FHWA

Activity Description:

Based on the general project design concept, the LPA with technical assistance from the district, CBLRS, BDE, and FHWA will inventory the affected environment and evaluate the project alternatives as practical at this stage of project development. The evaluation of preliminary alternatives should be sensitive to those environmental resources for which analysis of alternatives for avoidance and minimization of adverse impacts is required (e.g., wetlands, flood plains, Section 4(f) properties/historic sites, threatened and endangered species). In addition, local agencies should recognize that avoidance of environmental resources requiring special compliance procedures for impacts should be the preferred course of action. Avoidance of such resources will help to shorten project development time by avoiding the reporting and coordination necessary for compliance. The compilation of these inventories should be pursued only as necessary to provide high-quality information on the environmental impacts of the proposed action and to promote decision-making. Discussion of the proposed project with resource agencies at a district coordination meeting may be helpful in determining the optimum level of effort for the inventorying activity.

The LPA should identify the full range of the environmental inventory by evaluating environmental databases, discussing the project at a district coordination meeting, and submitting an environmental survey request, as appropriate, to the CBLRS. Resources involved may include:

- Section 4(f) and/or 6(f) properties;
- archaeological and historical properties;
- flood plains;
- sensitive noise receptors;
- prime farmland;
- wetlands;
- threatened or endangered species habitat, nature preserves, and natural areas;
- wild and scenic rivers;
- status of air quality attainment;
- water quality of streams and lakes;
- special waste;
- social/economic characteristics of the population;
- visual quality factors;
- well-head protection areas;
- groundwater recharge areas; and
- other biological resources (biodiversity, riparian habitat, etc.).

After the inventory has been prepared, the LPA should perform a preliminary evaluation of the magnitude and importance of the potential environmental impacts precipitated by the proposed action. This will assist in initiating the early coordination process ([Activity 03](#)).

References:

- 40 CFR 1500.1(b) *Environmental Information for Decision-Making*
- 23 CFR 771.111 *Early Coordination and Public Involvement*
- Background Section of FHWA Technical Advisory T6640.8A *Consideration of Unusual Circumstances*
- [Section 20-2](#) *Environmental Studies*

Categorical Exclusion Process

Activity Title: Initiate Early Coordination

Activity No.: 03

Responsible Unit: Local Public Agency / BDE

Activity Description:

Coordination with governmental agencies and the public, as appropriate, is one of the most important aspects of the CE process. This coordination should begin as early as practical in project planning. (see [Activity 06](#))

As necessary, the LPA throughout the District, CBLRS, and BDE will initiate early coordination with organizations and persons and appropriate local, State, and Federal agencies that have an interest in the project or have information or expertise concerning environmental issues that the project may involve. The purpose of this coordination will be to assist in the evaluation of alternatives and the social, economic, and environmental impacts of the proposed project and possible impact mitigation measures. One specific objective of this early coordination is to gather information from other entities that may assist in the effort to compile an inventory of the affected environment ([Activity 02](#)). This may be necessary to identify historic/archaeological sites (State Historic Preservation Officer (SHPO)), natural resources (IDNR), land-use activities (local governments), etc.

If applicable, the LPA should begin developing the public involvement plan for the project at this stage; see [Chapter 21](#).

References:

- 40 CFR 1500.1(b) *Environmental Information for Decision Making*
- 40 CFR 1500.2(d) *Public Involvement*
- 40 CFR 1500.5(b) *Interagency Cooperation*
- 40 CFR 1501.1(b) *Interagency Cooperation*
- 40 CFR 1501.6 *Cooperating Agencies*
- 23 CFR 771.111 *Early Coordination and Public Involvement*
- 23 CFR 771.119(b) *Early Coordination/Scoping*
- Question 9. of CEQ Q&A *Approvals from Other Agencies*
- [Section 18-5](#) *Coordination*
- [Chapter 21](#) *Requirements for Public Involvement Programs*

Categorical Exclusion Process

Activity Title: Evaluate Alternatives for Unusual Circumstances

Activity No.: 04

Responsible Unit: Local Public Agency / District / CBLRS

Activity Description:

As a part of the CE process, the LPA, district, and CBLRS must evaluate the project alternatives for any potential unusual circumstances. This will be according to 23 CFR 771.117(b). If significant impacts are likely, an EIS or EA is required for a Federal action. If there is a question on whether or not unusual circumstances are involved, the LPA may need to perform additional studies and/or prepare an EA.

The LPA will initiate those studies necessary to determine the environmental impact of the proposed project alternatives. The depth of the studies will be as appropriate for the project consistent with its designation as a CE. The nature of the studies will include:

- coordination with affected local, State, and Federal agencies and the public; and
- an evaluation of the environmental impacts including:
 - + social/economic;
 - + agricultural;
 - + historical/archaeological;
 - + air quality;
 - + noise;
 - + energy;
 - + natural resources, threatened, and endangered species;
 - + water quality/resources;
 - + flood plains;
 - + wetlands (see [Chapter 10](#));
 - + special waste;
 - + Section 4(f)/6(f); and
 - + other issues as applicable (e.g., Wild and Scenic Rivers, well-head protection, regulated ground-water recharge areas).

References:

- 40 CFR 1502.24 *Methodology and Scientific Accuracy*
- 23 CFR 771.117(b) *Unusual Circumstances*
- 23 CFR 771.135 *Section 4(f) Evaluations*
- Paragraph I.B. of FHWA Technical Advisory T6640.8A *Consideration of Unusual Circumstances*
- Section 19-1.03 *Evaluation for Unusual Circumstances*
- [Chapter 20](#) *Special Environmental Studies*

Categorical Exclusion Process

Activity Title: Prepare Environmental Documentation

Activity No.: 05

Responsible Unit: Local Public Agency

Activity Description:

Once the LPA has completed its environmental evaluation of the project alternatives for unusual circumstances ([Activity 04](#)), the LPA will document its findings. The documentation will vary depending upon the CE processing type and whether or not a PDR (form [BLR 22210](#)) is required. CE processing types include the following:

1. State Approved. See Section 19-1.04(b).
2. Federal Approved. See Section 19-1.04(c).

Categorical Exclusion Process

Activity Title: Notify Public/Affected Agencies

Activity No.: 06

Responsible Unit: Local Public Agency / BDE

Activity Description:

In [Activity 03](#), the LPA will have made a preliminary identification of those agencies that may have an interest in the project. For proposed CE projects, the LPA and BDE will coordinate with the public and appropriate agencies to verify the decision, if applicable, that the project includes no unusual circumstances ([Activity 04](#)). Typically, the following agencies will be contacted when resource issues of concern to these agencies are involved:

BDE will be responsible for coordinating with:

- FHWA or other joint lead agency;
- US Environmental Protection Agency;
- US Fish and Wildlife Service;
- Illinois Department of Natural Resources;
- State Historic Preservation Officer (Illinois Historic Preservation Agency (IHPA));
- Advisory Council on Historic Preservation;
- governmental land management agencies whose properties are affected; and/or
- other governmental agencies which have special expertise, jurisdiction by law regarding a project issue, or otherwise have an interest in the project.

LPA will be responsible for coordinating with:

- Illinois Environmental Protection Agency;
- US Army Corps of Engineers;
- Sub-State Clearinghouse(s), Metropolitan Planning Organization(s), or other appropriate local planning agency;
- Natural Resources Conservation Service;
- Illinois Department of Agriculture.
- IDOT Bureau of Aeronautics / Federal Aviation Administration (FAA) ([Section 22-1.01\(a\)](#)).
- Railroad / Illinois Commerce Commission ([Section 22-1.01\(b\) and \(c\)](#)).
- US Coast Guard ([Section 7-4.04](#)).

References:

- 23 CFR 771.111 *Early Coordination/Public Involvement*
- [Section 7-4](#) *Federal Permits*
- [Section 18-5](#) *Coordination*
- [Chapter 21](#) *Requirements for Public Involvement Programs*
- [Section 22-1](#) *Coordination*

Categorical Exclusion Process

Activity Title: Secure CE Approval

Activity No.: 07

Responsible Unit: District

Activity Description:

State Approved CE projects may be approved by the Regional Engineer or CBLRS provided that it is determined (form BLR 19110 and form [BLR 22210](#) as required) that the project does not involve any "potential for unusual circumstances." For Federal Approved CE projects (form [BLR 22210](#)), the CE approval must be made by the FHWA. See Section 19-1.04(c).

The project must also meet the procedural requirements of any specific environmental impacts identified in the environmental studies ([Activity 04](#)). These may include, for example, a separate Section 4(f) Statement, a Section 404 permit, National Pollutant Discharge Elimination System (NPDES) permit, etc.

References:

- 23 CFR 771.113(a) *Timing of Administration Activities*
- 23 CFR 771.129(c) *Re-evaluations*
- [Section 22-3.15](#) of the *BDE Manual, Ensuring Validity of Environmental and Design Documents*
- Section 19-1.04(b) *State Approved Actions*
- Section 19-1.04(c) *Federal Approved Actions*

19-3 ENVIRONMENTAL DOCUMENTATION FOR CATEGORICAL EXCLUSIONS

19-3.01 General

PDRs (form [BLR 22210](#)) are not required for certain State Approved CE projects (see Section 19-1), but are required for all Federal Approved CE projects. For those projects that have PDRs, they must include evidence of consideration of environmental factors as discussed elsewhere in this Chapter. Circulation of a PDR to outside agencies for comment normally is not required.

19-3.02 Content

[Section 22-2.11](#) discusses the engineering information included in the PDR (form [BLR 22210](#)) and the overall format and content of the PDR. The following provides guidance for the environmental documentation appropriate for inclusion in a PDR for Categorical Exclusion projects:

1. CE Determination. Where the FHWA/CBLRS request formal written submittal of an action for concurrence in its classification as a Categorical Exclusion, the PDR will include information for the specific environmental issues requested by the FHWA/CBLRS. The information must be sufficient to permit an evaluation of whether the environmental effects will involve unusual circumstances (see Section 19-1.03) requiring preparation of an EIS or EA for Federally funded/regulated actions.

In any other cases where actions are formally submitted for CE approval, a discussion will be provided in the PDR concerning those factors involved with the action indicating potential for unusual circumstances (see Section 19-1.04). The information must be adequate to permit an assessment of whether the effects of the action warrant preparation of an EIS or EA for Federally-funded/regulated actions.

2. Environmental Surveys and Mitigation Commitments. The PDR should summarize the results of any necessary environmental screening, surveys, and related coordination for biological resources, wetlands, cultural resources, and special wastes. If surveys are not required, the basis for this determination should be documented. The PDR should include a statement indicating that the CERCLIS list was reviewed and should indicate whether any sites on the list are located within the project limits. In addition, either a copy of the Special Waste Screening Form or the response to the Preliminary Environmental Site Assessment (PESA) should be included. Any mitigation commitments resulting from the environmental survey and coordination process should be briefly discussed. Environmental mitigation measures (e.g., wetlands, tree replacement, tree clearing restrictions, prairie replacement) to be implemented for the project should be described.
3. Special Reports. Where a special report(s) is prepared, the PDR should contain a summary of the circumstances, findings, and processing status of each report along with a copy of any approval. These include reports for Section 4(f), wetlands, Section 106, noise analysis, special waste site investigations, etc. Copies of the special reports will be maintained in the project files.

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4. Coordination. [Section 18-5](#) and Section 19-2, of the CE Process; discuss the coordination required for a CE action. This should be summarized in the PDR (form [BLR 22210](#)). Specifically, where coordination with the Natural Resources Conservation Service and/or the Illinois Department of Agriculture is required, the PDR should include a brief summary of the results of the coordination (e.g., a copy of Form AD-1006, when required, and/or a synopsis of comments received and the related responses).
5. Permits. The PDR should indicate the permits (e.g., Section 404, Section 402, NPDES, Section 10, IDNR Office of Water Resources) required for the project.

19-3.03 Processing

The PA requires that only appropriate full time IDOT employees will be responsible for making a State Approved CE determination. In addition, the IDOT personnel must meet the following training and experience requirements:

1. Have completed the web based course FHWA-NHI-142052, "Introduction to NEPA and Transportation Decision-making" or equivalent; and
2. Have experience addressing NEPA compliance for transportation projects; or
3. Have their work reviewed by staff who has met items 1 and 2.

The PA places an accountability requirement on IDOT in the form of a process review and QC/QA activities by IDOT. To facilitate these processes, form BLR 19110 will be used to document the State Approved CE determination for projects requiring a PDR (form [BLR 22210](#)).

For all CE projects requiring PDRs (State Approved CE projects specified in Section 19-103(b) and all Federal Approved CE projects), the local agencies must include appropriate environmental information to document the basis for determining that the project qualifies as a CE. The district will review the PDR for State Approved CE projects and the CBLRS will review the PDR for all State Approved CE projects that include a bridge and Federal Approved CE projects for the following environmental information:

- for Federal Approved CE projects, the Regional Engineer shall ensure that all BLRS and FHWA recommendations and concerns are addressed prior to recommending Categorical Exclusion and Design Approval;
- information on the need for and results of environmental surveys;
- information indicating the environmental issues involved and why the project would not result in significant impacts on those issues;
- documentation of compliance with special waste procedures and other applicable requirements for specific environmental issues involved; and
- information on the need for and status of any environmental permits.

When Federal Approved CE PDRs are submitted for design approval, the CBLRS will advise the district of any problems or deficiencies with the environmental information or design criteria and will provide recommendations, as appropriate, for correcting the problems or deficiencies.

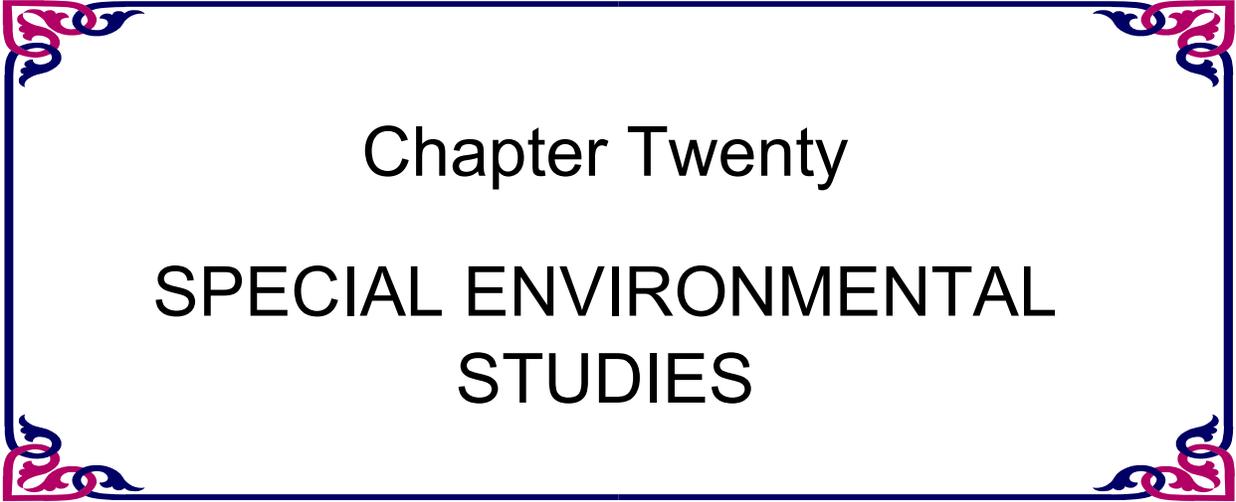
19-4 ACRONYMS

This is a summary of the acronyms used within this chapter.

ADA	<i>Americans with Disabilities Act</i>
BDE	Bureau of Design and Environment
CBLRS	Central Bureau of Local Roads and Streets
CE	Categorical Exclusion
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act</i>
CERCLIS	<i>Comprehensive Environmental Response, Compensation, and Liability Information System</i>
CFR	Code of Federal Regulations
EA	Environmental Assessment
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
IDNR	Illinois Department of Natural Resources
IDOT	Illinois Department of Transportation
IHPA	Illinois Historic Preservation Agency
LAFO	Local Agency Functional Overlay
LAPP	Local Agency Pavement Preservation
LPA	Local Public Agency
NEPA	<i>National Environmental Policy Act</i>
NHI	National Highway Institute
NPDES	National Pollutant Discharge Elimination System
PA	Programmatic Agreement
PDR	Project Development Report (form BLR 22210)
PESA	Preliminary Environmental Site Assessment
QC/QA	Quality Control / Quality Assurance
SHPO	State Historic Preservation Officer

19-5 REFERENCES

1. 40 CFR 1500-1508, *CEQ Regulations for Implementing NEPA*.
2. 23 CFR 771, *FHWA Environmental Impact and Related Procedures*.
3. FHWA Technical Advisory T6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, FHWA, October 1987.
4. Programmatic Agreement – Categorical Exclusions, FHWA and IDOT, October 2015.
5. [Chapter 22](#) “Environmental Documentation”, *BDE Manual*, IDOT.
6. [Chapter 26](#) “Special Environmental Analyses”, *BDE Manual*, IDOT.
7. [Chapter 7](#) “Permits”, *BLRS Manual*, IDOT.
8. [Chapter 18](#) “General Environmental Procedures”, *BLRS Manual*, IDOT.
9. [Chapter 20](#) “Special Environmental Studies”, *BLRS Manual*, IDOT.
10. [Chapter 21](#) “Requirements for Public Involvement Programs”, *BLRS Manual*, IDOT.
11. [Chapter 22](#) “Project Development”, *BLRS Manual*, IDOT.



Chapter Twenty

**SPECIAL ENVIRONMENTAL
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Chapter Twenty

SPECIAL ENVIRONMENTAL STUDIES - Federal Funds

20-1 GENERAL

20-1.01 Introduction

Although the *National Environmental Policy Act* (NEPA) is the major mandate for environmental considerations, there are other laws, executive orders, regulations, agreements, etc., which require special studies, analyses, coordination, and documentation on specific environmental issues. Chapter 20 discusses these special requirements for federally funded projects. Chapter 26 of the *BDE Manual* provides additional information for each of the topics discussed in this Chapter.

As appropriate, impact analyses and related surveys, studies, and coordination made necessary by environmental laws and requirements other than NEPA shall be integrated with the development of environmental information for inclusion in environmental reports or Project Development Reports.

20-1.02 Topics

Special studies include the following:

- Environmental Surveys,
- Section 4(f) Evaluations,
- Section 6(f) Land Conversion Requests,
- OSLAD Land Conversion Requests,
- Historic Preservation Compliance Documentation,
- Noise Analyses,
- Flood Plain Findings,
- Wetlands Analyses,
- Threatened and Endangered Species/Natural Areas Impact Assessments,
- Evaluations of Farmland Conversion Impacts,
- Air Quality Conformity Documentation,
- Air Quality Microscale Analysis, and
- Special Waste.

20-1.03 Applicability

Many of the special environmental studies discussed in this Chapter are the result of federal requirements. Although the Federally required analyses primarily affect federally funded or regulated projects, some also may apply to State-only (or State and local) funded projects where the projects will affect resources regulated by the federal government. In addition, several of the special analyses discussed are the result of State requirements that also apply to federally funded projects. These State requirements are often more stringent than those at the federal level, and they may potentially affect any federally funded Local Public Agency (LPA) project if the project involves the specific types of resources.

20-2 ENVIRONMENTAL SURVEYS

The environmental survey process initiates the review for cultural, biological, wetland, and special waste resources.

20-2.01 Applicability

Environmental Survey Requests (ESR) for cultural, biological, and wetland resources are required for federal, State, or MFT funded projects, and any locally funded project that requires Department review and approval if any of the following criteria are met:

- involves acquisition of additional right-of-way or easements (temporary or permanent), or construction activities outside the existing right-of-way;
- requires a drainage structure runaround or any in-stream work (The installation of rip-rap on a stream bank is considered in-stream work);
- potentially affects a recognized Illinois Natural Areas Inventory site or Illinois-dedicated Nature Preserve, a wetland, or a location where a State- or federal-listed species is known to occur;
- Involves a historic structure or is within the limits of a historic district.
- If a project does not require additional right-of-way, but does require cultural or biological resource coordination (e.g., a project is located within a historic district or in-stream work), an ESR needs to be submitted to the district.
- Potentially affect a historical district or property listed on the national register of historic places;
- Involve replacement or rehabilitation of a bridge 50 years old or older;
- Involves any excavation on State right-of-way; or
- If there will be new road, bike trail, or sidewalk on new alignment regardless of who owns the right-of-way.

Survey requests for special waste are required regardless of funding source for the following types of local projects:

- When the project plans are prepared by IDOT for a LPA;
- Local project affecting State right-of-way or a road under State jurisdiction;
- Local project acquiring right-of-way in the name of the State; or
- Local project involving temporary or permanent easements in the name of the State;

These types of projects must be coordinated with the district Special Waste Coordinator (SWC).

20-2.02 Environmental Survey Request

IDOT has developed a web page for environmental surveys. This page has links to the survey request forms and instructions, permitting the LPA or its consultant to transmit the forms electronically to the appropriate district office. The district will automatically be notified of a transmittal and will download the forms into the Project Monitoring Applications (PMA), which is used to track the environmental survey process. The LPA/consultant will submit a printed copy of the completed form with the required number of attachments to the district for processing. These submittals should be made as early as practical in project development.

The forms include the ESR and an Addendum Environmental Survey Request (AESR). The ESR form should only be used for the first submittal of a project. An AESR is only necessary when changes in a project will affect areas outside the limits of the original ESR or if there is a change in project scope that could involve additional resources. The, AESR, will retain the sequence number that was assigned to the original ESR for the project.

The LPA or their consultant is required to fully prepare and send attachments with the ESR form electronically to the district. These attachments include:

1. A general project location map clearly showing the project location within the county,
2. A detailed (close-up) project location map and an ArcGIS shape file clearly delineating the environmental survey request limits of the project,
3. Preliminary plan sheets showing the existing and proposed right-of-way or easement lines (plan sheets showing the area to be surveyed shaded in color is preferred),
4. And photos of the project area and of any bridges, culverts, buildings, or structures of any type within or adjacent to the project area.

Photos of bridges and structures over 50 years old in particular are required, and photos must allow IDOT requirements for photo logs outlined in "Photographing Historic Structures: Guidelines and Photo Logs" which is posted on the IDOT website on the Environmental page. For projects involving State right-of-way, or any of the special waste criteria listed in Section 20-2.01 (Applicability), the attachments should include a figure delineating the portion of the project involving state right-of-way or state jurisdiction and also explain it in text. Also, document this in the text of the PMA.

If an AESR is submitted, the preliminary plan sheets must clearly differentiate between the area that was surveyed in the original ESR, and the area surveyed in the addendum.

20-3 SECTION 4(F) EVALUATIONS

20-3.01 Introduction

A Section 4(f) Evaluation is a Federal requirement that applies only to projects involving funding and an approval or permit from an agency of the US Department of Transportation (USDOT). Section 4(f) applies to any significant publicly owned public park, recreation area, wildlife and waterfowl refuge, or any land from an historic site of national, state, or local significance. These properties and their significance are documented in a Section 4(f) Evaluation during project development, addressing alternatives, measures to minimize any harm, and net benefits that would result from the use of Section 4(f) land.

20-3.02 Legal Authority

49 USC 303, commonly known as Section 4(f) of the *Department of Transportation Act of 1966* (Public Law 89-665), provides that the Secretary of the US Department of Transportation:

. . . may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge, or land of a historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, recreation area, refuge, or site) only if:

- (1) there is no feasible and prudent alternative to using that land; and*
- (2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.*

20-3.03 Applicability

When Section 4(f) lands are involved, the specific applicability to a given action is based on regulatory criteria and interpretations, both by the courts and by agencies of the USDOT. FHWA regulatory criteria for applicability of Section 4(f) are stipulated in 23 CFR 771.135. Information concerning various interpretations that have been made regarding specific types of Section 4(f) resources and project actions is presented in the Section 4(f) Applicability/Q&A in the FHWA Section 4(f) Policy Paper (March 1, 2005). This policy paper and any revisions may be accessed at www.environment.fhwa.dot.gov/projdev/4fpolicy.htm. Where applicability questions arise that are not addressed by the FHWA regulatory criteria and/or interpretations that have been issued, the matter should be discussed with the Central BLRS and the responsible USDOT agency (in most cases the FHWA) as early as practical in the development of the action involved. The final determination of Section 4(f) applicability will be made by the responsible USDOT agency.

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Where there is a question concerning applicability of Section 4(f) to a specific resource involvement, any determination that Section 4(f) does not apply should be appropriately documented (e.g., a reference to a previously issued determination by the FHWA, a copy of a project-specific letter from the FHWA, a copy of meeting minutes, a memorandum to the files documenting discussions of the issue with the FHWA) in the Project Development Report or environmental document, and in the project files. This documentation should include, as appropriate, evidence of the views of the official having jurisdiction over the Section 4(f) resource.

20-3.04 Definitions

1. Section 4(f) Land. Land protected under 49 USC 303 Section 4(f) of the *USDOT Act of 1966*; i.e., any significant publicly owned public park, recreational area, or wildlife and waterfowl refuge; and any land from a historic site of national, State, or local significance as determined by the Federal, State, or local officials having jurisdiction over the park, recreational area, refuge or site. The term "historic site" includes both historic and prehistoric archaeological sites determined important for preservation in place.
2. Section 4(f) Evaluation. This is documentation of a project involving Section 4(f) land, addressing alternatives to use this land and mitigation measures that minimize any harm resulting from the proposed use.
3. Section 4(f) Approval. A finding that there is no feasible and prudent alternative to use other than the proposed Section 4(f) land and that all possible planning to minimize harm to Section 4(f) land is included in the proposed action.
4. Programmatic Section 4(f) Evaluation and Approval. An expedited evaluation and approval process, which addresses particular types of projects that involve the use of Section 4(f) land (e.g., independent walkway or bikeway construction projects). When studies and coordination with the officials having jurisdiction over the 4(f) resource indicate an action will conform to the requirements and conditions of a programmatic evaluation and approval, the processing of an individual Section 4(f) Evaluation document for that action is not required.
5. Use. For Section 4(f), use occurs (a) when land from a Section 4(f) site is permanently incorporated into a transportation project, (b) when there is a temporary occupancy of land that is adverse in terms of the preservationist purposes of Section 4(f), or (c) when the proximity impacts of a transportation project on a Section 4(f) site, without acquisition of land, are so great that the purposes for which the Section 4(f) site exists are substantially "impaired" (normally referred to by courts as a "constructive use"). See 23 CFR 771.135(p) and Section 4(f) Q&A Question #1 for further discussion concerning "use" under Section 4(f).
6. Significance. A publicly owned park, recreation area, or wildlife and waterfowl refuge must be a "significant" resource in order for Section 4(f) to apply. Resources are considered significant unless the official having jurisdiction concludes that the entire site is not significant. The FHWA must make an independent evaluation of significance. For purposes of Section 4(f), historic significance is based on whether a historic site is included on or eligible for inclusion on the National Register of Historic Places. Only those historic sites included on or eligible for inclusion on the National Register are subject to Section 4(f), unless the FHWA determines that the application of Section 4(f) is otherwise appropriate.

20-3.05 Section 4(f) Evaluation**20-3.05(a) Development**

Each Section 4(f) Evaluation includes a draft and final evaluation. A separate Section 4(f) involvement must be prepared for each location within a proposed project where use of Section 4(f) land is involved. The draft evaluation addresses avoidance alternatives, and the final evaluation addresses the selected alternative that involves the use of Section 4(f) land, as appropriate.

The FHWA Division Office has the responsibility for giving Section 4(f) approval. Projects meeting certain criteria may be approved by use of a Programmatic Section 4(f) Evaluation that streamlines the process with the various responsible agencies. Section 20-3.07 describes the Programmatic Section 4(f) Evaluation process.

20-3.05(b) Draft Evaluation Format

For categorical exclusion projects, the Section 4(f) Evaluation is processed as a separate document.

For an EIS or EA, the information should be placed in a special section of the environmental document labeled "Section 4(f) Evaluation." The following format is recommended for the Section 4(f) Draft Evaluation:

- Cover Sheet,*
- Table of Contents,*
- Description of Proposed Action,
- Description of Section 4(f) Property(ies),
- Impacts on the Section 4(f) Property(ies),
- Avoidance Alternatives,
- Measures to Minimize Harm,
- Net Benefits, and
- Section 4(f) Coordination.

** These parts are needed only where the Section 4(f) Evaluation is prepared as a separate document.*

20-3.05(c) Draft Evaluation Content

The following will apply to the contents of a Section 4(f) Draft Evaluation:

1. Cover Sheet. The suggested format and content for a Section 4(f) Draft Evaluation cover sheet is presented in Figure 20-3A.
2. Table of Contents. The Table of Contents should provide the title and page numbers for each major section and subsection of the Evaluation. Maps, charts, tables, etc., should have separate listings in the Table of Contents.

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3. Proposed Action. Where a separate Section 4(f) evaluation is prepared, describe the proposed project and explain the purpose and need for the project. When more than one alternative is under consideration, discuss each alternative requiring the use of Section 4(f) land.
4. Section 4(f) Property. Describe each Section 4(f) resource that would be used by any alternative under consideration. Provide the following information:
 - a. a detailed map or drawing of sufficient scale to identify the relationship of the alternatives to the Section 4(f) property;
 - b. size (acres (hectares) or ft² (m²)) and location (maps or other exhibits (e.g., photographs, sketches) of the affected Section 4(f) property;
 - c. ownership (e.g., city, county, State) and type of Section 4(f) property (e.g., park, recreation, historic);
 - d. function of, or available activities on, the property (e.g., ball playing, swimming, golfing);
 - e. description and location of all existing and planned facilities (e.g., ball diamonds, tennis courts);
 - f. access (e.g., pedestrian, vehicular) and usage (approximate number of users/visitors, etc.);
 - g. relationship to other similarly used lands in the vicinity;
 - h. applicable clauses affecting the ownership (e.g., lease, easement, covenants, restrictions, conditions (including forfeiture)); and
 - i. unusual characteristics of the Section 4(f) property (e.g., flooding problems, terrain conditions, other features) that either reduce or enhance the value of all or part of the property.
5. Impacts on the Section 4(f) Property. Discuss the impacts on the Section 4(f) property for each alternative (e.g., amount of land to be used, facilities and functions affected, noise, air pollution, visual).
6. Avoidance Alternatives. Identify and evaluate location and design alternatives that would avoid the Section 4(f) property. Generally, this would include alternatives to either side of the property. The design alternatives should be in the immediate area of the property and consider minor alignment shifts, a reduced facility, retaining structures, etc., individually or in combination, as appropriate.
7. Measures to Minimize Harm. Discuss all possible measures that are available to minimize the impacts of the proposed action on the Section 4(f) land.
8. Net Benefits. Discuss how the measures to minimize harm and the mitigation incorporated into the project results in overall enhancement of the Section 4(f) property when compared to the do nothing and avoidance alternative.
9. Coordination. Discuss the results of preliminary coordination with the public official having jurisdiction over the Section 4(f) property and with regional (or local) offices of Department of Interior (DOI) and, as appropriate, the US Department of Agriculture (USDA), the Regional Office of Housing and Urban Development (HUD), and the Forest Supervisor of the affected National Forest. Generally, the coordination should include a discussion of avoidance alternatives, impacts to the property, measures to minimize harm, and net benefits. In addition, the coordination with the public official having jurisdiction should include, where necessary, a discussion of significance and primary use of the property.

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(Route, Termini, City or County, and State)

DRAFT (FINAL) SECTION 4(f) EVALUATION
Submitted Pursuant to 49 USC 303
by the

US Department of Transportation
Federal Highway Administration

and

Illinois Department of Transportation
and
(Local Public Agency)

Date of Approval

For FHWA

The following persons may be contacted for additional information concerning this document:

(Name)

Division Administrator
Federal Highway Administration
3250 Executive Park Drive
Springfield, Illinois 62703-4514
Telephone: 217-492-4640

*(Name, office address, and phone number
of Regional Engineer)*

Include a one-paragraph abstract of the Evaluation indicating project type, length, etc., here.

Comments on this Draft Evaluation are due by *(date)* and should be sent to *(name and office address of Regional Engineer)*.*

**To be used on the Draft Evaluation only.*

**COVER SHEET FORMAT
(Separate Section 4(f) Evaluation)**

Figure 20-3A

20-3.05(d) Final Evaluation

When the preferred alternative uses Section 4(f) land, a final Section 4(f) Evaluation must be prepared. If the Section 4(f) Evaluation is a separate document, appropriate changes should be made in the Cover Sheet and Table of Contents to reflect that it is a Final Evaluation. In addition to the information in the Section 4(f) Draft Evaluation, the Section 4(f) Final Evaluation should include the following information:

1. **Alternatives.** A discussion of the basis for concluding that there are no feasible and prudent alternatives to the use of the Section 4(f) land. The supporting information must demonstrate that *“there are unique problems or unusual factors involved in the use of alternatives that avoid these properties or that the cost, social, economic, and environmental impacts, or community disruption resulting from these alternatives reach extraordinary magnitudes”* (23 CFR 771.135(a)(2)). This language should appear in the document together with the supporting information.
2. **Planning Actions.** A discussion of the basis for concluding that the proposed action includes all possible planning to minimize harm to the Section 4(f) property. When there are no feasible and prudent alternatives that avoid the use of Section 4(f) land, the final Section 4(f) Evaluation must demonstrate that the preferred alternative is a feasible and prudent alternative with the least harm; or provides a net benefit on the Section 4(f) resources after considering mitigation to the Section 4(f) resources.
3. **Coordination.** A summary of the appropriate formal coordination with the Headquarters Offices of DOI (and/or appropriate agency under that Department) and, as appropriate, the involved offices of USDA and HUD.
4. **Comments.** Copies of all formal coordination comments and a summary of other relevant Section 4(f) comments received and an analysis and response to any questions raised. Where Section 6(f) land is involved, document the National Park Service’s position on the land transfer.
5. **Concluding Statement.** Include a concluding statement as follows: “Based upon the above considerations, there is no feasible and prudent alternative to the use of land from the (identify Section 4(f) property) and the proposed action includes all possible planning to minimize harm to the (Section 4(f) property) resulting from such use.”

20-3.06 Coordination and Processing

The Section 4(f) Draft Evaluation must be circulated for review. The Department of Interior (DOI) should receive seven copies of the Section 4(f) Draft Evaluation for coordination. In addition to coordination with DOI, Section 4(f) Draft Evaluations must be coordinated with the officials having jurisdiction over the Section 4(f) property as well as HUD and USDA, where these agencies have an interest in or jurisdiction over the affected Section 4(f) resource (23 CFR 771.135(i)). The point of coordination for HUD is the appropriate Regional Office and for USDA, the Forest Supervisor of the affected National Forest. One copy should be provided to the officials with jurisdiction of the Section 4(f) property and two copies should be submitted to HUD and USDA when coordination is required. The minimum period of time for receipt of comments is 45 days. DOI should also receive seven copies of the Section 4(f) Final Evaluation for information.

Comments received as a result of coordinating the Section 4(f) Evaluation must be given careful consideration. If the selected alternative requires the use of Section 4(f) land, the IDOT District Office and the FHWA Division Office must ensure that the EA/FONSI, the Final EIS, or Section 4(f) Final Evaluation includes sufficient information to fully support Section 4(f) approval.

20-3.07 Programmatic Section 4(f) Evaluations and Approvals

Appendix A of the *BDE Manual* includes the Programmatic Section 4(f) Evaluations for the following:

- historic bridges;
- minor involvements with public parks, recreations lands, and wildlife and waterfowl refuges;
- minor involvements with historic sites;
- independent bikeway or walkway construction projects; and
- projects that have a net benefit ⁽¹⁾.

Note: 1. The Programmatic 4(f) Evaluation for projects that have a net benefit is available at www.environment.fhwa.dot.gov/projdev/4fnetbenefits.htm.

Uses of Section 4(f) land covered by a Programmatic Section 4(f) Evaluation shall be documented and coordinated as specified in the applicable Programmatic Evaluation. Where Section 4(f) approval is given under a Programmatic Evaluation, a copy of the approval documentation should be included in the Project Development Report or environmental report for the action. Figure 20-3B presents the recommended format for the Cover Sheet (and approval documentation) for a Programmatic Section 4(f) Evaluation submittal. The recommended Cover Sheet format includes a paragraph that identifies which Programmatic Section 4(f) Evaluation is being used. This paragraph includes a space for entering the date on which the Programmatic Section 4(f) Evaluation was approved. For use of the Programmatic Section 4(f) Evaluations on minor involvements, the "issued on" date, indicated at the end of each, should be entered as the "approved on" date in the Cover Sheet paragraph. For use of the Programmatic Section 4(f) Evaluation on bikeway/walkway projects, enter May 23, 1977 in the Cover Sheet paragraph; the date that the Programmatic Section 4(f) Evaluation was originally approved and issued.

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*[Project Information
(e.g., FAP number, termini, location)]*

SECTION 4(f) APPROVAL

US Department of Transportation
Federal Highway Administration

The Federal Highway Administration (FHWA) has determined that this project meets all requirements for processing under the nationwide Programmatic Section 4(f) Evaluation for *[historic bridges; bikeways; publicly owned parks, recreational lands, or wildlife and waterfowl refuges; or historic sites]* approved on *[(date)]*. This determination is based on the attached documentation which has been independently evaluated by FHWA and determined to adequately and accurately discuss the Section 4(f) considerations on this project. Accordingly, FHWA gives Section 4(f) approval under the nationwide Section 4(f) Evaluation for *[(AlternativeX)]*, which uses land from *[(resource name)]*.

Date

For Federal Highway Administration

Note: Where brackets are used, select the proper evaluation or fill in the proper information.

**COVER SHEET FORMAT
(Programmatic Section 4(f) Evaluation)**

Figure 20-3B

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20-4 SECTION 6(F) REQUESTS**20-4.01 Section 6(f) Land Conversion Request****20-4.01(a) Introduction**

Special procedures must be followed when lands purchased and developed by using Land and Water Conservation (LAWCON) funds will be used for highway purposes. Section 20-4 discusses these procedures. Similar procedures may be required where lands are involved that have been improved or developed with funds under *the Urban Park and Recreation Recovery Act of 1978* § 1010, 16 U.S.C. § 2509 (Pub. L. 95-625, § 1010, 92 Stat. 3538 (1978)) or the *Illinois Open Land Trust Act*, 525 ILCS 33/1 *et seq.* Specific procedural requirements will be addressed on a case-by-case basis.

20-4.01(b) Legal Authority

16 USC 460I-8(f)(3), commonly known as Section 6(f) of the *Land and Water Conservation Fund Act of 1965*, Pub. L. 88-578, §6, 78 Stat. 897 (1964), requires that:

No property acquired or developed with assistance under this section shall, without the approval of the Secretary, be converted to other than public outdoor recreation uses. The Secretary shall approve such conversion only if he finds it to be in accordance with the then existing comprehensive statewide outdoor recreation plan and only upon such conditions as he deems necessary to assure the substitution of other recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location.

“Secretary” refers to the Secretary of the U.S. Department of Interior. The authority to approve Section 6(f) land conversions has been delegated to the Regional Directors of the National Park Service (NPS).

20-4.01(c) Applicability

Section 6(f) procedures must be followed for all projects, regardless of project type or funding source, which involve the taking of property acquired or developed with LAWCON funds.

20-4.01(d) Procedures

Use the following procedures when processing Section 6(f) land conversion requests:

1. Coordination. Early and ongoing coordination with the official having jurisdiction over the 6(f) land, IDNR, and the NPS Regional Director should be diligently pursued.
2. Report Requirements. When a project proposes use of land in which LAWCON funds have been involved in its purchase or development, Section 6(f) requires the approval of the Secretary of the Interior for the conversion of the land to other than public outdoor recreational use. Section 6(f) does not otherwise require a special report.

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3. Conversion Request. Requests to convert LAWCON-assisted properties in whole or in part to other than public outdoor recreational uses must be submitted through IDNR to the appropriate NPS Field Director in writing. NPS will consider the conversion request if the prerequisites described below have been met. As applicable, the LPA should submit a request for Section 6(f) land conversion approval to the IDNR Division of Grant Administration for submittal to the appropriate NPS Field Director. Formal review periods for conversion requests are not specified in the regulation. IDNR has advised that the typical time frame for NPS response to conversion requests is 60 to 90 days. The conversion request should include information to address each of the following points:
 - Alternatives. All practical alternatives to the proposed conversion have been evaluated.
 - Value. The fair market value of the property to be converted has been established and the property proposed for substitution is of at least equal fair market value as established by an approved appraisal (prepared according to uniform federal appraisal standards), excluding the value of structures or facilities that will not serve a recreational purpose.
 - Replacement Property. The property proposed for replacement is of reasonably equivalent usefulness and location as that being converted. Depending on the situation, and at the discretion of the NPS Field Director, the replacement property need not provide identical recreational experiences or be located at the same site, provided it is in a reasonably equivalent location. Generally, the replacement property should be administered by the same political jurisdiction as the converted property. For additional guidance on replacement property, see Section 26-3 of the *BDE Manual*.
4. Coordination. All necessary coordination with other federal agencies has been satisfactorily accomplished.
5. Environmental Review. The guidelines for environmental evaluation have been satisfactorily completed and considered by NPS during its review of the proposed 6(f) action. Where the proposed conversion arises from another federal action, final review of the LPA's proposal will not occur until the NPS Regional Office is assured that all environmental review requirements related to that other action have been met.
6. State Clearinghouse. If the proposed conversion and substitution constitute significant changes to the original LAWCON project, ensure that the State intergovernmental clearinghouse review procedures have been met.
7. Statewide Comprehensive Outdoor Recreation Plan (SCORP). Ensure the proposed conversion and substitution are consistent with SCORP and/or equivalent recreational plans.

20-5 HISTORIC PRESERVATION COMPLIANCE DOCUMENTATION**20-5.01 Introduction**

In the development of a Federally funded or regulated project, it is necessary to consider the effects of the undertaking on properties included in, or eligible for inclusion in, the National Register of Historic Places. Where these properties will be affected, the Advisory Council on Historic Preservation (ACHP) must be afforded a reasonable opportunity to comment on the undertaking prior to project approval.

20-5.02 Legal Authority

The following legal authority regulates or influences the policies and procedures for Section 106 documentation:

- 16 USC 470f, Section 106 of the *National Historic Preservation Act of 1966*, as amended.
- 16 USC 470h-2, Section 110(f) of the *National Historic Preservation Act of 1966*, as amended.
- Executive Order 11593, Protection and Enhancement of the Cultural Environment.

Appendix C in Part III “Environmental Procedures” of the *BDE Manual* briefly describes each of these.

20-5.03 Applicability

The procedures described in Section 20-5 apply to all Federally funded/regulated highway projects that may result in changes in the character, setting, or use of a historic property.

20-5.04 Policy

In the development of a proposed Federally funded or regulated project, appropriate measures must be taken to evaluate the undertaking’s effect on properties included in, or eligible for inclusion in the National Register of Historic Places. Where these properties will be affected, the Advisory Council on Historic Preservation must be given a reasonable opportunity to comment prior to project approval. Special efforts must be made to minimize harm to any National Historic Landmark that may be directly and adversely affected by a proposed Federally funded or regulated undertaking.

20-5.05 Definitions

The following definitions apply to historic preservation:

1. Area of Potential Effects. The geographic area or areas within which an undertaking may cause changes in the character or use of historic properties, if these properties exist.

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2. Council. The Advisory Council on Historic Preservation or a Council member or employee designated to act for the Council.
3. Historic Property. Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register. This term includes, for the purposes of these regulations, artifacts, records, and remains that are related to and located within these properties. The term "eligible for inclusion in the National Register" includes properties formally determined as such by the Secretary of the Interior and all other properties that meet National Register listing criteria.
4. Indian Tribe. The governing body of any Indian tribe, band, nation, or other group that is recognized as an Indian tribe by the Secretary of the Interior and for which the United States holds land in trust or restricted status for that entity or its members.
5. Interested Person. Those organizations and individuals that are concerned with the effects of an undertaking on historic properties.
6. Local Government. A county, township, municipality, or other general purpose political subdivision of a State.
7. National Historic Landmark. A historic property that the Secretary of the Interior has designated as a National Historic Landmark.
8. National Register. The National Register of Historic Places maintained by the Secretary of the Interior.
9. National Register Criteria. The criteria established by the Secretary of the Interior for use in evaluating the eligibility of properties for the National Register.
10. State Historic Preservation Officer (SHPO). The official appointed or designated pursuant to Section 101(b)(1) of the *National Historic Preservation Act* to administer the State historic preservation program or a representative designated to act for the SHPO. The SHPO for Illinois is the Director of the State Historic Preservation Agency, or their designee.
11. Undertaking. Any project, activity, or program that can result in changes in the character or use of historic properties, if any historic properties are located in the area of potential effects. The project, activity, or program must be under the direct or indirect jurisdiction of a Federal agency, or licensed or assisted by a Federal agency. Undertakings include new and continuing projects, activities, or programs and any of their elements not previously considered under Section 106.

20-5.06 Development

The following guidance reflects the assumption that FHWA, in most cases, will be the lead Federal agency for a project subject to the Section 106 requirements. If a different Federal agency is the lead (e.g., USACE for a local- or State-funded project requiring a Section 404 permit), that agency would fulfill the functions indicated for FHWA:

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1. Identification. Identify historic properties in the area of potential effects of a proposed highway undertaking as early as practical in the development of the project. Properties may be identified from listings of the National Register and eligible properties published by the Keeper of the National Register (e.g., in the Federal Register); from local (e.g., county, city) inventories of historic sites; through coordination with the State Historic Preservation Officer (SHPO) or local historic groups; through field investigations (e.g., conducted as part of the IDOT "Integrated Process for Environmental Surveys, Studies, and Associated Preliminary Coordination"); or for a list of historic bridges in Illinois, see IDOT's website.
2. No Sites Identified. If no historic properties are found, provide documentation to the SHPO. Ordinarily, the documentation will consist of the Environmental Survey Request form for the project on which the results of the survey will be indicated. Coordination of this information with the SHPO will be accomplished by BDE. A copy of the response from the SHPO, if any, will be returned to the district. Persons and parties known to be interested in the undertaking and its possible effects on historic properties should be notified of the finding. For some project types, agreements with the SHPO and the Federal Highway Administration permit BDE to issue an "in-house" clearance on historic properties without the need for field surveys or project-specific coordination with the SHPO. For these projects, the Cultural Resources form, from the Project Monitoring application (PMA) with the "Cleared for Design Approval" and "Cleared for Letting" date field completed, constitutes the necessary documentation of Section 106 compliance. A copy of the PMA screen will be sent to the LPA by the district and will be placed in the EA and/or PDR. The agreement also allows that no survey request needs to be submitted on some projects.
3. Potential Sites Identified. If sites, buildings, structures, or objects are identified in the area of potential effects of an undertaking for which the National Register eligibility status has not been determined, appropriate information must be coordinated with the SHPO and, as appropriate, the Keeper of the National Register (in the US Department of Interior) for a determination of eligibility. This coordination ordinarily will be accomplished by BDE. In most cases, the information needed for the eligibility determination will be obtained through the studies conducted in response to the submittal of the Environmental Survey Request form for the undertaking. Where additional information is needed, BDE may request the assistance of the LPA in obtaining specific items of information.
4. Determining Effect. For all historic properties in the area of potential effects of a highway undertaking, the effects of the undertaking must be assessed. This assessment will be based on the Criteria of Effect and Adverse Effect (see Section 26-5 of the *BDE Manual*, developed by the Advisory Council on Historic Preservation (ACHP)).
5. "No Effect" Finding. If it is determined that the undertaking will have no effect on historic properties, BDE will provide documentation of this finding, ordinarily a letter and the results of the Cultural Resources portion of the environmental survey, to the SHPO and to interested persons who have made their concerns known. Unless the SHPO objects within 30 days of receiving this notice, no further actions are required for Section 106 compliance. If the SHPO provides a written response concurring in the no-effect finding, the district will provide a copy to the LPA.

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6. Determining Adverse Effect. If an effect on a historic property is found, or if the SHPO objects to a no-effect finding, the effect must be evaluated under the Criteria of Adverse Effect; see Section 26-5 of the *BDE Manual*. In addition, the public and interested persons must be afforded notice of the opportunity to comment on any project affecting a site on or eligible for the National Register. LPAs may accomplish this notification as part of the announcements for public involvement activities or the public availability of environmental documents for comment, or through publication of a separate notice specifically for that purpose. The announcement or notice should include a statement to the effect that:

In accordance with the National Historic Preservation Act, the views of the public and interested persons are being sought regarding the effect of the project on [list the specific National Register or eligible property(ies) involved] which is included on [or eligible for inclusion on] the National Register of Historic Places.

This published notice will be in addition to any other direct contacts the LPAs may have with the public or interested persons to obtain their views regarding the project's effect on historic resources. Any views received in response to the notification should be considered and documented in the Section 106 compliance information.

7. Finding of No Adverse Effect. If the effect is not considered adverse under the Criteria of Adverse Effect, BDE will coordinate this finding with the SHPO. The following outcomes may occur:
- a. If, within 30 days, the SHPO concurs in the finding, BDE will notify ACHP, via the FHWA, and will provide summary documentation (i.e., the information that was coordinated with the SHPO) to support the finding.
 - b. If the SHPO does not concur in the finding, BDE will submit documentation of the Finding of No Adverse Effect to ACHP, via the FHWA, for a 30 day review period and will notify the SHPO.
 - c. If the ACHP does not object to the Finding of No Adverse Effect within 30 days of receipt of notice, or if ACHP objects but proposes changes that are accepted (by IDOT and FHWA), no further steps are required in the Section 106 process other than to comply with any agreement with the SHPO or ACHP concerning the undertaking.
 - d. If the ACHP objects to the Finding of No Adverse Effect or changes proposed by the ACHP, if any, are not accepted, then the effect will be considered adverse.

The purpose of Section 106 documentation is to provide sufficient information to explain how the Finding of No Adverse Effect was determined. The required documentation is as follows:

- a description of the undertaking including photographs, maps, and drawings, as necessary;
- a description of historic properties that may be affected by the undertaking;
- a description of the efforts used to identify historic properties;
- a statement of how and why the criteria of adverse effect were found inapplicable; and
- the views of the SHPO, affected local governments, Indian tribes, Federal agencies, and the public, if any were provided, and a description of the means employed to solicit those views.

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8. Adverse Effect Finding. If an adverse effect on historic properties is found, BDE will notify the ACHP, via the FHWA (except in cases where the ACHP has objected to a Finding of No Adverse Effect), and will initiate consultation in cooperation with the Central BLRS, the district, and the LPA to seek ways to avoid or reduce the effects on historic properties. The SHPO or IDOT/FHWA may request the ACHP to participate. The ACHP may participate in the consultation without this request. Interested persons will be invited to participate as consulting parties when they so request. Members of the public also shall have an opportunity to receive information and express their views. BDE will provide each of the consulting parties' documentation of the Finding of Adverse Effect.

The required documentation, provided by the LPA, for a finding of "Adverse Effect" is as follows:

- a description of the undertaking including photographs, maps, and drawings, as necessary;
 - a description of the efforts to identify historic properties;
 - a description of the affected historic properties, using materials already compiled during the evaluation of significance, as appropriate; and
 - a description of the undertaking's effects on historic properties.
9. Memorandum of Agreement. If IDOT/FHWA and the SHPO agree upon ways to avoid or reduce adverse effects, or agree to accept these effects, they must execute a Memorandum of Agreement (MOA). Ordinarily, BDE will prepare the MOA in consultation with the LPA, district, Central BLRS, FHWA, and SHPO. When the ACHP participates in the consultation, it will execute the MOA with the LPAs, IDOT/FHWA, and the SHPO. When the ACHP has not participated in consultation, BDE will submit, via the FHWA, the MOA, with appropriate documentation; see Section 26-5 of the *BDE Manual*. As appropriate, IDOT/FHWA, SHPO, and ACHP, if participating, may agree to invite other parties to concur in the Agreement.

When IDOT/FHWA submits an MOA and related documentation to the ACHP, the ACHP will have 30 days from receipt to review it. Before this review period ends, ACHP will:

- accept the MOA, which concludes the Section 106 process;
- advise IDOT/FHWA of changes to the MOA to make it acceptable; subsequent agreements by IDOT/FHWA, the SHPO, and ACHP conclude the Section 106 process; or
- decide to comment on the undertaking, in which case, the ACHP will provide its comments within 60 days of receiving the submittal from IDOT/FHWA, unless IDOT/FHWA agrees otherwise.

When an MOA is submitted for review, the documentation, in addition to that specified in the "Finding of Adverse Effect", will also include a description and evaluation of any proposed mitigation measures or alternatives that were considered to address the undertaking's effects and a summary of the views of the SHPO and any interested persons.

When an MOA becomes final, the undertaking must be implemented according to the terms of the Agreement. This evidences fulfillment of Section 106 responsibilities. Failure to implement the terms of an MOA requires that the undertaking be resubmitted to the ACHP for comment.

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10. Request for Comments. Where IDOT/FHWA and the SHPO cannot agree upon measures to avoid or reduce adverse effects nor agree to accept these effects, BDE will request, via the FHWA, the ACHP's comments and provide documentation for a Request for Comments When There is No Agreement; see Section 26-5 of the *BDE Manual*.

When the ACHP has commented on an undertaking, the comments will be considered by IDOT/FHWA in reaching a final decision on the proposed undertaking. BDE will report, via the FHWA, the decision to the ACHP prior to initiating the undertaking, if possible.
11. Discovery During Construction. Where historic properties are discovered during construction, the Central BLRS should be contacted for guidance concerning the specific actions necessary for compliance.
12. Documentation in Environmental Report. The results of compliance actions under Section 106 will be summarized in the environmental report for the action.

20-5.07 Section 106 Programmatic Agreement for Transportation Enhancement Projects

The Section 106 Programmatic Agreement is an expedited process for transportation enhancement activities funded with Surface Transportation Program (STP) funds that fall within the following categories:

- acquisition of scenic easements and scenic or historic sites;
- scenic or historic highway programs;
- landscaping and other scenic beautification;
- historic preservation;
- rehabilitation and operation of historic transportation buildings, structures, or facilities, including historic railroad facilities and canals;
- preservation of abandoned railway corridors including the conversion and use thereof for pedestrian or bicycle trails;
- control and removal of outdoor advertising;
- archeological planning and research;
- mitigation of water pollution due to highway runoff; and
- facilities for pedestrians and bicycles.

The guidance provided in Section 20-5.06 remains the same with the exception of the "No Effect Finding" and "Finding of No Adverse Effect" procedures. For both steps, BDE will provide a written determination of the finding to the SHPO. The SHPO will provide written concurrence or comments within 15 days. If the district and the SHPO agree on the finding, BDE will document that finding, which will be available for public inspection, and proceed with the activity without further review by the ACHP.

The Section 106 Programmatic Agreement for Enhancement Projects can be obtained through the Central BLRS.

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20-5.08 Documentation Requirements

The following discussion stipulates the documentation required for specific findings, agreements, or requests for comments in the Section 106 compliance process. For archaeological resources, BDE ordinarily will prepare the Section 106 compliance documentation, in cooperation with the LPA, Central BLRS, district, and the FHWA. For historic or architectural resources, the LPA ordinarily will prepare the documentation. See Section 20-5.06 for the documentation requirements.

20-5.09 Coordination

Coordination is conducted by BDE to comply with Section 106. Coordination primarily involves the FHWA, SHPO, the Keeper of the National Register, and ACHP. However, in the identification of historic properties and the evaluation of the effects of proposed undertakings on these properties, careful consideration should be given to information and views provided by contacts with:

- interested and affected persons;
- local governments;
- Indian tribes;
- public and private organizations; and
- applicants for or holders of grants, permits, or licenses and owners of affected lands.

When an adverse effect on historic properties is involved, these parties must be invited to participate in the Section 106 consultation process, if they request to be so involved.

20-5.10 Historic Bridge Memorandum of Understanding

For information on IDOT's Memorandum of Understanding with the FHWA, see Section 10-1.06.

20-6 NOISE ANALYSES

20-6.01 Introduction

In the development of a Federally funded project, it may be necessary to undertake special technical analyses to identify and evaluate the potential noise impacts that the project will involve. This topic prescribes procedures for these analyses, noise abatement measures and related coordination, and the noise abatement criteria prescribed by Federal regulations.

20-6.02 Complementary Technical Manual

The IDOT Highway Traffic Noise Assessment Manual (Manual) provides technical information and technical procedures associated with the provisions of this topic. The Manual contents will comply with the procedures described herein.

20-6.03 Legal Authority

The following legal authority regulates or influences the policies and procedures for noise analyses:

- 42 USC 4901-4918, commonly known as the *Noise Control Act of 1972* (Public Law 92-574).
- 23 USC 109(h) and (i), which are amendments to the *Federal-aid Highway Act of 1970* (Public Laws 93-87 and 91-605).
- 42 USC 4331 and 4332, which are portions of the *National Environmental Policy Act of 1969* (Public Law 91-190).
- 23 CFR Part 772 "Procedures for Abatement of Highway Traffic Noise and Construction Noise."
- "Highway Traffic Noise: Analysis and Abatement Guidance," by the US Department of Transportation, Federal Highway Administration June 2010, as revised January 2011.

20-6.04 Policy

Special efforts must be made in the development of a project to comply with Federal, State, and local requirements for noise control, to consult with appropriate officials to obtain the views of the affected community regarding noise impacts and abatement measures, and to mitigate highway-related noise impacts, where reasonable and feasible. The reasonableness evaluation for noise abatement will include the solicitation of viewpoints from the benefited receptors.

For detailed information, see the "Highway Traffic Noise Analysis and Abatement — Policy and Guidance," by the US Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch, Washington D.C., June 1995.

20-6.05 Definitions

The following definitions apply to noise analyses:

1. Existing Noise Levels. The worst hourly noise level resulting from the combination of natural and mechanical sources and human activity usually present in a particular area.
2. Facility or Existing Highway. Any road or street on the highway system that falls under the jurisdiction of IDOT, county, road district, or municipality.
3. Noise Barrier. A physical obstruction (i.e. stand alone noise walls, noise berms (earth or other material), and combination berm/wall systems) that is constructed between the highway noise source and the noise sensitive receptor(s) that lowers the noise level at the receptor location.
4. Receptor. A discrete or representative location of a common noise environment(s), for any of the land uses listed in Figure 20-6A.
5. Residence. A dwelling unit. Either a single family residence or each dwelling unit in a multifamily dwelling.
6. Type I Project.
 - The construction of a highway on new location; or,
 - The physical alteration of an existing highway where there is either:
 - *Substantial Horizontal Alteration*. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition in the future build condition; or
 - *Substantial Vertical Alteration*. A project that removes shielding, therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,
 - The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a HOV lane, Highway-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,
 - The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
 - The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,
 - Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or,
 - The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.
7. Type II Project. A Federal or Federal-aid highway project for noise abatement on an existing highway.
8. Type III Project. A Federal or Federal-aid highway project that does not meet the classifications of a Type I or Type II project. Type III projects do not require a noise analysis.

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9. Undeveloped Lands. Those tracts of land or portions thereof that do not contain improvements or activities devoted to frequent human habitation or use (including low-density recreational use) and for which no such improvements or activities are permitted.
10. Worst Hourly Traffic Noise. The noise level resulting from the highest hourly volume a facility can handle while maintaining stable flow. This traffic volume will be either the design hourly volume or the maximum volume that can be accommodated under Level of Service C (i.e., where high traffic volumes begin to restrict speed and drivers' maneuverability).

20-6.06 Applicability

The noise analysis procedures described in this Section applies to all Type I and Type II projects; see Section 20-6.05 for definitions. If a project is determined to be a Type I project, then the entire project area as defined in the NEPA environmental document is a Type I project. For further information on noise analysis procedures and abatement measures, see Section 26-6 of the *BDE Manual*.

20-6.07 Procedures

The *IDOT Traffic Noise and Vibration Manual* provides technical information and technical procedures associated with the provisions of this topic. Its contents should be considered in complying with these procedures.

20-6.07(a) Analysis and Reporting

The analysis and reporting of noise impacts must be accomplished in accordance with the following:

1. Traffic Noise Analysis. In the development of proposed projects, expected traffic noise impacts must be determined and analyzed, and the overall benefits that can be achieved by noise abatement measures to mitigate these impacts will be determined, giving weight to any adverse social, economic, and environmental effects. The level of analysis may vary from simple calculations for rural and low-volume highways to extensive analysis for high-volume, controlled-access highways in urban areas. Noise abatement criteria are listed in Figure 20-6A.

The traffic noise analysis shall be conducted in the following manner:

- Identify existing activities, developed areas, and undeveloped lands which may be affected by noise from the highway. Land uses shall be characterized based on the activity categories and descriptions listed in Figure 20-6A. Undeveloped lands permitted for development by the date of public knowledge shall be evaluated for traffic noise impacts and noise abatement (if impacts are identified) based on the permitted land use description.

- Predict the traffic noise levels for each reasonable alternative carried forward under detailed study (including the “no-action” alternative) using the most current version of the FHWA-approved Traffic Noise Model (TNM) which is described in “FHWA Traffic Noise Model” Report No. FHWA-PD-96-010, or any other model determined by the FHWA to be consistent with the methodology of the FHWA TNM. The pavement type in TNM shall be the average pavement type unless a different pavement type has been approved by FHWA.
 - When determining traffic noise impacts, primary consideration shall be given to exterior areas where frequent human use occurs *for Activity Categories A, B, C, and E*. Traffic noise impacts for land uses within Activity Category D shall be predicted for interior areas only if no exterior use areas are identified. See the *IDOT Highway Traffic Noise Assessment Manual* for further guidance.
 - Determine the existing noise levels using field measurements, modeling, or both, using the most current version of the FHWA-approved TNM or any other model determined by the FHWA to be consistent with the methodology of the FHWA TNM. Modeling of existing conditions may not be appropriate when the project involves construction of a new roadway in a new location where there is no existing traffic noise contribution. Predicted noise levels shall be validated through comparison between measured and predicted noise levels. The $L_{eq}(h)$ noise metric shall be used to quantify the measurement of both existing and predicted noise levels.
2. Noise Abatement. See Section 26-6.05(d) of the BDE Manual for noise abatement measures.
3. Construction Noise. The following general steps for addressing construction noise will be performed for all Type I and Type II projects:
- Identify land uses or activities that may be affected by noise from construction of the project. This identification must be performed during the project development studies.
 - Determine the measures recommended for inclusion in the contract plans and specifications to minimize or eliminate adverse construction noise impacts on the community. This determination includes a weighing of the benefits to be achieved and the overall adverse social, economic, and environmental effects and the costs of the abatement measures.
 - Incorporate the recommended abatement measures into the contract plans and specifications.
- See Section 26-6.08 of the BDE Manual for additional guidance on construction noise.
4. Documentation in Reports. Although there may be instances in which a noise analysis is conducted independent of environmental documentation for a highway project (e.g., for Type II noise abatement projects), the analysis typically is conducted concurrently with the development of an EIS, EA, or other environmental report (or Project Development Report, where applicable). It is important that appropriate information from the technical noise study be made a part of the environmental documentation. Therefore, careful planning should be undertaken to ensure that the technical study reaches appropriate milestones in time to incorporate summaries of the noise analysis results into the environmental documentation for circulation and comments, as appropriate. See Section 26-6.09 of the BDE Manual for further guidance.

The technical report should be reviewed by the district or be submitted by the district to the Central BLRS so it can be forwarded to BDE for review.

20-6.07(b) Coordination

Coordination with Metropolitan Planning Organizations (MPOs) and with local officials (within whose jurisdiction the highway project is located) will be undertaken for all Type I projects. The LPA will provide the following information to these organizations:

- approximate generalized future noise levels (for various distances from the highway improvement) for both developed and undeveloped lands or properties in the immediate vicinity of the project, and
- information that may be useful to local communities to protect future land development from becoming incompatible with anticipated highway noise levels.
- Compare the predicted design year build traffic noise levels based on traffic characteristics that yield the worse traffic noise impact for the preferred alternative, or for each alternative under detailed study, with the existing noise levels and with the noise abatement criteria (see Figure 20-6A). This comparison shall also include predicted traffic noise levels for the “no-action” alternative in the design year. Such information shall be used primarily to describe the noise levels of proposed highway improvements in contrast with noise levels likely to be reached in the same area if no highway improvement is undertaken. Noise impacts are defined when the predicted traffic noise levels for the design build year approach (defined by the Department as “within 1 decibel of”) or exceed the Noise Abatement Criteria provided in Figure 20-6A, or when the predicted traffic noise levels for the design year are substantially higher (defined by the Department as “more than 14 decibels greater”) than the existing noise levels.
- Examine and evaluate noise abatement measures (see Section 26.05(d) of the BDE Manual) for existing activities, developed lands, and undeveloped lands for which development is permitted where traffic noise impacts have been identified. Before project plans and specifications are approved, it must be determined that noise abatement measures determined to be feasible and reasonable have been incorporated. Because decisions on noise abatement are prerequisites to determining environmental impacts, and because these impacts influence decisions on adoption of a highway location, it is important that a preliminary determination be made of likely noise abatement measures.
- Design year build noise levels shall be predicted for undeveloped lands for which there will be no development permitted by the date of public knowledge. The results shall be documented in the NEPA environmental documents and noise analysis documents. The information presented may include a prediction of noise contours or a prediction of distances from the highway for which impacts would likely occur. A noise abatement evaluation is not warranted for these undeveloped lands provided that development is not permitted by the date of public knowledge. See Section 26-6.05(e) of the BDE Manual for additional information to be provided to local officials for undeveloped lands.

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Activity Category	L _{eq} (h)	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67	Exterior	Residential.
C	67	Exterior	Active sports areas, amphitheatres, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	---	---	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	---	---	Undeveloped lands that are not permitted.

*Note: The Noise abatement Criteria are noise impact thresholds for considering abatement. (Abatement must be considered when predicted traffic noise levels for the design year approach (i.e., within 1 decibel of) or exceed the noise abatement criteria, or when the predicted traffic noise levels are substantially higher (i.e., more than 14 decibels greater) than the existing noise level.) The Noise Abatement Criteria are **not** attenuated design criteria or targets. The goal of noise abatement measures is to achieve the feasibility noise reduction criteria and the noise reduction design goal. The reductions may or may not result in design year noise levels at or below the Noise Abatement Criteria.*

**NOISE ABATEMENT CRITERIA
(Hourly Sound Level - decibels (dBA))**

Figure 20-6A

20-7 FLOOD PLAIN FINDING (EXECUTIVE ORDER 11988)**20-7.01 Introduction**

In the development of a Federally funded/regulated project, Executive Order 11988 imposes special requirements when the project will entail a significant flood plain encroachment. The following discussion explains the Executive Order 11988 requirements. These are in addition to IDNR Office of Water Resources flood plain permit requirements discussed in Chapter 7 and the special hydraulic analyses associated with determining structure openings and elevations for facilities located in flood plains discussed in Section 10-2.03.

A project that will involve a significant flood plain encroachment, as defined under the Executive Order 11988 requirements, will require the preparation of an EA or EIS.

20-7.02 Legal Authority

The following legal authority regulates or influences the policies and procedures for flood plains:

- Executive Order 11988, Flood Plain Management.
- US Water Resources Council's Flood Plain Management Guidelines for Implementing Executive Order 11988.
- US Department of Transportation Order 5650.2, Protection and Management of Flood Plains.
- Federal Highway Administration regulations on Location and Hydraulic Design of Encroachments on Flood Plains (23 CFR 650A).
- Title 92 IAC 708, implementing Sections 23, 29, and 30 of the *Rivers, Lakes, and Streams Act*, 615 ILCS 5/23, 29a, and 30.

See Appendix C of Part III "Environmental Procedures" of the *BDE Manual* for more information.

20-7.03 Policy

In the development of a Federally funded/regulated project, special efforts must be made to:

- encourage a broad and unified effort to prevent uneconomic, hazardous, or incompatible use and development of flood plains;
- avoid longitudinal encroachments, where practical;
- avoid significant encroachments, where practical;
- minimize impacts of actions that adversely affect base flood plains;
- restore and preserve the natural and beneficial flood plain values that are adversely impacted by LPA actions;
- avoid support of incompatible flood plain development; and
- be consistent with the intent of the Standards and Criteria of the National Flood Insurance Program, where appropriate.

20-7.04 Applicability

The following Sections discuss the procedures that apply to all Federally funded/regulated projects that will entail encroachment or which otherwise will affect base flood plains, except for repairs made with emergency funds during or immediately following a disaster. The assessment of flood plain encroachments should be incorporated into the development and analysis of design alternatives so that flood plain impacts will not be considered in isolation from other social, economic, environmental, and engineering considerations.

20-7.05 Definitions

The following definitions apply to floodplain findings:

1. Action. Any highway construction, reconstruction, rehabilitation, repair, or improvement undertaken for Federally funded/regulated projects.
2. Base Flood. The flood or tide having a 1% chance of being exceeded in any given year.
3. Base Flood Plain. The area subject to flooding by the base flood.
4. Encroachment. An action within the limits of the base flood plain. Generally, any increase in the 100-year-water-surface elevation produced by a longitudinal encroachment on a National Flood Insurance Program (NFIP) flood plain should not exceed the 1 ft (300 mm) allowed by the Federal NFIP standards and must be supported by the design risk assessment.
5. Longitudinal Encroachment. An action that is parallel to the channel and within the limits of the base flood plain.
6. Minimize. To reduce to the smallest practical amount or degree.
7. Natural and Beneficial Flood Plain Values. These include, but are not limited to fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharge.
8. Practical. Capable of being done within reasonable natural, social, or economic constraints.
9. Preserve. To avoid modification to the functions of the natural flood plain environment or to maintain it as closely as practical in its natural state.
10. Regulatory Floodway. The flood plain area that is reserved in an open manner by Federal, State, or local requirements (i.e., unconfined or unobstructed either horizontally or vertically) to provide for the discharge of the base flood so that the cumulative increase in water surface elevation is no more than a designated amount (not to exceed 1 ft (300 mm)) as established by the Federal Emergency Management Agency (FEMA) for Administering the National Flood Insurance Program.
11. Restore. To re-establish a setting or environment in which the functions of the natural and beneficial flood plain values adversely impacted by the highway agency action can again operate.

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12. Risk. The consequences associated with the probability of flooding attributable to an encroachment. It will include the potential for property loss and hazard to life during the service life of the highway.
13. Significant Encroachment. A highway encroachment and any direct support of likely base flood plain development that would involve one or more of the following construction- or flood-related impacts:
 - a significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route,
 - a significant risk, or
 - a significant adverse impact on natural and beneficial flood plain values.
14. Support Base Flood Plain Development. To encourage, allow, serve, or otherwise facilitate additional base flood plain development. Direct support results from an encroachment; indirect support results from an action out of the base flood plain.
15. Transverse Encroachments. The network of the natural surface drainage system does not allow any alternative to transverse encroachments by a highway program. Therefore, it is essential that the design selected for transverse encroachments be supported by analysis of design alternatives with consideration given to capital costs, risk, and other site-specific factors. "Supported" means that the design is either shown to be cost-effective or justified on some other engineering basis. The analysis used to develop this support is referred to as a design risk assessment (see Section 20-7.06(b)). Justification for the structure size selected for design must be documented in a Hydraulic Design Study Report and retained in the project file.

20-7.06 Procedures

The *IDOT Water Quality Manual* provides additional information and procedures to assist in fulfilling the requirements herein. The *IDOT Drainage Manual* discusses hydraulic analyses for flood plain encroachments.

20-7.06(a) Assessment and Documentation of Flood Plain Encroachments

When considering flood plain encroachments, projects are divided into six categories. This Section provides guidance on the appropriate assessment and documentation for the different categories of work. The Central BLRS or FHWA may require additional information on individual projects prior to environmental or design approval.

Assessments of flood plain encroachments may range from inspections resulting in certifying statements, as suggested in Categories 1 and 2, to a lengthy detailed analysis, as suggested in Category 6. Different levels of analysis have been established for different categories of projects depending upon their size, scope, and impact upon the flood plain. Each of the categories is based upon certain assumptions. If these assumptions are not totally accurate, the level of analysis should be modified so that sufficient information is contained to support the conclusions and recommendations.

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A single highway improvement project may involve two or more of the categories listed below. When this occurs, it is necessary to include information in the Project Development Report (PDR) or environmental document to address each of the categories that may be involved. Each drainage structure on the proposed project must be addressed in the report and a determination made on the significance of any encroachments. If a given situation does not fit a category, these guidelines should be used as a basis for developing a reasonable approach to fit that situation.

The categories are the following:

Category 1. Projects that will not involve any work below the 100 year flood elevation. When the 100 year flood elevation is available from existing information without additional detailed analysis and it can be determined that certain projects (e.g., resurfacing, widening and resurfacing, bridge deck repairs) will not involve any work below the 100 year flood elevation, it should be sufficient to state in the PDR:

Although this project involves work within the horizontal limits of the 100 year flood plain, no work is being performed below the 100 year flood elevation and as a result this project does not encroach upon the base flood plain.

Category 2. Projects that do not involve the replacement or modification of any drainage structures. Projects in this Category must be on an existing alignment. They may involve a change in the profile grade elevation of a magnitude normally associated with resurfacing. If a profile change is proposed, an inspection of the flood plain is required to determine if an increase will result in a significant change in damage or risks. It is assumed that there are no known drainage problems within the limits of the project or that other factors were considered to override the need for concurrent drainage improvements. The following information should be included in the PDR:

This project will not involve the replacement or modification of any existing drainage structures or the addition of any new drainage structures. As a result, this project will not affect flood heights or flood plain limits. This project will not result in any new, or increase the adverse effects of any existing, environmental impacts; it will not increase flood risks or damage; and it will not adversely affect existing emergency service or emergency evacuation routes; therefore, it has been determined that this encroachment is not significant.

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Category 3. Projects involving modification to existing drainage structures. Projects within this Category will not involve the replacement of any existing drainage structures or the construction of any new drainage structures. It is intended to apply only to those projects that modify existing structures (e.g., extending crossroad culverts, adding headwalls, extending existing bridge piers). Some projects involving modifications of existing drainage structures will affect flood heights and flood limits; however, these effects should be minimal. Some analysis may be necessary to support statements concerning the insignificance of the modifications. For example, if a number of culverts will be lengthened, a typical calculation addressing the worst-case situation should be included to demonstrate the magnitude of the expected changes in backwater elevations. In addition to calculations relative to changes in capacity of existing structures, an inspection of the flood plains should be made to determine if any expected increases in flood heights could result in a significant damage not expected under current conditions. An example of this might be an existing levee that will be overtopped by even a small increase in flood heights.

A statement similar to the following, together with a summary of appropriate analyses required to support conclusions therein, should be included in the PDR:

The modifications to drainage structures included in this project will result in an insignificant change in their capacity to carry floodwater. This change will cause a minimal increase in flood heights and flood limits. These minimal increases will not result in any significant adverse impacts on the natural and beneficial flood plain values; they will not result in any significant change in flood risks or damage; and they do not have significant potential for interruption or termination of emergency service or emergency evacuation routes; therefore, it has been determined that this encroachment is not significant.

Category 4. Projects involving replacement of existing drainage structures on existing alignment. This Category does not include those replacement projects that reduce the effective waterway opening from that which currently exists. In addition, there should be no record of drainage problems and no unresolved drainage complaints from residents in the area. The site should be inspected to determine if there are any existing conditions that would affect the usual design of the replacement structure. If these conditions are satisfied, a discussion similar to the following should be included in the PDR:

The proposed structure will have an effective waterway opening equal to or greater than the existing structure, and backwater surface elevations are not expected to increase. As a result, there will be no significant adverse impacts on natural and beneficial flood plain values; there will be no significant change in flood risks; and there will be no significant increase in potential for interruption or termination of emergency service or emergency evacuation routes; therefore, it has been determined that this encroachment is not significant.

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When downstream flood heights are affected, the area should be inspected to determine if the anticipated increase could result in a significant impact. If no significant impacts are expected, that information should be added to the discussion in Category 4. If significant impacts are expected, the project should follow the guidelines in Category 5.

Category 5: Projects on new alignment and projects with potentially significant increases in 100 year flood water surface elevations. Projects in this Category are expected to require a hydraulic analysis to determine pipe size or waterway opening. If other factors cause consideration of a significant change to the pipe size or waterway opening of an existing structure, an analysis will be necessary to determine the resultant change in flood heights upstream and downstream, when appropriate. In either case, the expected change in water surface elevations must be calculated to first determine the appropriate level of assessment and then to make the assessment.

If the hydraulic analysis results in a finding that flood water surface elevations will not change, the PDR should contain a discussion similar to that suggested in Category 3. If a new alignment is involved, it will be necessary to discuss whether or not it is likely to support incompatible flood plain development. If support is anticipated, alternatives to that support must be discussed. New alignments will also require a determination of whether the roadway will be overtopped more than once every 100 years. If yes, the frequency and its impact should be discussed in the PDR.

If the hydraulic analysis results in a finding that flood water surface elevations will increase either upstream or downstream, the area affected must be inspected to determine the potential for significant increases in flood impacts. The inspection should identify flood receptors that may experience significant adverse impacts as a result of the anticipated increase in flood heights. The impact on those receptors should be assessed and a summary of the types of receptors likely to be affected, and the degree of impact should be included in any PDR. Consultation with natural resource and flood plain management agencies should be initiated when necessary to adequately assess flood impacts. If significant adverse impacts are not predicted, the summary should be followed by a discussion similar to that suggested in the preceding paragraph and a determination that the encroachment is not significant.

If the assessment of impacts results in a prediction of significant adverse impacts on natural and beneficial flood plain values, significant increases in flood risks, or a significant increase in potential for interruption or termination of a transportation facility that is needed for emergency service or emergency evacuation routes, the encroachment should be considered significant and the guidelines in Category 6 followed.

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When new alignments are classified as longitudinal encroachments, they should be analyzed to determine the resultant increase in flood heights, if any. The impact of the increase should be assessed in accordance with the preceding two paragraphs. In addition, the PDR and accompanying environmental documentation should evaluate and discuss alternatives to the longitudinal encroachment on the flood plain.

Category 6: Significant Encroachments. Any proposed project that encroaches on a flood plain, either transversely or longitudinally, and which is predicted to result in a significant adverse impact on natural and beneficial flood plain values, a significant increase in flood risk, or a significant increase in potential for interruption or termination of emergency service or emergency evacuation routes, must be accompanied by a complete hydraulic analysis, a risk analysis, a flood plain study (Section 20-7.06(b)), and a flood plain finding (Section 20-7.06(c)). When it is determined that encroachments are significant, an EIS or EA must be prepared. When significant transverse encroachments are proposed, the accompanying reports must include consideration of alternatives that do not include such encroachments. No significant encroachment will be approved unless there is no practical alternative.

The hydraulic analysis must provide the following information that must be summarized in the PDR:

- a. For a 100-year flood frequency:
 - discharge,
 - backwater, and
 - water surface elevation before and after proposed project.
- b. For the design frequency (if other than 100 years):
 - frequency,
 - discharge,
 - backwater,
 - water surface elevation before and after proposed project, and
 - waterway opening.
- c. The frequency with which the highway is likely to be overtopped in 500 years or less. If over 500 years, it should be so stated. The location of the overtopping should be indicated.

The risk analysis should include an economic comparison of design alternatives using expected total costs (i.e., construction costs plus risk and damage costs) to determine the alternative with the least total expected cost to the public. The comparison includes probable flood-related costs during the service life of the facility for highway operation, maintenance, and repair; for highway-aggravated flood damage to other property; and for additional or interrupted highway travel.

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The flood plain study will require an inspection of the flood plain to determine the increase in the number of flood receptors and the increase in the damage to present flood receptors that will result from the expected increase in flood heights. Consultation with natural resource and flood plain management agencies should be initiated where necessary to adequately assess encroachments. Following the inspection and consultation, the flood plains subsection of the appropriate environmental report should be prepared.

When significant encroachments are under consideration, public involvement notices published in the news media must indicate that encroachments are being considered. Identify all encroachments during presentations at public hearings or meetings.

20-7.06(b) Design Risk Assessment

Justification or "support" is achieved through the design risk process. The degree of support is to be commensurate with the sensitivity of each site, and will range from conducting an economic analysis to simply describing the constraint(s) that justifies the design.

An economic analysis is a monetary exercise that determines whether a proposed hydraulic structure is cost-effective by demonstrating that an appropriate balance exists between the capital costs and the risk costs attributable to the encroachment. This method of support should be used to the extent that existing risk is quantifiable. Risk is defined as the consequences associated with the probability of flooding attributable to an encroachment. It includes the potential for property loss and hazard to life during the design life of the highway.

An economic analysis demonstrating the cost-effectiveness of a design should include consideration for both the design frequency and the 100 year frequency. In some cases, even a lower frequency occurrence may have significant risk costs.

There are many projects where the optimum design is controlled by obvious economic, environmental, or physical constraints. In these situations, a description of the constraint with a statement explaining how the constraint justifies the design will be sufficient support for the design risk assessment. Some examples of constraints include:

- rehabilitation of existing structure (including superstructure replacement, deck replacement or repairs, widenings, and culvert extensions);
- extensive development adjacent to the flood plain;
- reservoir and dam crossing;
- channel stability problems;
- supercritical flow;
- roadway overtopping;
- minimum opening that spans the channel;
- smallest standard bridge design that does not exceed acceptable backwater;
- major ice or debris problems;
- flood control projects;

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- topography (e.g., deep ravine);
- geometrics (e.g., navigation clearances);
- foundation problems;
- multiple-use structure (e.g., combination stream and grade separation structure, cattle pass); and
- environmental commitments (e.g., threat to endangered species, encroachment on historic sites, parks, recreation areas, wildlife and waterfowl refuges).

20-7.06(c) Flood Plain Studies

Special technical studies assessing the effect of any encroachment and determining the practicability of alternatives to significant encroachments and longitudinal encroachments, when applicable should be undertaken for all projects. The following should be considered when preparing these studies:

1. NFIP Maps. Use National Flood Insurance Program (NFIP) maps, if available, and other information developed by IDOT and/or local, State, or Federal water resources and flood plain management agencies to determine whether a highway location alternative will include an encroachment.
2. EO 11988. The intent of Executive Order 11988 can be satisfied for many actions without documenting the exact flood plain limits. The required determination of encroachments can be accomplished without detailed study.
3. Alternatives. Flood plain studies include evaluation and discussion of the practicability of alternatives to any longitudinal encroachments or to any significant encroachments or any support of incompatible flood plain development.
4. Scope of Discussion. Flood plain studies include a discussion of the following items, commensurate with the significance of the risk or environmental impact, for all alternatives containing encroachments, and for those actions that would support base flood plain development:
 - the risks (e.g., flooding risk) associated with implementation of the action;
 - the impacts on natural and beneficial flood plain values;
 - the support of probable incompatible flood plain development;
 - the measures to minimize flood plain impacts associated with the action; and
 - the measures to restore and preserve the natural and beneficial flood plain values impacted by the action.
5. Documentation. Summarize the flood plain studies in the project's Environmental Impact Statement (EIS), Environmental Assessment (EA), or Project Development Report. No documentation is needed for a Group I Categorical Exclusion.

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20-7.06(d) Flood Plain Finding

A proposed action that includes a significant encroachment will not be approved unless the FHWA finds that the proposed significant encroachment is the only practical alternative. This finding is included in the recommendation for a FONSI or in a special subsection entitled "Only Practical Alternative Finding" within the Final EIS. This finding must be supported by the following information:

- a reference to Executive Order 11988 and 23 CFR 650, Subpart A;
- the reasons why the proposed action must be located in the flood plain;
- the alternatives considered and why they were not practical; and
- a statement indicating whether the action conforms to applicable State or local flood plain protection standards.

This finding must be included in the environmental report and forwarded to the appropriate State and local clearinghouses. The clearinghouse copies may be included in the appendix of the regular design stage contact.

20-7.06(e) Coordination

Local, State, and Federal water resources and flood plain management agencies, including the IDNR Office of Water Resources (OWR), should be consulted to determine if the proposed highway action is consistent with existing watershed and flood plain management programs, and to obtain current information on development and proposed actions in the affected watersheds.

20-8 WETLAND ANALYSES AND FINDINGS**20-8.01 Legal Authority**

Federal Executive Order 11990 applies special requirements for addressing the impacts of Federal projects on wetlands. Wetlands also are subject to regulation under the *Clean Water Act* (33 USC 1251-1376) as a part of the Section 404 permit process and the Section 401 Water Quality Certification requirements (33 CFR Parts 320 through 330). In addition, the Illinois *Interagency Wetland Policy Act of 1989* (20 ILCS 830) and the implementing rules for the Act (17 IAC 1090) address State policy for wetlands.

20-8.02 General

For Federal, State, and Motor Fuel Tax (MFT) funded projects and any locally funded project that requires IDOT review and approval, the submission of the Environmental Survey Request (ESR) will initiate the identification and delineation process for wetlands by BDE at no cost to the LPA. The results will be sent to the LPA upon completion of the delineation by BDE. After the wetlands have been delineated in the project vicinity, the LPA will be required to prepare the Wetland Impact Evaluation form in accordance with Section 20-8.05. The LPA also has the option of having the delineation performed by a consultant pre-qualified by the Department. In all cases, at the time of submission of the ESR, it should be noted on the ESR whether the LPA or BDE will be responsible for performing the delineation.

20-8.03 Definitions**20-8.03(a) Definitions**

The following definitions apply:

1. Adverse Impact. Any land management activity, construction, or related activity that directly or indirectly reduces the size of a wetland or impairs a wetland's functional value or impairs a wetland's functional value or the hydrologic characteristics of a wetland
2. Compensation Ratios. This refers to replacement area, quantified wetland functions, or dollar value when compared to the wetland area that is adversely impacted. The procedure for computing wetland compensation requirements is to multiply the appropriate wetland compensation ratio by the unit of compensation.
3. Floristic Quality Index. An index derived from floristic inventory data that is considered in determining mitigation ratios for wetland compensation, in accordance with the provisions of 17 Ill. Adm. Code 1090. The FQI is calculated and identified on the INHS wetland delineations. In general, an index score below 10 suggests a site of low natural quality; below 5, a highly disturbed site. An FQI value of 20 or more suggests that a site has evidence of native character and may be considered an environmental asset.
4. Hydrologic Unit. The drainage basin of a river or a stream as identified in Figure 20-8A
5. Mitigation Bank. A site where wetlands and/or natural habitats are restored, created, enhanced, or preserved, expressly for the purpose of providing compensatory mitigation in advance of authorized impacts to similar type resources.

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6. National Wetlands Inventory. A mapping program administered by the US Fish and Wildlife Service (USFWS) for identifying the locations of wetlands and deepwater habitats. Quadrangle-based maps are available for Illinois that include Riverine (streams), Lacustrine (lakes), and Palustrine (wetland) systems.
7. Off-Site. A wetland compensation area located within the same Hydrologic Unit boundary, but more than 1 mile (1.6 kilometers) from the proposed project limits for which the wetland compensation is required.
8. On-Site. When a wetland compensation area is located within the same Hydrologic Unit boundary, as shown in Figure 20-8A, and within 1 mile (1.6 kilometer) of the proposed project limits for which the wetland compensation is required.
9. Out-of-Basin. When a wetland compensation area is located outside the Hydrologic Unit boundary that includes the site of the proposed project for which the wetland compensation is required.
10. Programmatic Review Actions. Programmatic review actions involve impacts to wetlands where construction is within the existing right-of-way or in new right-of-way that is contiguous to the existing right-of-way. For projects that qualify as programmatic review actions, project-specific coordination with IDNR for wetland compliance will generally not be required. In these cases, BDE will determine replacement ratios, approve any compensation plans, and coordinate with IDNR, as necessary. The LPA is responsible for maintaining complete files on all actions processed under this programmatic procedure. These files will be made available for audit upon request.
11. Replacement Area. The area of wetland compensation that is required. It is computed by multiplying the wetland area that is adversely impacted by the appropriate compensation ratio.
12. Significant Alteration. An adverse wetland impact that does not meet the criteria to be defined as a programmatic action and that causes either:
 - the alteration of pre-existing hydrology or soils of 0.5 acre (0.2 hectare) or less of a wetland for more than 12 months. This includes, but is not limited to, the placement of dredge or fill material into a wetland, the drainage of a wetland, filling in of a wetland through sedimentation, etc. or
 - the removal or loss of more than 0.5 acre (0.2 hectare) but less than 2 acres (0.8 hectare) of wetland vegetation but that does not alter the pre-existing hydrology of the wetland for a period of more than 12 months (a temporary impact).
13. Standard Review Action. Involves projects with unavoidable adverse wetlands impacts that do not qualify as programmatic review actions. Coordination will be required with IDNR on a project-by-project basis.
14. Value. A unit of measure (i.e., acres (hectares), wetland functions, or dollars) that is multiplied by the appropriate wetland compensation ratio to determine the amount of wetland compensation required.

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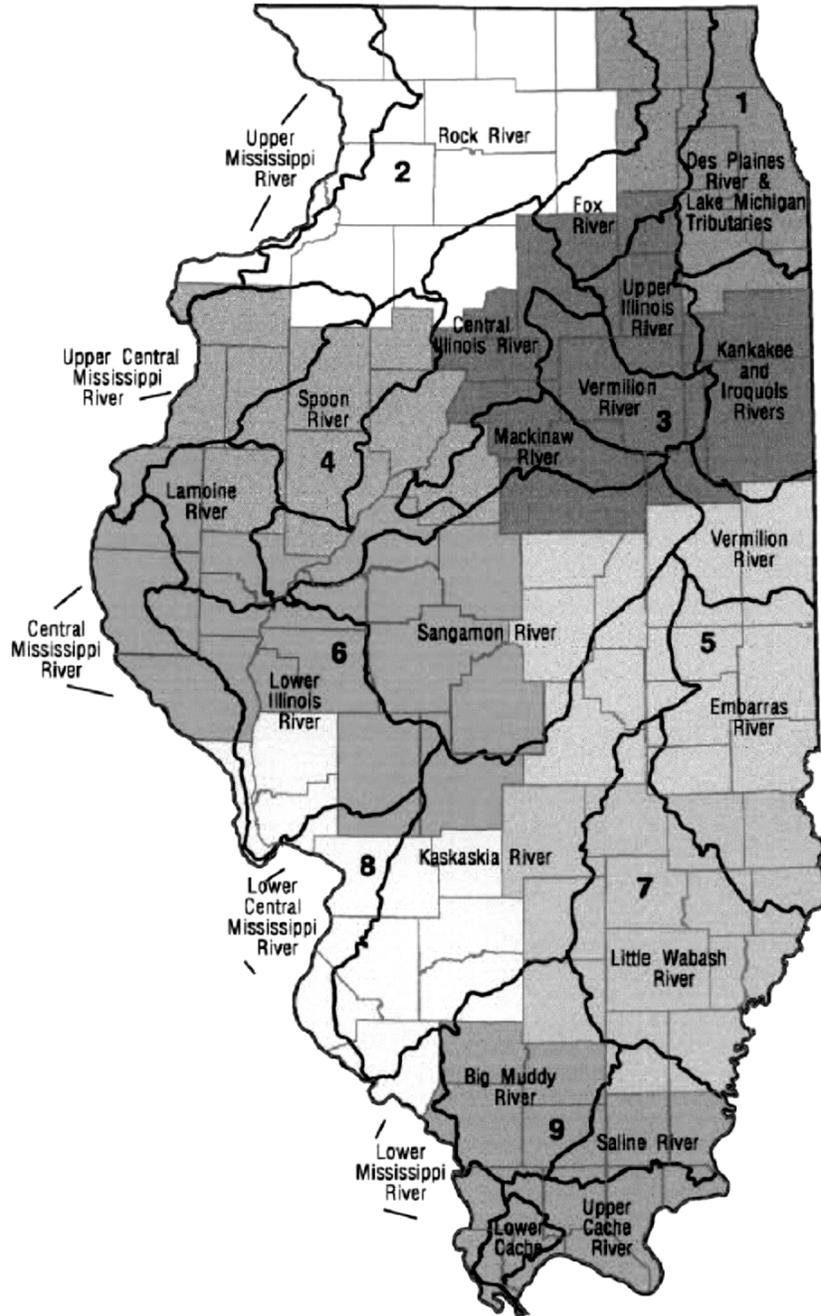
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15. Wetlands. Those areas that are inundated or saturated by surface or groundwater at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. For purposes of the *Interagency Wetland Policy Act of 1989*, the term includes areas that are restored or created as the result of mitigation or planned construction projects and that function as a wetland even when all three wetland parameters (i.e., hydric soils, inundation or saturation by surface or groundwater, and prevalence of hydrophytic vegetation) are not present.
16. Wetlands Classification. A system for designating wetlands and deepwater habitats as to type, based on vegetation and other pertinent characteristics. The Cowardin classification of wetlands and deepwater habitats is used on the National Wetland Inventory maps. Sites depicted as palustrine on these maps may be jurisdictional wetlands. On-site wetland determinations are required to confirm the jurisdictional status of the site. Classes of palustrine wetlands include emergent, scrub-shrub, and forested.
17. Wetland Compensation Plan. A plan developed for each individual construction affecting wetlands that details how compensation will be provided for unavoidable adverse impacts.
18. Wetland Creation. The establishment of a wetland where a wetland does not currently exist.
19. Wetland Delineation. Determining the boundary of a wetland area. The determination is based on the presence of three criteria:
 - a prevalence of hydrophytic vegetation,
 - hydric soils, and
 - wetland hydrology.

To accurately delineate a wetland, a person must have the ability to identify vascular plants to the species level (plant taxonomy), be able to identify soil types, and have at least a general knowledge of wetland hydrology.
20. Wetland Impact Evaluation (WIE) Form. An IDOT form that must be completed and submitted to the district for processing when it is determined that a project would impact wetlands.

**Drainage Basins for the
Evaluation of Wetland Resources**
Displayed with County Boundaries and IDOT Districts



HYDROLOGIC UNITS – WETLAND ACTION PLAN

Figure 20-8A

20-8.04 Identification and Delineation of Wetlands

For Federally, State, and MFT funded and any locally funded project that requires Department review and approval, the submittal of the Environmental Survey Request (ESR) with the biological box checked will initiate the identification and delineation process for wetlands by BDE at no cost to the local agency. If BDE (in consultation with IDNR) determines wetlands are present within 250 feet from the project location, they will task the Illinois Natural History Survey (INHS) to perform the wetland delineations. After INHS completes the wetland delineations, they will prepare a report. If the information clearly indicates that no wetlands are present in or near the project vicinity, BDE will provide a sign-off indicating that further action under the wetland requirements will not be necessary, unless the scope or location of the project changes and it would potentially affect location beyond the area previously reviewed for wetlands. If the wetland report shows that any wetland sites have an adverse wetland impact by the project, the local agency will be required to prepare a Wetland Impact Evaluation (WIE) Form.

20-8.05 Wetland Impact Evaluation (WIE)

When preparing a WIE form, the local agency should consider the following, while giving due consideration to safety and appropriate design standards:

- First Priority. Avoid the adverse wetland impacts.
- Second Priority. Minimize the adverse wetland impacts.
- Third Priority. Compensate for unavoidable adverse wetland impacts.

The WIE form, which can be found on IDOT's website for environmental surveys, will document all information regarding any potential wetland impacts including alternatives for avoiding and minimizing adverse impacts. The WIE will include the following:

- Information either stating there will be no wetland sites impacted, or identifying the wetland site(s) impacted,
- A summary of why there are no practicable alternatives to the use of wetlands,
- The type of wetland mitigation being proposed (i.e. wetland bank, on-site),
- The wetland impacts and amount of mitigation required for each site. This includes the type of wetlands, the type of work and the acres of impact,
- Plan sheets clearly showing the impacts to the wetland site(s) must be included with the WIE form.

Submit the WIE and attached plan sheets electronically to the district. The district will forward the necessary documents to the Central BLRS for submittal to BDE. From the information contained in the WIE form, BDE will determine the amount of wetland compensation, generally based on the compensation ratios in Figure 20-8B.

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Adverse Impact	On-Site	Off-Site	Out-of-Basin
Minimal Alteration	1.0:1*	1.5:1	2.0:1
	1.5:1**		
Significant Alteration	1.5:1	2.0:1	3.0:1
Destruction	2.5:1	4.0:1	5.5:1

* The 1.0:1 ratio applies to all other types of wetland vegetation, substrate, or wetland type except those wetlands that have woody vegetation.

** The 1.5:1 ratio applies if the vegetation of the adversely impacted wetland is woody.

WETLAND COMPENSATION RATIOS

Figure 20-8B

According to 17 Ill. Admin. Code 1090.50(c)(8), the compensation ratio used to determine the amount of wetland compensation required is always 5.5:1 if the adversely impacted wetland has one or more of the following situations present:

- the presence of a State or federally listed endangered and threatened species,
- the presence of essential habitat of a State or federally listed endangered and threatened species,
- the presence of an Illinois Natural Inventory (INAI) Site, maintained and updated by IDNR, and/or
- a wetland that is comprised of a plant community that receives a floristic quality native index score of 20 or more and/or a native mean coefficient of conservatism of 4.0 or greater using the procedure described in the publication *Plants of the Chicago Region*.

20-8.06 Wetland Compensation Plan Development

After the amount of anticipated unavoidable adverse impacts has been established for a project, the compensation process can begin.

The preferred mitigation for adverse wetland impacts of less than 0.1 acre (0.04 hectare) is wetland banking for compensation in a larger compensation site or sites with the approval of BDE only if the project is outside of wetland bank area. See Section 20-8.11 for wetland banking. If wetland banking is not practiced, BDE may allow wetland accumulations in certain cases.

For impacts equal to or greater than 0.1 acre (0.04 hectare), opportunities for on-site compensation may be considered. Options that are off-site, but in-basin, must be considered before out-of-basin alternatives are proposed if wetland banking is not proposed. The local agency is encouraged to purchase credits from an approved wetland mitigation bank rather than restoring or creating wetlands on or near the development site. A wetlands mitigation bank is a wetland area that has been restored, created, enhanced, or (in exceptional circumstances) preserved, which is then set aside to compensate for future conversions of wetlands for development activities. Use of wetland banks or other approved sources of pre-existing wetland credits may be proposed provided this sequencing requirement is satisfied.

A wetland compensation plan must be developed when some form of compensation is provided. Additional information can be found in the *BDE Manual*.

1. Pre-existing Wetland Credits. If all of the wetland compensation is from a wetland bank or an approved source of preexisting compensation credits, the Wetland Compensation Plan will contain the following information:
 - project name, number, location, and description,
 - name and address of responsible agency,
 - types, amounts, and locations of affected wetlands, including any drainage basins and watercourses involved,
 - description of alternatives that would provide avoidance or minimization of adverse impacts to the wetland and, as applicable, the reasons for their rejection,
 - reasons for proposing use of an approved wetland compensation account or other source of pre-existing wetland credits, and
 - description of applicable compensation ratios, the amount and type of compensation credit to be provided, and the source of the credits, including location, current balances, and any pending changes.
2. Restoration, Enhancement, and/or Creation of Wetlands. If compensation will be provided through wetlands restoration, enhancement, and/or creation, the local agency should take the lead in locating a suitable compensation site, giving appropriate consideration to the effect of the applicable compensation ratios on the amount of compensation needed.

After the local agency has identified one or more potential compensation sites, it should submit information concerning the sites to the district for an assessment of the suitability of the site by BDE. An agency or applicant may request approval to use existing public lands for wetland compensation projects. IDNR will have the final approval on the use of existing public lands for this purpose. Once a site has been determined to be suitable for compensation, a Compensation Plan will be prepared by the local agency.

20-8.07 Conceptual Compensation Plan for the Creation of Wetlands

The local agency will first develop a Conceptual Compensation Plan, if they propose to create a wetland. The conceptual plan should contain enough information to enable BDE and IDNR to concur in the proposed approach and the project's location prior to proceeding with its implementation. The Conceptual Plan includes:

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- project name and number, location, and description,
- name and address of the responsible agency,
- summary statement and date of surveys,
- name, work address, email address, and phone numbers of persons conducting surveys,
- types and amounts of affected wetland, including drainage basins and watercourses involved,
- description of alternatives considered that would avoid or minimize the adverse impacts to the wetland and, as applicable, the reasons for their rejection,
- description of the precise location of the proposed wetland replacement site (including a map, legal description, the distance from the impacted wetland, current land use, current vegetation, biological, hydrological, and soil characteristics),
- description of the proposed wetland compensation, including a clear statement of goals,
- description of wetland to be created, restored, acquired, compensation ratios to be applied, any research funding proposed in lieu of a component of the total compensation and, if use of pre-existing wetland credits is proposed as a component of the total compensation, the source of the credits, including current balances and pending changes,
- general description of the work (e.g., grading, planting, alteration of hydrology) proposed to establish compensation sites, and
- the names of the entities to assume long-term responsibility for compensation sites to be established.

The project environmental documentation should summarize the Conceptual Compensation Plan as concurred by BDE and IDNR.

20-8.08 Compensation Design Plan for the Creation of Wetlands

Once approval is given for the Wetland Compensation Plan, the local agency will prepare a detailed construction plan reflecting the proposed work for the creation of a new wetland. The local agency will provide BDE the opportunity to review the preliminary plans. BDE will have 2 weeks to comment.

The Compensation Design Plan will include the following items:

- a detailed site plan that includes the plant materials and methods to establish those plant materials, proposed contours of the wetland and surrounding buffer to be established, source of water, anticipated hydro-period of the proposed wetland and any water control structures, the watershed draining into the proposed wetland, and the relationship of the site to surrounding land uses,
- the operation, management, and maintenance plan for the site, including procedures to restrict further adverse impacts to the site (e.g., the use of buffer areas, restricting future construction within the wetland compensation area),

- a monitoring plan that evaluates the success and/or failure of the wetland establishment effort, including the use of measures to correct identified deficiencies or problems, and
- the anticipated starting and ending dates of the wetland compensation plan.

Projects should not proceed to letting until the compensation plan has been approved. Approval of the compensation plan is valid for 2 years.

20-8.08(a) Compensation Plan Implementation

The following procedures apply:

1. Use of Pre-existing Wetland Credits. Once the compensation plan has been approved, the local agency should proceed with acquiring or accomplishing the necessary accounting for the application of credits on the project. The credits must be provided/secured before the associated adverse wetland impacts occur.
2. Wetlands Creation. During the construction phase of the wetland compensation areas, the local agency will notify BDE when grading is complete before landscaping and again once landscaping is complete. BDE is to be notified when the inspection of the plant material is scheduled so that they may be present. At the end of the construction phase, the local agency will provide BDE a copy of the grading and planting plans of record.

20-8.09 Monitoring of Wetland Compensation Area

Monitoring and reporting procedures for wetland compensation areas will be as stated in the Wetland Compensation Plan. If BDE is monitoring the wetland compensation area, BDE will write and process the annual wetland monitoring report and send a copy of the report to the local agency. If BDE is not monitoring the wetland compensation area, 2 copies of the annual wetland monitoring report must be sent to the district by the local agency for transmittal to BDE.

20-8.10 Transfer of Wetland Compensation Area

When a local agency can transfer management responsibility for wetland compensation area without impacting the project operation, a written request will be submitted through IDOT to IDNR for approval. The request will contain information identifying the proposed recipient of the lands and an outline of the terms of the transfer agreement.

20-8.11 Wetland Banking

The Department's preferred method of wetland compensation involves the use of pre-existing wetland credits from a commercial or Department-owned wetland mitigation bank site. This preference may be met when the project is within the service area of a bank site. Information on Department-owned wetland mitigation bank sites and service areas may be accessed at the Department's Environment webpage. The local agency will be required to purchase the credits from the wetland mitigation bank at either their own cost or as part of the project cost.

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20-9 THREATENED AND ENDANGERED SPECIES/NATURAL AREA IMPACT ASSESSMENTS

20-9.01 Introduction

In the development of a project, special studies and coordination are required when the action may affect Federally listed threatened or endangered species (T&E Species). This Section addresses the reporting and processing requirements for these actions. This applies to all Federal, State, and Motor Fuel Tax (MFT) funded projects and any locally funded project that requires IDOT review and approval.

20-9.02 Legal Authority

The *Federal Endangered Species Act* (50 CFR 402) is the legal authority that regulates or influences the policies and procedures for threatened and endangered species.

20-9.03 Policy

In the development of a project, an assessment shall be made on the likely impacts on species of plants or animals listed as threatened or endangered. Every effort will be made to minimize the likelihood of jeopardizing the continued existence of listed threatened or endangered species, or the destruction or adverse modification of a Natural Area, or an area of habitat that has been designated as a critical habitat or essential habitat. See Section 20-9.04 for the definition of critical and essential habitat.

20-9.04 Definitions

The following definitions apply:

1. Biological Assessment. Information on listed and proposed species and designated and proposed critical habitat that may be present in the action area and the evaluation of potential effects of the action on these species and habitat.
2. Biological Opinion. The document that states the opinion of the US Fish and Wildlife Service (USFWS) on whether or not an action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.
3. Critical Habitat. An area designated by the USFWS as critical habitat.
4. Destruction or Adverse Modification. A direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of listed species. Alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical.
5. Essential Habitat. The habitat necessary to prevent the depletion of a threatened and/or endangered species.

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6. Formal Consultation. A process between the USFWS and the Federal agency responsible for a proposed action that commences with the Federal agency's written request for consultation and concludes with the USFWS issuance of a biological opinion.
7. Jeopardize the Continued Existence. To engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.
8. Listed Species. Any species of fish, wildlife, or plant that has been determined to be endangered or threatened pursuant to the *Federal Endangered Species Act*.
9. Proposed Species. Any species of fish, wildlife, or plant that is proposed to be listed under Section 4 of the *Federal Endangered Species Act*.

20-9.05 Federal T&E Species Requirements

20-9.05(a) Applicability

The preparation of a Biological Assessment is required for any Federally funded/regulated "major construction activity" where listed species or critical habitat may be present in the action area. A Biological Assessment also may be appropriate for other actions where listed species or critical habitat may be present and it is unclear whether they may be affected. If they may be affected, formal consultation is required.

20-9.05(b) Processing Procedures

As a part of the environmental survey and coordination process for a proposed undertaking, BDE will evaluate affected habitat in the action area and, as appropriate, will either:

- request from the USFWS information concerning any listed or proposed species, or designated or proposed critical habitat, that may be present in the action area; or
- provide the USFWS with written notification of species and critical habitat that has been determined, on the basis of surveys or available information, to be potentially present in the action area.

In response to the contact from BDE, the USFWS will:

- provide information regarding listed or proposed species or designated or proposed critical habitat that may be present in the action area, and a list of candidate species* that may be present in the action area;
- concur with or revise the information provided by BDE; or

* Candidate species refers to any species being considered by the USFWS for listing as endangered or threatened but not yet formally proposed or listed. Candidate species are accorded no protection under the *Endangered Species Act*. Notification concerning each species is intended to alert agencies of potential proposals or listings. These species should be identified in the environmental report for a proposed undertaking. Also, close contact should be maintained with BDE on the disposition of the candidate species during the environmental processing of a project.

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- where a list is not provided, advise whether, based on the best scientific and commercial data available, any listed or proposed species or designated or proposed critical habitat may be present in the action area.

If, as a result of the coordination with the USFWS, a determination is made that no listed species or critical habitat may be present, a Biological Assessment is not required. In these cases, further consultation with the USFWS on listed species or critical habitat also is not required. If it is determined that only candidate species or proposed critical habitat may be present, a Biological Assessment is not required unless the proposed listing and/or designation become final before the action is completed.

If the coordination with the USFWS results in a determination that listed species or critical habitat may be present, a Biological Assessment should be prepared. Where candidate species or proposed critical habitat also may be present, they should be addressed in the Biological Assessment.

The *IDOT Ecological and Natural Resources Manual* provides additional information and procedures to assist in fulfilling the requirements herein.

See Section 26-9 of the *BDE Manual* for details concerning the preparation of a biological assessment.

20-9.05(c) Processing of the Biological Assessment

The Biological Assessment will be coordinated with the FHWA and transmitted by BDE to the USFWS for review. The USFWS will respond in writing within 30 days on whether it concurs with the findings of the Biological Assessment.

If the Biological Assessment indicates the action is not likely to jeopardize the continued existence of proposed species or result in the destruction or adverse modification of proposed critical habitat and USFWS concurs, a conference is not required. If it is determined that the action is likely to jeopardize the continued existence of proposed species or result in the destruction or modification of proposed critical habitat, a conference is required.

If the Biological Assessment indicates there are no listed species or critical habitat present that are likely to be adversely affected by the action and the USFWS concurs, formal consultation is not required. If listed species or critical habitat are present and it is determined they are likely to be adversely affected by the action, formal consultation is required.

If required, a written request will be made by BDE to the USFWS to initiate formal consultation.

Formal consultation will be directed toward further analysis of the species and/or critical habitat involved and alternatives to the proposed action. The purpose of these analyses is to allow the USFWS to develop its opinion concerning whether the action is likely to jeopardize the continued existence of listed species, or result in the destruction or adverse modification of critical habitat.

Formal consultation will be concluded within 90 days after its initiation unless a longer period is mutually agreed to. Within 45 days after concluding formal consultation, the USFWS will provide its Biological Opinion concluding that:

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- the action is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat (a “jeopardy” biological opinion); or
- the action is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat (a “no-jeopardy” biological opinion).

If a “jeopardy” biological opinion is issued, the USFWS must be notified of the final decision on the action (i.e., whether the action will be modified and, if so, how).

If the final decision on the action will involve a likelihood of jeopardizing the continued existence of a listed species or resulting in the destruction or adverse modification of critical habitat, the action may not proceed (under Federal approvals or with Federal funds) unless, and until, an exemption from the requirements of Section 7(a)(2) of the *Endangered Species Act* (which directs Federal agencies to “ensure” that their actions are not likely to “jeopardize” listed species or destroy or adversely modify critical habitat) is obtained.

20-9.06 State T&E Species Requirements

20-9.06(a) Applicability

The pre-screening procedures discussed in Section 20-9.06(b) are applicable to all projects requiring submittal of an Environmental Survey Request pursuant to the criteria in Section 20-2. The procedures in the remainder of this Section are applicable to all projects.

20-9.06(b) Review for State-listed Threatened and Endangered Species and Illinois Natural Areas Inventory Sites

For all projects meeting the applicability criteria in Section 20-2.01, BDE will determine if the projects may have an adverse effect on a state-listed T&E Species, or a site listed on the Illinois Natural Areas Inventory (INAI), which include Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, and registered Land and Water Reserves. BDE may cause biological surveys to be conducted to assist in their determination of affect. BDE will develop measures to avoid, minimize or mitigate potential adverse effects to T&E species or INAI sites.

20-9.06(c) Consultation

BDE will submit to the IDNR Ecological Compliance Assessment Tool (EcoCAT) website a consultation requests for proposed actions that may have an adverse effect, that are adjacent to a Nature Preserve or Land and Water Reserve, or that entail excavation outside of an existing right-of-way and are within one mile of a Nature Preserve or Land and Water Reserve. The IDNR will review the EcoCAT reports within 30 days of receipt. After review, IDNR will either:

1. Terminate consultation because adverse affects are unlikely; or
2. Request additional information and /or request a biological survey.

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BDE will submit any measures to avoid, to minimize, or to mitigate potential adverse effect to T&E species or INAI sites to the IDNR for concurrence. The IDNR will review mitigation measures submitted by IDOT and coordinate with appropriate IDNR staff to determine whether further analysis or recommendations are required. Within 90 days of receipt of IDOT-proposed mitigation measures, IDNR will either:

1. Recommend additional measures to avoid or minimize adverse effects; or
2. Concur with proposed mitigation measures and terminate consultation.

Both IDOT and IDNR have 45 days to resolve any differences that may remain. If a resolution is not reached within this time, both agencies may agree to:

1. terminate consultation;
2. elevate the issue within each agency; or
3. continue negotiations.

20-9.06(d) Expiration

If the project involves other resource concerns requiring further review, BDE will re-screen the project against the Illinois Natural Heritage Database prior to any final action confirming satisfactory disposition of the other resource issues. The BDE review or the IDNR consultation is valid for 3 years from the initial date on the BDE review, date on the EcoCAT submittal or from the date of final confirmation from IDNR on resolution of other resource concerns, if applicable. Before a project is advertised for a bid letting, the BDE review must be renewed if more than 3 years have elapsed since the last update on the screen or the project scope has changed. If the 3-year time period has elapsed, the LPA should request to update the BDE review by sending a copy of the original BDE review with appropriate attachments (i.e. topographic and/or GIS maps) to the district. The district will process the request similar to the procedures of an Environmental Survey Request. A copy of the renewed BDE review will be sent to the LPA through the district. See Chapter 18 for further guidance on the general principles of coordination with IDNR.

20-9.07 Coordination of Federal/State Requirements

Where a species involved with an action is listed at both the Federal and State level, the Biological Assessment (Federal) and Detailed Action Report (State) prepared for the action will be processed concurrently with the USFWS and IDNR, as practical. Although processing may be concurrent and the results of consultation may be considered by either agency, the Federal and State requirements are independent; both must be satisfied when species are on both the Federal and State lists.

20-10 EVALUATIONS OF FARMLAND CONVERSION IMPACTS**20-10.01 Introduction**

In the development of a project, consideration must be given to the impacts that the action will cause in the conversion of farmland to non-farm uses. Under certain circumstances, coordination must be initiated with the US Department of Agriculture, Natural Resources Conservation Service (NRCS) and/or the Illinois Department of Agriculture (IDOA) to evaluate the impacts on farmland and obtain the views of those agencies on alternatives to the proposed action. This Section discusses the criteria and procedures for accomplishing the necessary coordination with NRCS and IDOA. Coordination is discussed in Section 10-1.08.

20-10.02 Legal Authority

The following legal authority regulates or influences the policies and procedures on farmland conversions:

- 7 USC 4201-4209, *Farmland Protection Policy Act of 1981* (Public Law 97-98).
- 7 CFR 658, Farmland Protection Policy.

See Appendix C of Part III "Environmental Procedures" of the *BDE Manual*, for more information.

20-10.03 Policy

In the development of a project, an evaluation is made of the action's effects on conversion of farmland to non-farm use. Coordination between NRCS and/or IDOA, as appropriate, is necessary to obtain their views on any anticipated farmland conversion. This evaluation and coordination with NRCS and IDOA is accomplished in conformance with Federal and State statutes, regulations, Executive Orders, and IDOT agreements concerning farmland. Consideration is given to alternatives that could reduce adverse impacts to farmland. Proposed actions are developed to be compatible with State and local governments and private programs and policies to protect farmland.

20-10.04 Definitions

The following definitions apply:

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1. Farmland. Prime or unique farmlands, as defined in Section 1540(c)(1) of the *Farmland Protection Policy Act*, or farmland that is determined by the appropriate State or unit of local government agency or agencies with concurrence of the Secretary of Agriculture to be farmland of Statewide or local importance. "Farmland" does not include land already in or committed to urban development or water storage. Farmland "already in" urban development or water storage includes all land with a density of 30 structures per 40 acre (16 per ha) area. Farmland already in urban development also includes lands identified as "urbanized area" (UA) on the Census Bureau Map, or as urban area mapped with a "tint overprint" on the USGS topographical maps, or as "urban-built-up" on the USDA Important Farmland Maps. Areas shown as white on the USDA Important Farmland maps are not "farmland" and, therefore, are not subject to the *Act*. Farmland "committed to urban development or water storage" includes all land that receives a combined score of 160 points or less from the land evaluation and site assessment criteria.
2. Site. The location that would be converted by the proposed action.

20-10.05 Federal Requirements

20-10.05(a) Applicability

A project that requires additional right-of-way outside any corporate limits must be coordinated with NRCS unless any one of the following applies:

1. There are no federal funds involved in the project.
2. None of the land to be acquired is prime farmland or farmland of Statewide or local importance.
3. The land to be acquired is in urban development (i.e., has a minimum current density of 30 structures (permanently affixed to the ground) per 40 acre (16 ha) tract).
4. The project is exclusively for widening and resurfacing and does not involve borrow areas, mitigation sites, or new alignment in which the right-of-way diverges from and is not contiguous to the existing right-of-way.
5. The project is nonlinear (e.g., bridge or intersection improvements) and requires acquisition of no more than 10 acres (4 ha) of land. This threshold applies to nonlinear projects other than new rest areas and new truck weigh stations. All new rest area and truck weigh station projects must be coordinated with NRCS, regardless of the amount of acquisition involved. When the areas of right-of-way for the project approach the 10 acre (4 ha) threshold for coordination and the project will likely involve additional acquisition for borrow or mitigation, the project should be coordinated with NRCS. Anticipated sites for borrow and mitigation should be indicated if known.
6. The project is linear; requires acquisition of no more than 3 acres of land per project mile (0.75 ha of land per project kilometer) (area of acquisition divided by project length), and does not involve alternative alignment(s) in which the right-of-way diverges from, and is not contiguous to, the existing right-of-way. When the amount of right-of-way to be acquired approaches the 3 acres per project mile (0.75 ha per project kilometer) threshold for coordination and the project will likely involve additional acquisition for borrow or mitigation, the project should be coordinated with NRCS. Anticipated sites for borrow and mitigation should be indicated if known.

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The categories of projects addressed by these items have been programmatically addressed in consultations with NRCS, and a general Form AD-1006 (see Section 20-10.05(c)) has been prepared for these actions. Further project-specific review by NRCS on these projects ordinarily will not be necessary. See Section 20-10.05(b) for further discussion of requirements for these types of actions.

If there is a question on whether any of the above conditions are met, contact the Central BLRS for a determination of applicability.

20-10.05(b) Procedures

The following will apply:

1. NRCS Coordination. For all projects requiring coordination with NRCS according to the criteria in Section 20-10.05(a), contact with NRCS should be made as early in the project development process as practical. The initial contact should be made with the State Office of the NRCS in Champaign. Form AD-1006 must be forwarded to the NRCS Office as part of the coordination process as soon as sufficient information is available. Coordination may be initiated prior to completion of the forms, as appropriate.
2. Minor Impacts. Where a project appears to be covered by Items 5 and 6 in Section 20-10.05(a), care should be taken to ensure that the project does not involve more than minor impacts on farmland and that there are no unusual circumstances that would make the criteria described inapplicable to the project. If more than minor impacts on farmland are involved or if unusual circumstances are present, coordination should be initiated with NRCS as discussed in Item 1 above.

If such impacts/circumstances are not involved, include documentation in the project file indicating the applicability of the criterion in Section 20-10.05(a) as the basis for not coordinating with NRCS. Also, include a copy of the general Form AD-1006 for these projects in the file. An appropriate paragraph similar to the following should be included in the Project Development Report or environmental report, as appropriate:

The impact of this project on farmland conversion has been evaluated in accordance with the requirements of the US Natural Resources Conservation Service (NRCS). The project will convert 3 acres or less of farmland per mile (0.75 ha or less of farmland per kilometer) and the conversion will not result in more than minor impacts. Accordingly, the project conforms to the general Form AD-1006 prepared by NRCS. Therefore, further coordination with NRCS on this project will not be necessary.

20-10.05(c) Form AD-1006

The following will apply:

1. The LPA should complete Parts I and III of Form AD-1006 and submit it to the State NRCS office when information is submitted to IDOA in accordance with State farmland protection requirements; see Section 10-1.08. NRCS will complete Parts II, IV, and V and will then send the Form to IDOA for completion of the Site Assessment portions of the Form. When completed, IDOA will return the form to the LPA.

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2. Form AD-1006 is the primary means of coordination with NRCS. It may, however, be supplemented with other information. It is recommended that a copy of the information sent to IDOA (see Section 20-10.06) be sent to NRCS with Form AD-1006. The additional information will help to expedite the review and minimize turnaround time. An informational copy of the completed AD-1006 form should be provided to IDOA when it is submitted to NRCS.
3. On new construction and reconstruction projects, early contacts with the local field offices and the Statewide office of NRCS are recommended. This will notify NRCS of the project and allow early comments while maximum flexibility still exists. Form AD-1006 may follow after the project development has determined the impacts. In this manner, substantive comments are discovered early and the potential for major changes in the later stages of project development will be reduced.

AD-1006 forms should not be sent to NRCS county field offices. AD-1006 forms for single and multi-county projects should be sent to the State NRCS office. See IDOT's website for the appropriate address.

20-10.05(d) Siting Requirements

Sites or alternatives with the highest combined scores, determined on Form AD-1006, should be regarded as most suitable for protection from conversion to non-farm use, and sites/alternatives with the lowest scores as least suitable for protection. Sites or alternatives receiving total scores of 175 or fewer points require only minimal consideration for protection from conversion, and no additional sites/alternatives need be evaluated. Sites or alternatives with scores of 176 to 225 points are in the moderate range for consideration of protection from conversion. At least one build alternative should be considered for these projects. Sites or alternatives receiving scores over 225 points should receive the highest priority for protection from conversion to non-farm uses. For these sites or alternatives, give consideration to other alternatives (e.g., rehabilitation of existing facilities, alignments that use lesser amounts of farmland).

The *Federal Farmland Protection Policy Act* (FPPA) regulations provide that:

If, after consideration of the adverse effects and suggested alternatives, the applicant wants to proceed with the conversion, the Federal agency may not, on the basis of the Act or these regulations, refuse to provide the requested assistance.

Therefore, alternatives that adversely affect agriculture may be recommended, but only after full consideration of adverse effects and less damaging alternatives. The coordination with NRCS will ensure the adequacy of that consideration. The results of coordination with NRCS should be summarized in the environmental report or Project Development Report for the action.

20-10.05(e) Notification of Selected Alternative

NRCS requires that, when a Federally funded project has one or more alternatives that require acquisition of farmland subject to the FPPA and is not otherwise exempted from the requirement to submit Form AD-1006, the project agency should provide NRCS a copy of Form AD-1006 indicating the project alternative selected for implementation. Upon receiving design approval for projects, the LPA will inform the State NRCS office which alternative was selected for implementation. The LPA should use a copy of the previously coordinated Form AD-1006 for providing this notification. The LPA should complete the parts of the Form entitled "Site Selected" (enter appropriate site identification letter from the AD-1006) and "Date of Selection" (use design approval date) and should then send 1 copy to the State NRCS office. To aid NRCS in its record keeping, note on the top of the Form that it is a "Final Decision Notification."

20-10.06 State Requirements

The results of the evaluations of farmland conversion impacts, mitigation measures, and associated coordination with IDOA should be summarized in the project's environmental report or Project Development Report, as appropriate. The results of coordination with IDOA should also be summarized in the environmental report or Project Development Report for the action.

See Section 10-1.08 for detailed information on the State's requirements for the evaluations of farmland conversions.

20-10.07 Relationship of Federal and State Requirements

Requirements for coordination with the NRCS, although similar to those for the Illinois Department of Agriculture (IDOA), are separate and distinct. Coordination with IDOA does not preclude the need to coordinate with NRCS. Projects that require coordination with NRCS will normally also require coordination with IDOA.

20-11 AIR QUALITY CONFORMITY DOCUMENTATION

20-11.01 Background

Section 176(c)(4) of the *Clean Air Act* Amendments of 1990 requires that transportation plans, programs, and projects that are funded or approved under Title 23 USC must conform to State or Federal air implementation plans. The implementation plans describe how air quality standards will be achieved. Conformity to an implementation plan is defined in the *Clean Air Act* as conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards. Federal activities may not cause or contribute to new violations of air quality standards, exacerbate existing violations, or interfere with the timely reduction of emissions as reflected in the State implementation plan. The implementing regulations for determining conformity of transportation projects (40 CFR Part 93, "Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded or Approved Under Title 23 USC or the *Federal Transit Act*") also impose requirements upon "regionally significant projects" in non-attainment areas regardless of whether those projects involve Federal funding or approvals.

Non-attainment areas are those areas of the country where air pollution levels persistently exceed the national ambient air quality standards.

"Regionally significant projects" means transportation projects (other than exempted projects) that are on facilities which serve regional transportation needs (e.g., access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls and sports complexes, transportation terminals), and would normally be included in the modeling of a metropolitan area's transportation network, including, at a minimum, all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel.

Illinois includes non-attainment areas in which standards are being exceeded for one or more of the air pollutants that the US Environmental Protection Agency (USEPA) has defined as "criteria pollutants" (e.g., Ozone (O₃), Carbon Monoxide (CO), Nitrogen Dioxide (NO₂)). The Illinois Environmental Protection Agency's (ILEPA) website (www.epa.state.il.us) has a complete list of non-attainment areas in Illinois under the Air Section.

20-11.02 Applicability

The following procedures are applicable to all highway projects funded or approved by the FHWA under Title 23 USC and to "regionally significant projects" in non-attainment areas, regardless of whether these projects are Federally funded or approved under Title 23.

20-11.03 Procedures**20-11.03(a) Determining Project Involvement with Designated Non-attainment Areas**

In the preparation of environmental documentation for projects subject to these procedures, districts should review the most recent information from the Central Office of Planning and Programming regarding those areas of Illinois that have been designated as non-attainment for one or more of the criteria pollutants. If the proposed improvement is partially or completely within a designated non-attainment area it will be subject to the conformity requirements unless the type of work involved is exempted; see Section 20-11.03(c). USEPA rules do not currently require conformity determinations for projects outside of non-attainment areas (i.e., within attainment areas).

20-11.03(b) Determining Project Exemption from Conformity Requirements

The USEPA conformity rules for transportation projects exempt the project types listed below from the requirement for a conformity determination. The determination of whether a particular action is exempt from the conformity requirement, in most cases, is made during the development of the Transportation Improvement Program (TIP) prior to the initiation of project planning. Note that a particular project of a type listed is not exempt if the Metropolitan Planning Organization (MPO), in consultation with other agencies, EPA, and the FHWA, concurs that it has potentially adverse emissions impacts for any reason.

20-11.03(c) Exempt Projects

The following describes the types of projects considered exempt from air quality conformity documentation:

1. Safety. The following safety projects are exempt:
 - railroad/highway crossing;
 - hazard elimination program;
 - safer non-Federal-aid system roads;
 - shoulder improvements;
 - increasing sight distance;
 - safety improvement program;
 - traffic control devices and operating assistance other than signalization projects;
 - railroad/highway crossing warning devices;
 - guardrails, median barriers, crash cushions;
 - pavement resurfacing and/or rehabilitation;
 - pavement marking demonstration;
 - emergency relief;
 - fencing;
 - skid treatments;
 - safety roadside rest areas;
 - adding medians;
 - truck-climbing lanes outside urbanized areas;

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- lighting improvements;
 - widening narrow pavements or reconstructing bridges with no additional travel lanes; and
 - emergency truck pullovers.
2. Air Quality. Bicycle and pedestrian facility projects are exempt.
3. Other. The following are also considered exempt:
- specific activities that do not involve or lead directly to construction (e.g., planning and technical studies, Federal-aid systems revisions, planning activities conducted pursuant to 23 USC and 49 USC);
 - engineering to assess social, economic, and environmental effects of a proposed action or alternatives to that action;
 - noise attenuation;
 - advance land acquisitions (23 CFR Part 712 or 23 CFR Part 771);
 - acquisition of scenic easements;
 - plantings, landscaping, etc.;
 - sign removal;
 - directional and informational signs;
 - transportation enhancement activities (except rehabilitation and operation of historic transportation buildings, structures, or facilities); and/or
 - repair of damage caused by natural disasters, civil unrest, or terrorist acts, except projects involving substantial functional, locational, or capacity changes.
4. Regional Emissions Analyses. The following projects are exempt from regional emissions analyses:
- intersection channelization projects;
 - intersection signalization projects at individual intersections;
 - interchange reconfiguration projects;
 - changes in vertical and horizontal alignments; and
 - truck size and weight inspection stations;

20-11.03(d) Determining Highway Project Conformity

The project conforms with the requirements of the *Clean Air Act* if the district confirms that the following statements are applicable to the action:

- The project was included in a conforming transportation plan and TIP.
- The project design concept and scope have not changed significantly from what was reflected in the conformity analysis for the plan and TIP.
- The project will comply with PM₁₀ control measures in the State Implementation Plan. PM₁₀ refers to particular matter measured in the ambient air with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

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Other criteria and procedures will apply for determining conformity of projects within CO or PM₁₀ non-attainment areas. Districts should contact the Central BLRS for further guidance regarding these projects as the need arises.

To determine conformity for projects in non-attainment areas or maintenance areas outside of locations served by Metropolitan Planning Organizations (MPOs), the district should contact the Central BLRS and the Central Office of Planning and Programming to initiate a regional emissions analysis.

Projects must be found to conform before they are adopted, accepted, approved, or funded. Conformity must be redetermined if none of the following major steps has occurred within 3 years of the conformity determination — NEPA process completion; start of final design; acquisition of a significant portion of the right-of-way; or approval of the plans, specifications, and estimates. A new conformity determination also will be required if there is a significant change in project design concept and scope or if a supplemental environmental document for air quality purposes is initiated.

For further information on Project Conformity, see Section 26-11 of the *BDE Manual*.

20-11.03(e) Documentation

The environmental documentation for all projects subject to these procedures must include a statement regarding the status of the project with regard to the *Clean Air Act* conformity regulations (i.e., indicating that the project is outside of any designated non-attainment area or maintenance area; that the project is of a type exempted from conformity requirements; or that the project has been determined to satisfy the conformity regulations). Section 26-11 of the *BDE Manual* provides example air quality conformity document statements for the following situations:

- projects outside of non-attainment areas or maintenance areas,
- exempt projects,
- projects within a portion of a non-attainment area or maintenance area for which the Chicago Area Transportation Study (CATS) is the MPO,
- projects within a non-attainment area or maintenance area served by a MPO other than CATS,
- projects within a non-attainment or maintenance area not served by a MPO, and
- “regionally significant” non-Federal projects within a non-attainment area or maintenance area.

20-11.04 Microscale Analysis

If the screening analysis indicates the project “fails” (i.e., that it has potential for contributing to a violation of the NAAQS for CO), or if the project does not fit the assumptions for use of the screening analysis, a detailed air quality analysis is required. The worst-case location and calculated 8 hour results of this analysis should be described, following the guidance in the *IDOT Air Quality Manual*. The latest USEPA Mobile model should be used for emissions factors. Comparison of these results to the National Ambient Air Quality Standards (NAAQS) for CO shall determine whether the project supports the maintenance of the CO NAAQS in Illinois. Analysis results below the 8 hour CO NAAQS (less than 9 ppm) will indicate no impacts present to the local atmospheric conditions that are necessary to protect the public health and welfare. Analysis results above the 8 hour CO NAAQS will indicate impacts present, which will require mitigation measures to be discussed with the FHWA, USEPA, and IEPA. Any mitigation measures should be described in the EA or EIS.

A determination must be made as to whether the highway project is located wholly or partially in a portion of the State classified by the USEPA as a non-attainment area or maintenance area for any of the six criteria pollutants (40 CFR Part 81). This determination should be made and documented in accordance with the procedures in Section 26-11 of the *BDE Manual*.

Version 2.0 of the Illinois Carbon Monoxide (CO) Screen for Intersection Modeling (COSIM) includes a pre-screen feature that replaces the 16,000 ADT criterion previously used for screening highway projects for CO microscale analysis purposes.

See BDE Procedure Memorandum 37-03 for more details on this type of analysis.

20-11.05 Construction Related Particular Matter

The following text should be added in the Air Quality section of the ECAD, EA, EIS, or Project Development Report:

Demolition and construction activities may result in short-term increases in fugitive dust and equipment-related particulate emissions in and around the project area. Equipment related particulate emissions may be minimized if the equipment is well maintained. The potential air quality impacts will be short-term, occurring only while demolition and construction work is in progress and local conditions are appropriate.

The potential for fugitive dust emissions typically is associated with building demolition, ground clearing, site preparation, grading, stockpiling of materials, on-site management of equipment, and transportation of materials. The potential is greatest during dry periods, periods of intense construction activity, and during high wind conditions.

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The Department's Standard Specifications for Road and Bridge Construction include provisions on dust control. Under these provisions, dust and airborne dirt generated by construction activities will be controlled through dust control procedures or a specific dust control plan, when warranted. The contractor and the Department will meet to review the nature and extent of dust generating activities and will cooperatively develop specific types of dust control techniques appropriate to the specific situation. Techniques that may warrant consideration include measures such as minimizing track-out of soil onto nearby publicly traveled roads, reducing speed on unpaved roads, covering haul vehicles, and applying chemical dust suppressants or water to exposed surfaces, particularly those on which construction vehicles travel. With the application of appropriate measures to limit dust emissions during construction, this project will not cause any significant, short-term particulate matter air quality impacts.

See BDE Procedure Memorandum 42-04.

20-11.06 Mobile Source Air Toxics (MSATs)

The FHWA has developed a tiered approach for analyzing MSATs in NEPA documents. Depending on the specific project circumstances, FHWA has identified three levels of analysis:

- No analysis for projects with no potential for meaningful MSAT effects;
- Qualitative analysis for projects with low potential MSAT effects; or
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Documentation of MSAT Evaluation will be included in the PDR, ECAD, EA, or EIS. MSAT level of documentation should be discussed at a coordination meeting and the meeting minutes should document FHWA's recommendation. Guidance is found in USDOT's *Interim Guidance on Air Toxic Analysis in NEPA Documents*.

20-11.06(a) MSAT Required Analysis

1. Exempt Projects or Projects with No Meaningful Potential MSAT Effects. The types of projects included in this category are:
 - Projects qualifying as a categorical exclusion under 23 CFR 771.117 (c). See BLRS Manual Section 19-1.04(b) for examples of actions that would typically qualify as Group I Actions listed in 23 CFR 771.117 (c);
 - Projects exempt under the Clean Air Act conformity rule under 40 CFR 93.126. See BLRS Manual Section 20-11.03(c)(1-3) for exempt project types; or
 - Other projects with no meaningful impacts on traffic volumes or vehicle mix

For project types qualifying as a categorical exclusion (Group I), under 23 CFR 771.117 (c), or for projects that are exempt under the Clean Air Act conformity rule under 40 CFR 93.126, include the following certifying paragraph in the Phase I Engineering Report:

Mobile Source Air Toxics

This project is of a type qualifying as a categorical exclusion (Group I) under 23 CFR 771.117(c), or exempt under the Clean Air Act conformity rule under 40 CFR 93.116, and as such, a Mobile Source Air Toxics analysis is not required.

For project types with no meaningful impacts on traffic volumes or vehicle mix such as found in 23 CFR 771.117(d) (See BLRS Manual Section 19-1.04(c)), or 40 CFR 93.127 (See BLRS Manual Section 20-11.03(c)(4)), include the following text in the Phase I Engineering Report and associated Environmental Document:

Mobile Source Air Toxics

This project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions relative to the no-build alternative. As such, FHWA has determined that this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special Mobile Source Air Toxic concerns. Consequently, this effort is exempt from analysis for MSATs.

Moreover, EPA regulations for vehicle engines and fuels will cause overall MSATs to decline significantly over the next 20 years. Even after accounting for a 64 percent increase in VMT, FHWA predicts MSATs will decline in the range of 57 to 87 percent, from 2000 to 2020, based on regulations now in effect, even with a projected 64 percent increase in VMT. This will both reduce the background level of MSATs as well as the possibility of even minor MSAT emissions from this project.

2. Projects with Low Potential MSAT Effects. The types of projects included in this category are those that serve to improve operations of highway, transit or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase emissions. This category covers a broad range of projects.

Any projects not meeting the threshold criteria for higher potential effects set forth in subsection (3) below and not meeting the criteria above should be included in this category. Examples of these types of projects are minor widening projects and new interchanges, such as those that replace a signalized intersection on a surface street or where design year traffic is not projected to exceed the 140,000 AADT criterion.

For project types that have a low potential for MSAT effects, a qualitative assessment of emissions projections should be conducted. Four types of project documentation are offered in BDE Procedure Memorandum 52-06.

In addition to the qualitative assessment, the NEPA document for this category of projects must include a discussion of information that is incomplete or unavailable for a project specific assessment of MSAT impacts, in compliance with CEQ regulations 40 CFR 1502.22 (b). Recommended prototype language for this discussion is included in BDE Procedure Memorandum 52-06.

3. Projects with Low Potential MSAT Effects. This category includes projects that have the potential for meaningful differences among project alternatives. To fall into this category, projects must:

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- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location; or
- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to exceed 140,000 by the design year; and,
- Be proposed to be located in proximity to populated areas or in rural areas, in proximity to concentrations of vulnerable populations (i.e., schools, nursing homes, hospitals).

Projects falling within this category should be more rigorously assessed for impacts. If a project falls into this category, the LPA should contact the District for assistance in developing a specific approach for assessing impacts.

20-11.06(b) MSAT Mitigation Strategies

Lessening the effects of mobile source air toxics should be considered for projects with substantial construction-related MSAT emissions that are likely to occur over an extended building period, and for post-construction scenarios where the NEPA analysis indicates potentially meaningful MSAT levels. Such mitigation efforts should be evaluated based on the circumstances associated with individual projects, and they may not be appropriate in all cases. However, there are a number of available mitigation strategies and solutions for countering the effects of MSAT emissions.

20-11.06(c) Mitigating for Construction MSAT Emissions

Construction activity may generate a temporary increase in MSAT emissions. Project-level assessments that render a decision to pursue construction emission mitigation will benefit from a number of technologies and operational practices that should help lower short-term MSATs. In addition, the SAFETEA-LU has emphasized a host of diesel retrofit technologies in the law's CMAQ provisions - technologies that are designed to lessen a number of MSATs.¹

Construction mitigation includes strategies that reduce engine activity or reduce emissions per unit of operating time. Operational agreements that reduce or redirect work or shift times to avoid community exposures can have positive benefits when sites are near vulnerable populations. For example, agreements that stress work activity outside normal hours of an adjacent school campus would be operations-oriented mitigation. Also on the construction emissions front, technological adjustments to equipment, such as off-road dump trucks and bulldozers, could be appropriate strategies. These technological fixes could include particulate matter traps, oxidation catalysts, and other devices that provide an after-treatment of exhaust emissions. The use of clean fuels, such as ultra-low sulfur diesel, also can be a very cost beneficial strategy.

The EPA has listed a number of approved diesel retrofit technologies; many of these can be deployed as emissions mitigation measures for equipment used in construction. This listing can be found at: www.epa.gov/otaq/retrofit/retroverifiedlist.htm

20-11.06(d) Post-Construction Mitigation for Projects with Potentially Significant MSAT Levels

Longer-term MSAT emissions can be more difficult to control, as variables such as daily traffic and vehicle mix are elusive. Operational strategies that focus on speed limit enforcement or traffic management policies may help reduce MSAT emissions even beyond the benefits of fleet turnover. Well traveled highways with high proportions of heavy-duty diesel truck activity may benefit from active Intelligent Transportation System programs, such as traffic management centers or incident management systems. Similarly, anti-idling strategies, such as truck-stop electrification can complement projects that focus on new or increased freight activity.

The initial decision to pursue MSAT emissions mitigation strategies should be in consultation with BDE's Air Quality Specialist.

20-12 SPECIAL WASTE PROCEDURES**20-12.01 Definitions**

1. Adjoining Property. Any real property or properties of which the border is contiguous with that of the subject property (project limits), or that would be contiguous with that of the property but for a street, road, or other public thoroughfare separating them.
2. Agriculture Property. Any real property for which the present or post-remediation use is growing agricultural crops for food or feed, either as harvested crops, cover crops, or as pasture. This definition includes but is not limited to, properties used for confinement or grazing of livestock or poultry and for forestry operations. Excluded from this definition are farm residences, farm outbuildings, and agrochemical facilities.
3. Conservation Property. Any real property for which the present or post-remediation use is primarily for wildlife habitat.
4. Excavation. For the purposes of this section, excavation is the digging or grading of any soil or fill material, including in-stream work and underground utility works such as installation of fiber optic cabling, with the exception of aggregate fills with are not considered a soil or fill material of concern. The following types of maintenance projects are not considered excavation when the excavated material is left on, or incorporated within, the IDOT or LPA ROW:
 - a. bridge maintenance
 - b. ditch cleaning
 - c. working within the sub-base or pavement
 - d. removal and replacement of shoulders, curb and gutter, or curb ramps
5. Industrial/Commercial Property. Any real property not meeting the definition of residential property, conservation property, or agriculture property. For the purposes of special waste screening, the term also includes real property used historically or previously for industrial, commercial, or retail purposes.
6. Leaking Underground Storage Tank (LUST). An underground storage tank where the contents have leaked into the environment.
7. Preliminary Environmental Site Assessment (PESA). A detailed evaluation of available records dealing with site history, including a field visit to the site to visually inspect and investigate conditions.
8. PESA Validation. The re-evaluation of the project area to check for the possibility of new reported releases and determine if land uses have changed within the project area. This process reflects the realization that special wastes and other regulated substance contamination often may be introduced (through illegal disposal, migration from off-site, or generation from new land uses) into areas previously evaluated for contamination. The re-evaluation should consider any changes in the proposed action, the affected environment, and anticipated special waste/regulated substance involvement.
9. Preliminary Site Investigation (PSI). A preliminary investigation of the site, including sampling, testing, and analysis of soil or groundwater, as necessary, and an estimate of the cost of cleanup by parcel, if possible, for the Department's project.

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10. Project Monitoring Application (PMA). The electronic database used by BDE to manage Environmental Survey Requests (ESR). Each project in PMA is assigned a unique BDE sequence number and is also referenced to a construction job number and contract number when available. The database is accessible to designated IDOT Central Office personnel and district environmental personnel.
11. Recognized Environmental Condition (REC). The presence or likely presence of any regulated substances on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any regulated substances into structures on the property or into the ground, groundwater, or surface water of the property. The term includes regulated substances even under conditions in compliance with laws. The term is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment, and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.
12. Residential Property. Any real property used for habitation by individuals, or where children have the opportunity for exposure to contaminants through soil ingestion or inhalation at educational facilities, health care facilities, childcare facilities, or outdoor recreational areas.
13. Resource Conservation and Recovery Act (RCRA). This Act governs the management of hazardous wastes. The process for identifying a hazardous waste involves many steps. There is no single, comprehensive list of hazardous wastes that is regularly updated. To be considered a hazardous waste, a material first must be classified as a solid waste (40 CFR 261.2 "Definition of Solid Waste"). EPA defines solid waste as garbage, refuse, sludge, or other discarded material (including solids, semisolids, liquids and contained gaseous materials). If a waste is considered solid waste, it must then be evaluated to determine if it is a hazardous waste (40 CFR 262.11 "Hazardous Waste Determination"). EPA defines wastes as hazardous if they are specifically named on one of four lists of hazardous wastes included in Subpart D of 40 CFR 261 "Lists of Hazardous Wastes" (see 40 CFR 261.30 through 261.35) or if they exhibit any of the four characteristics discussed in Subpart C of 40 CFR 261 "Characteristics of Hazardous Waste" (see 40 CFR 261.20 through 261.24).
14. Site Reconnaissance. A visit to the project site and adjoining properties during which observations are made. The objective of site reconnaissance is to obtain information indicating the possible presence of environmental conditions within the minimum search distances listed in BDE Manual Chapter 27-3, Figure 27-3.B. Environmental conditions include situations that may negatively affect the property including the presence of, for example, illegal dumping, unknown containers and vessels, waste associated with 'crack' and methamphetamine houses (e.g., discarded hazardous material on the outside of a property), battery piles, paint spills, abandoned transformers, surface staining, and vegetative damage. This level of inspection generally does not require the investigator to enter onto a property and may be done from the existing ROW. During the site reconnaissance, observations are documented and photographic evidence is obtained to assist in completing the Environmental Survey Request (ESR).
15. Special Waste. Special waste means any of the following:
 - a. potentially infectious medical waste;

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- b. hazardous waste, as determined in conformance with RCRA hazardous waste determination requirements set forth in 35 Ill. Admin. Code 722.111, including a residue from burning or processing hazardous waste in a boiler or industrial furnace unless the residue has been tested in accordance with 35 Ill. Admin. Code 726.212 and proven to be non-hazardous;
- c. industrial process waste or pollution control waste, except:
 - any such waste certified by its generator, pursuant to Section 22.48 of the Illinois Environmental Protection Act, not to be any of the following:
 - + a liquid, as determined using the paint filter test set forth in subdivision (3)(A) of subsection (m) of 35 Ill. Admin. Code 811.107;
 - + regulated asbestos-containing waste materials, as defined in 40 CFR 61.141, under the National Emission Standards for Hazardous Air Pollutants;
 - + polychlorinated biphenyls (PCBs) regulated pursuant to 40 CFR 761;
 - + an industrial process waste or pollution control waste subject to the waste analysis and recordkeeping requirements of 35 Ill. Admin. Code 728.107 under the land disposal restrictions of 35 Ill. Admin. Code 728; and
 - + a waste material generated by processing recyclable metals by shredding and required to be managed as a special waste under Section 22.29 of the Illinois Environmental Protection Act.
 - any empty portable device or container, including but not limited to a drum where a special waste has been stored, transported, treated, disposed of, or otherwise handled, provided that the generator has certified that the device or container is empty and does not contain a liquid, as determined using the paint filter test set forth in subdivision (3)(A) of subsection (m) of 35 Ill. Admin. Code 811.107. For purposes of this definition, "empty portable device or container" means a device or container where removal of special waste, except for a residue not to exceed one inch (25 mm) in thickness, has been accomplished by a practice commonly employed to remove materials of that type. An inner liner used to prevent contact between the special waste and the container shall be removed and managed as a special waste; or
 - as may otherwise be determined under Section 2.9 of the Illinois Environmental Protection Act.

Special waste does not mean fluorescent and high-intensity discharge lamps as defined in subsection (a) of Section 22.23a of the Illinois Environmental Protection Act, waste that is managed in accordance with the universal waste requirements set forth in Title 35 of the Illinois Administrative Code, Subtitle G, Chapter I, Subchapter c, Part 733, or waste that is subject to rules adopted pursuant to subsection (c)(2) of Section 22.23a of the Illinois Environmental Protection Act. (415 ILCS 5/3.475)

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16. Special Waste Coordinator (SWC). The district IDOT person primarily responsible for screening projects for the possible presence of waste using the processes described in this chapter. The individual is additionally responsible for coordinating and preparing the Environmental Survey Request (ESR) for DOH projects and the state portion of local projects involving state right of way or when project plans are prepared by IDOT for the Local Public Agency (LPA). Screening of projects for special waste should be conducted by those with environmental experience and expertise, typically the District Environmental Coordinator.
17. Survey Target Date. The date established by the district by which the completed survey report (e.g., the PESA) is desired. This target date is used by BDE for internal scheduling purposes for all the requested environmental surveys and does not necessarily represent the completion date of the respective survey(s). The size, length, and complexity of the proposed project, along with seasonal field conditions and minimum timing required by policy, should be considered when establishing the date.
18. Underground Storage Tank (UST). Any single tank or combination of tanks (including underground pipes connected to the tank(s)) used to contain an accumulation of regulated substances, and that has 10% or more of its volume (including the volume of associated underground pipes) beneath the surface of the ground. The term does not include any of the following facilities or associated pipes:
 - a. farm or residential tank with a capacity of 1100 gallons or less, used for storing motor fuel for noncommercial purposes;
 - b. septic tank;
 - c. pipeline facility (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968 or the Hazardous Liquid Pipeline Safety Act of 1979 (both codified in 49 USC 60101, et seq.), or that is an intrastate pipeline facility regulated under State laws as provided in either of the aforementioned statutes, and that is determined by the Secretary of Energy to be connected to a pipeline or to be operated or intended to be capable of operating at pipeline pressure or as an integral part of a pipeline;
 - d. surface impoundment, pit, pond, or lagoon;
 - e. storm water or waste water collection system;
 - f. flow-through process tank;
 - g. liquid trap or associated gathering lines directly related to oil or gas production and gathering operations; or
 - h. storage tank situated in an underground area (e.g., basement, cellar, mine working, drift, shaft, tunnel) if the storage tank is situated upon or above the surface of the floor.

The term also means an underground storage tank used exclusively to store heating oil for consumptive use on the premises where stored and that serves other than a farm or residential unit (415 ILCS 5/57.2).

20-12.02 Applicability

These procedures apply to all LPA projects using Federal, State and MFT funded projects, or any LPA project affecting State property.

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20-12.02(a) Applicability for Special Waste Affecting State Property

Early in project development, the LPA must determine who will hold title to the acquired property, who will prepare plans, and who owns and manages the existing right-of-way. Specifically, if any portion of the local project involves any of the following situations, regardless of funding source, then the project is additionally subject to review by Chapter 27-3 (Special Waste Procedures) of the BDE Manual:

- Project plans are prepared by IDOT for a LPA;
- Title is held or will be held in the name of the State;
- Work involves acquiring temporary or permanent easements in the name of the State;
- Work (including excavation) affects State ROW or a road under state jurisdiction; or
- Work requires acquiring right-of-way in the name of the State.

In these cases, the LPA must contact the District BLRS who will communicate with the District Special Waste Coordinator (SWC) early in the planning process and co-coordinate the special waste review. Involvement of the Department in these types of projects acknowledges that BLRS and BDE must coordinate efforts in order to deliver timely and comprehensive environmental review.

20-12.03 Special Waste Screening

The LPA must screen all projects on the local highway system in order to determine whether they require further documentation for special waste contamination on sites otherwise potentially impacted by regulated substances. Follow the Special Waste Assessment (SWA) Screening Criteria shown on Figure 20-12A. The screening process applies criteria for determining a project's potential involvement with special waste and other regulated substances and leads to a determination whether or not further action is necessary.

The LPA must also determine when a project involves any of the bulleted items listed in Section 20-12.02(a) (Applicability for Special Waste Affecting State Property), and if so, these projects must also follow BDE Manual Chapter 27-3 and require co-ordination with the District SWC, as described below in more detail.

20-12.03(a) Special Waste Screening on State Property

For a project where the plans are prepared by IDOT on behalf of a LPA [bullet #1 in Section 20-12.02(a)], the entire project must follow BDE Chapter 27-3 procedures and IDOT will be responsible for the preparation of the PESA and a Preliminary Site Investigation (PSI), if necessary. For a project involving any one of the other bulleted items, the portion(s) of the project involving the State must follow BDE Chapter 27-3 procedures; the remaining portions of the project must follow BLRS Chapter 20 procedures. The coordination of these projects lies with the LPA and their District BLRS coordinator. The district SWC and BDE provide guidance to ensure that Chapter 27 is followed for the state-affected portion of the project.

Follow these steps when the project involves any one of the five bulleted situations in Section 20-12.02(a):

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- Fully complete the ESR and check the Special Waste box.
- Clearly identify the portion(s) of the project where ISGS should complete the PESA for BDE; show this area on a figure, explain in text, and include with the ESR submittal.
- The District will alert the District (Highways) SWC who is responsible for ensuring that BDE Manual Chapter 27 is followed for the portion of the project affecting State jurisdiction.

The district BLRS will forward the special waste portion of the ESR to the district SWC for special waste screening according to BDE Manual Section 27-3.02. The PESA effort will be divided between BDE and LPA on a case-by-case basis by the District SWC and BDE using the information supplied with the ESR. In most cases, BDE will complete a PESA on the state road portion of the project, and the LPA/consultant will complete a PESA on the non-state road portion(s) of the project. If the project does not involve any of the five bulleted criteria in Section 20-12.02(a), do not check the special waste box or complete the special waste screen on the ESR.

The district SWC will ensure that the special waste box is checked on the Project Monitoring Application (PMA) and will review the state portion of the project using the information provided by the LPA. The SWC will ensure the LPA has provided the necessary information on the special waste screen on the ESR and place it in the Project Monitoring Application (PMA) for subsequent processing by BDE. For certain projects that meet Level I or Level II screening criteria, the district SWC may sign-off on the special waste and a PESA is not required. All other projects with the special waste box checked in the PMA will require a PESA.

BDE will send a request for a PESA to the Illinois State Geological Survey (ISGS). The target date for the completion of the PESA report is a minimum 6 months from the date ISGS is alerted of the PESA request. Upon receipt of the final PESA report, the district notifies the LPA of the findings and awaits a PESA Response. The district coordinates the PESA Response with the district SWC. If a PSI is necessary, BDE will contact the Statewide Special Waste Investigation Consultant and request a work plan and estimated budget for the PSI. See BDE Manual Section 27-3.05 (Preliminary Site Investigation) for the PSI procedures. In any case, a PSI by BDE will be conducted only on the state road portion of the project. The LPA/consultant is responsible for conducting a PSI on the non-state portion(s) of the project.

In summary, a local project involving any of the five bulleted criteria must follow BDE Chapter 27-3 for the portion of the project that involves State highway, or in the case when IDOT is preparing the plans for the LPA, the entire project must follow BDE Chapter 27. The State portion of the project must be coordinated with the district SWC and managed through PMA.

20-12.03(b) Special Waste Screening on non-State Property

Taking title (or lesser interest) to property containing special waste, or moving contaminated soil off-site, exposes the LPA to potential liability for associated investigation and cleanup costs. To limit liability, projects must be screened/assessed for special waste or other regulated substances as described in the following sections and as flowcharted in Figure 20-12A. Successfully following the screening process and appropriately documenting the results limit the LPA's potential environmental liability.

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1. General Screening Information. The LPA conducting the screening shall complete the applicable portion of the ESR form, sign and date the form, and send an electronic (or paper copy) of the signed and dated form to the District BLRS. The district shall ensure the form is retained in the project file and included in the environmental documentation for the project to support the finding that further investigations are not warranted.

For purposes of the screening process, the project and project area shall include the area encompassing the current right of way or easements (temporary or permanent) plus the outer most limits of the proposed right of way or easements. Furthermore, the minimum search distance when conducting the screening is measured from the outermost edges of the project area.
2. Level I Screening. The LPA shall screen projects to determine if special waste investigations are necessary. That is, the LPA may sign-off the project and not undertake further action to identify and assess special wastes or other regulated substance contamination if the project does not:
 - a. involve acquisition of additional right-of-way or easements (temporary or permanent);
 - b. cross or otherwise involve a railroad's right-of-way other than a single rail rural right-of-way with no maintenance facilities; or
 - c. involve excavation (see definition of excavation) or subsurface utility relocation.
3. Level II Screening. Projects that don't pass Level I screening due to situations 2a and 2c may be further screened by the LPA to determine if a PESA will be necessary or if the project is still eligible for a LPA sign-off. Projects that involve situation 2b are ineligible for LPA sign-off and must go through the PESA process.

To be eligible for LPA Level II sign-off, the following must be met:
 - there are no conditions or database occurrence within the minimum search distances shown in BDE Manual Chapter 27, Figure 27-3.B;
 - a site reconnaissance was conducted and no concerns were identified, and;
 - the ESR form was thoroughly completed and processed through CBLRS.
If application of the Level II screening leads to a determination that further action is required, a PESA will be necessary.

20-12.04 Preliminary Environmental Site Assessment (PESA)

The purpose of a PESA is to determine the environmental condition of a site prior to the acquisition of right-of-way, easements (temporary or permanent), or improvements to existing right-of-way or easements.

The LPA or a consultant will prepare a PESA using the processes described in *A Manual for Conducting Preliminary Environmental Site Assessments for Illinois Department of Transportation Infrastructure Projects, Second edition, January 2012.*

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20-12.04(a) PESA Findings

The following procedures apply:

1. No "Recognized Environmental Condition" (REC) Finding. If the final PESA report indicates that the property(ies) investigated within the project limits have no RECs (other than de minimis), the LPA shall document this finding in the PDR or environmental document for the project. The documentation should include a copy of the final PESA report's risk finding. The LPA need not take any further action regarding property(ies) that do not contain any REC unless a re-evaluation for special wastes becomes necessary or a previously unidentified property is encountered. No further action is necessary regarding sites potentially impacted with regulated substances unless a reevaluation for special wastes become necessary under the Validation of Special Waste Assessment Results, see Section 20-12.07, or if a previously unidentified site is encountered. If another site is encountered, work affecting the site should immediately cease until the LPA has assessed the situation and determined an appropriate course of action.
2. "Recognized Environmental Condition" (REC) Finding. If the PESA results in a determination that the project has a REC(s), further investigation is required. For special waste or other sites potentially impacted with regulated substances, determine conditions for reducing the risk to an acceptable level through means of avoidance.
 - a. Avoidance of Contaminated Site Possible. If it is determined that the project can avoid the site containing the REC(s), indicate it in the environmental document or Project Development Report. Avoidance of the site may be a horizontal or vertical change in alignment so that the LPA does not acquire the contaminated site, or a part that is contaminated or impacts it during construction. No further action is necessary regarding sites potentially impacted with regulated substances unless a re-evaluation for special wastes becomes necessary under the Validation of Special Waste Assessment Results, see Section 20-12.08, or if a previously unidentified site is encountered during construction. If another site is encountered, work affecting the site should immediately cease until the LPA has assessed the situation and determined an appropriate course of action.
 - b. Avoidance of Contaminated Site Not Possible. If it is determined that the project cannot avoid the site containing the REC(s), prepare a Preliminary Site Investigation (PSI) with a consultant or LPA personnel. The PSI will determine the nature and extent of contamination (i.e., above or below the clean-up objectives).

20-12.05 Preliminary Site Investigation (PSI)

20-12.05(a) PSI Work Plan

Prior to initiating the PSI, the LPA or it's consultant will prepare a PSI Work Plan that presents the scope of work and cost estimate for the potential waste sites affected by the project. At a minimum, the Work Plan should include the following information:

- Introduction
 - REC site background (referenced from PESA)
- Scope of Work (field investigation, drilling and laboratory subcontractor)

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- Health and safety
- General sampling approach
- Soil Sampling methodology
- Groundwater sampling methodology
- Sample handling, decontamination & investigation-derived waste
- Analytical methodology and procedures
- Geotechnical and analytical contractors
- Scope of Work (PSI Report)
- Project Organization, Schedule and Cost Estimate

The work plan should also include supporting tables and figures and appendices as necessary including excerpts and maps from the pertinent sections of the PESA.

20-12.05(b) PSI and Report

The purpose of the typical PSI is to assess environmental conditions within the existing and proposed right-of-way (ROW) or easements, to determine environmental impacts to soil and groundwater and/or sediment in the project area, and to evaluate how these impacts may affect proposed construction activities and/or land acquisition. The scope of the proposed investigation typically includes the following objectives:

- Determine the nature and extent of soil contamination within the ROW and at any proposed acquisition properties associated with the project area. If groundwater is encountered during the investigation, determine environmental impacts to the uppermost unit of groundwater.
- Based on the results of the soil and groundwater chemical analysis, prepare a site investigation report with finding, conclusions, and recommendations which include the remediation scope of work. The remediation scope of work should include an estimate of contaminated soil excavation quantities and an estimated cost for remediation. If groundwater is impacted and sufficient data on the extent and source of contamination are available, remedial alternatives will also be provided to implement cleanup. If necessary, a supplemental site characterization will be proposed to better determine the nature and extent of contamination.
- Evaluate the potential for contaminant migration to surrounding properties within the project area and present recommendations for reducing or eliminating such migration, if necessary, when the potential for migration is determined to be high.

The PSI report should include the following information:

- Introduction
- Site background
- Field investigation procedures and sampling rationale
- Field Investigation results
 - Analytical results
 - Comparison of analytical results t with regulatory standards
- Conclusions and recommendations

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- Prevention of contaminant migration
- Comparison of concentrations to TACO
- References

The report should also include supporting tables and figures and appendices as necessary including PESA excerpts, boring logs, summary of analytical results, laboratory data packages, site photographs, and uncontaminated soil certification forms. The figures should show the areas impacted by special waste or regulated substances. The report should include cost estimates to excavate, transport, and dispose of the contaminated material, and a special provision for managing the contamination including pay items and quantities.

Send a copy of the PSI to the IEPA if a LUST or Site Remediation Program (SRP) site is investigated and results exceed Tiered Approach to Corrective Action Objectives (TACO) levels. Send a copy of the PSI to the Office of State Fire Marshall (OSFM) if the site investigated is on the UST list and exceed TACO levels.

20-12.06 Relationship of Special Waste Process Results to Design Approval

Categorical exclusion concurrence and design approval for Federally funded projects may be given upon request of the LPA when results of the special waste process support one of the following determinations:

1. Application of the SWA screening criteria resulted in a finding that the project has no potential for involving special waste sites or other sites impacted with regulated substances.
2. The PESA has resulted in a finding that the project has no RECs for involvement with special waste sites or other sites impacted with regulated substances.
3. The PESA has resulted in a finding that the project has REC(s) for involvement with special wastes sites or other sites impacted with regulated substances and the LPA has determined that it can avoid the site. The request for design approval must include in the environmental documentation or PDR the LPA's determination that the site can be avoided. The information regarding the avoidance determination must be included in the commitment file for the project to ensure follow-through in subsequent stages of project development and implementation.
4. The PESA resulted in a finding that the project has REC(s) for involvement with special waste sites or other sites impacted with regulated substances, and the LPA cannot avoid the site and:
 - the nature and extent of the involvement is known;
 - the cost of addressing the site is known, based on the results of the PSI or subsequent studies or assessments, as needed;
 - the LPA has determined that the above cost is acceptable; and
 - the areas of contamination will be managed and disposed of in accordance with all applicable State and Federal regulations.

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The request for design approval must include documentation of the LPA's determination that the cost and effort involved in addressing the site is acceptable. When the proposed project is on existing alignment or involves only a single alignment alternative, the LPA may request design approval prior to receiving the results of the PSI. Prior to initiation of the PSI, the LPA should re-screen the project to evaluate whether anything has changed in the project area that would affect the results of the PESA and should update the PESA as necessary. If design approval has been given and federal funds will be used to purchase ROW, the PSI and subsequent studies must be completed prior to the acquisition of any parcels that contains a REC(s).

If the identified contaminated area is located on property that is held or will be acquired in the name of the State or if contract plans will be prepared by IDOT, the LPA may submit a request to the district for design approval before the special waste procedures are completed provided that the special waste screen on the PMA shows the project is cleared for design approval. The district will coordinate the request with the district SWC. The waiver request will be submitted to the Central BLRS.

If the identified contaminated area is located on property that is held or will be acquired in the name of the LPA, the LPA may submit a request to the district for design approval before the special waste procedures are completed if one of the determinations stated above apply. The request will be given via a special waste waiver. The waiver request will be submitted to Central BLRS.

20-12.07 Relationship of Special Waste Process Results to Contract Letting

Anytime design approval is requested before a PSI has been completed a commitment stating that the PSI will be completed before the project is included on a letting must be included in the PDR or environmental document. The LPA will be required to complete the PSI, when applicable, and ensure all commitments in the Project Development Report, Design Report, or environmental document regarding the monitoring and management of regulated substances are included in the contract documents prior to letting. The LPA will provide the district with written notification that all required special waste studies has been completed.

20-12.08 Validity of Special Waste Assessment Results

If significant changes in land use, or more than 180 days and less than 3 years have elapsed since the last examination of a project for special waste/regulated substance contamination (i.e., LPA screening/sign-off or PESA), the LPA must validate the examination results before proceeding with arrangements for further special waste/regulated substance investigations before submitting the Project Development Report or environmental document for approval, if required, or before initiating land acquisition. The validation review should include a site reconnaissance and a check of the databases; see Section 20-12.08, for new reported releases and new land uses of potential concern. If changes are identified, a PESA should be conducted to evaluate the new reported release(s) and/or new potential land use concern(s).

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If 3 years or more have elapsed since the last examination for special waste/regulated substance contamination, LPA screening and sign-off or completion of a PESA, the entire project should be re-evaluated as a new action, that is, a new PESA should be performed, prior to proceeding with arrangements for further special waste/regulated substance investigations, before submitting for approval, or before initiating land acquisition. If a project was initially screened and cleared by the LPA and no PESA was completed, the re-evaluation after 3 years may again consist of LPA screening using the Level 2 screening tool, and clearance provided no changes have occurred in the project area that would alter the findings upon which the original clearance was based.

If a PSI was conducted for a project and 5 years or more have elapsed since it was completed, the entire project should be evaluated for regulated substances as a new action and a new PESA must be conducted prior to proceeding with the aforementioned project actions. In any case, a valid PESA is required and must be current up until the time of project letting. Completion of a PSI does not negate the need for an up-to-date PESA.

When validation of the results of special waste/regulated substance evaluations is necessary, the review should consider any changes in the proposed action, the affected environment, anticipated special waste/regulated substance involvement, and proposed measures for addressing the special waste/regulated substance.

20-12.09 Resources

The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list can be found on the EPA website. The Environmental Protection Agency's current list of Leaking Underground Storage Tanks (LUST) can be found on the Illinois EPA website. The list of LUST sites is an unconfirmed list and should not be used as a final determination regarding whether releases have occurred at sites on the list. BDE Manual Chapter 27, Figure 27-3.B contains a listing of all the databases required for a Level II screening.

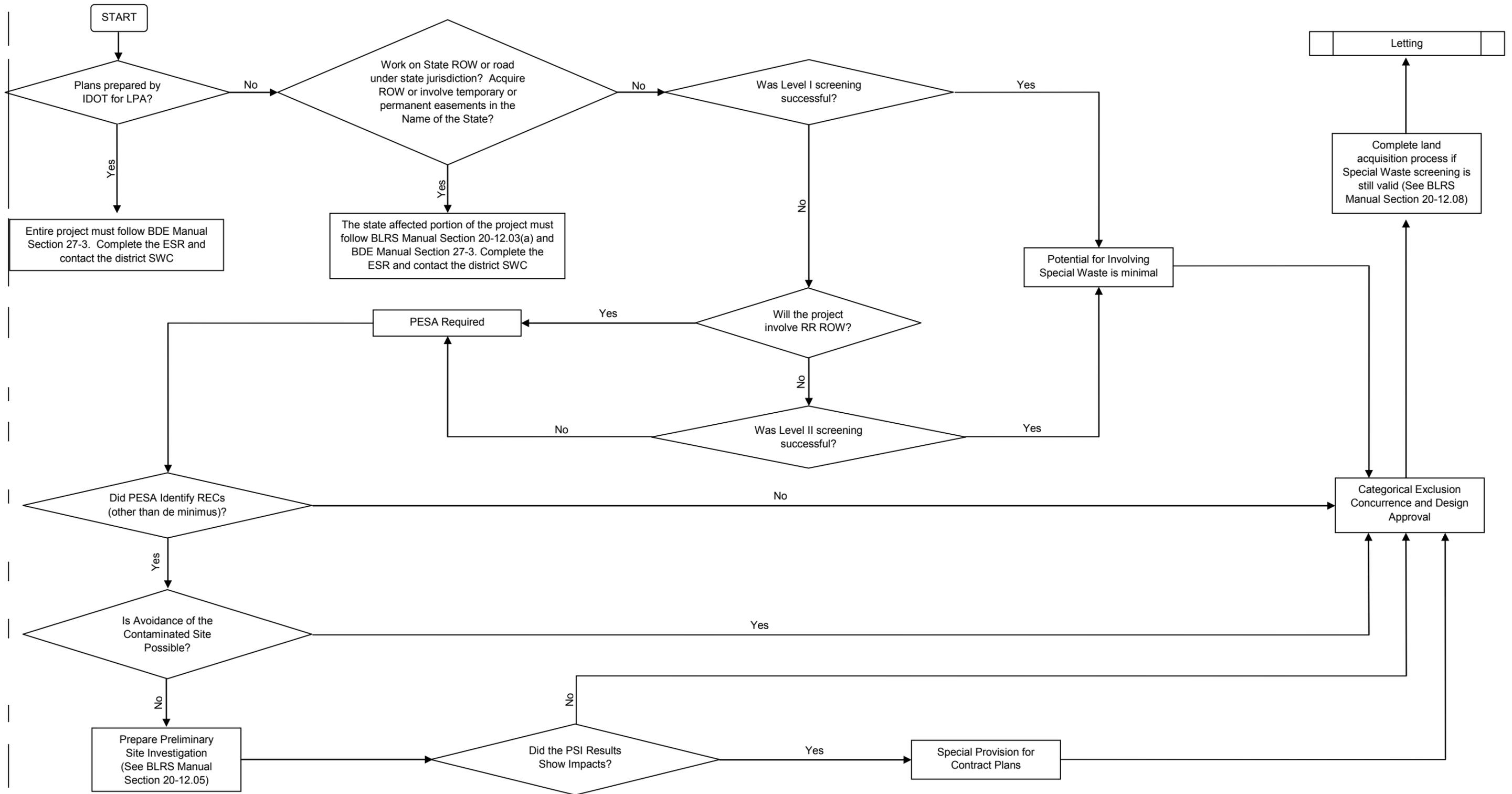
If a project involves a property on which the existence of an UST is suspected and does not appear on the list, contact the State Fire Marshal's office to check the most current registrations. The *Standard Specifications for Road and Bridge Construction* also contains guidance on proper procedures for UST removal.

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20-13 REFERENCES

1. 23 CFR 771, "Environmental Impact and Related Procedures."
2. FHWA Technical Advisory T6640.8A, "Guidance for Preparing and Processing Environmental and Section 4(f) Documents."
3. Section 4(f) Background/Questions and Answers, 49 USC 303.
4. Executive Order 11988, "Flood Plain Management."
5. Executive Order 11990, "Protection of Wetlands."
6. *Federal Endangered Species Act*, 50 CFR 402.
7. *Farmland Protection Act of 1981*, 7 USC-4201-4209.
8. "Farmland Protection Policy," 7 CFR 658.
9. Part III "Environmental Procedures," *Illinois Bureau of Design and Environment Manual*, IDOT.
10. *A Manual for Conducting Preliminary Environmental Site Assessments for Illinois Department of Transportation Infrastructure Projects, Second edition, January 2012, Open File Series 2012-1.*

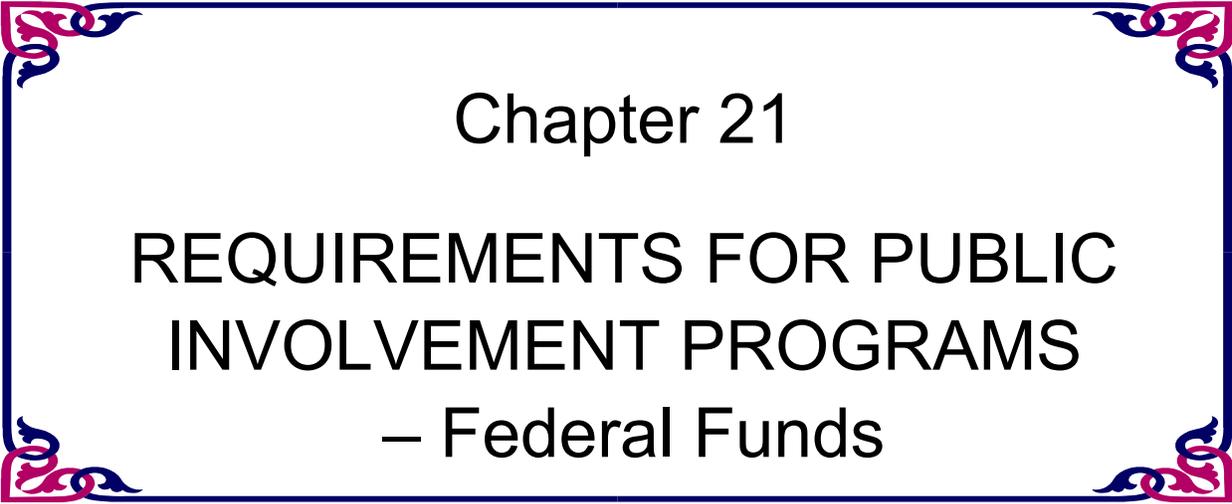
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Chapter 21

REQUIREMENTS FOR PUBLIC
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Chapter 21
REQUIREMENTS FOR PUBLIC INVOLVEMENT PROGRAMS - Federal Funds

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Chapter 21

REQUIREMENTS FOR PUBLIC INVOLVEMENT PROGRAMS - Federal Funds

The information detailed in this chapter is the Illinois Department of Transportation's (IDOT) public involvement policies and procedures that are required for all projects processed through the Bureau of Local Roads and Streets (BLRS).

21-1 FEDERAL REQUIREMENTS FOR PUBLIC INVOLVEMENT PROGRAMS

Section 128 of Title 23 of the *United States Code (USC)* specifically requires:

- (a) Any State transportation department which submits plans for a Federal-aid highway project involving the by passing of or, going through any city, town, or village, either incorporated or unincorporated, shall certify to the Secretary that it has had public hearings, or has afforded the opportunity for such hearings, and has considered the economic and social effects of such a location, its impact on the environment, and its consistency with the goals and objectives of such urban planning as has been promulgated by the community.
- (b) When hearings have been held under subsection (a), the State transportation department shall submit a copy of the transcript of said hearings to the Secretary, together with the certification and report.

In accordance with the Federal Highway Administration (FHWA) Regulations on Environmental Impact and Related Procedures (23 CFR 771.111(h)1) and pursuant to 23 USC 128 and 139 and Council on Environmental Quality (CEQ) regulations, each State must have procedures approved by FHWA to carry out a public involvement/public hearing program.

These procedures must provide for:

1. coordination of public involvement activities and public hearings with the entire *National Environmental Policy Act (NEPA)* process;
2. early and continuing opportunities during project development for the public to be involved in the identification of social, economic, and environmental impacts as well as impacts associated with relocation of individuals, groups, or institutions;
3. one or more public hearings or the opportunity for hearing(s) to be held at a convenient time and place for any Federal-aid project that:
 - requires significant amounts of right-of-way (ROW);
 - substantially changes the layout or functions of connecting roadways, or of the facility being improved;
 - has a substantial adverse impact on abutting property;
 - otherwise has a significant social, economic, environmental, or other effect; or

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- FHWA determines that a public hearing is in the public interest.
4. reasonable notice to the public of either a public hearing or the opportunity for a public hearing. Such notice will indicate the availability of explanatory information and provide information that is required to comply with the public involvement requirements of other laws, executive orders, and regulations; and
 5. an explanation at the public hearing of the following information, as appropriate:
 - the project's purpose, need, and consistency with the goals and objectives of any local urban planning;
 - the project's alternatives and major design features;
 - the social, economic, environmental, and other impacts of the project;
 - the relocation assistance program and the ROW acquisition process; and
 - the State highway agency's procedures for receiving both oral and written statements from the public.
 6. Submission to the FHWA of a transcript of each public hearing and a certification that a required hearing or hearing opportunity was offered.
 7. An opportunity for public involvement in defining the purpose and need and the range of alternatives, for any action processed as an Environmental Impact Statement (EIS).
 8. Public notice and an opportunity for public review and comment on a Section 4(f) *de minimis* impact finding, in accordance with 49 U.S.C. 303(d).

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21-2 DEFINITION AND APPLICATION

The following Sections provide guidance on the application of public involvement programs. When there is a question as to whether a public hearing is required, a determination must be obtained from the Central BLRS (CBLRS) and FHWA. This is typically done at a district coordination meeting.

21-2.01 Public Involvement Process and the NEPA Process

FHWA regulations require coordination of public involvement activities with the entire *NEPA* process and early and continuing opportunities during the project development process for the public to be involved in identification of impacts. The intent of public involvement is to obtain input from and inform affected property owners, the traveling public and other interested parties about the project and its impacts to the environment. The public involvement process includes a range of activities from sending a letter to an impacted property owner to holding formal public hearings. Whenever comments are received from the public, the local public agency (LPA) is obligated to respond to the comments in an attempt to resolve any concerns about the project.

The application of the public involvement process is intended to be flexible so that it can be applied to any project from a simple bridge replacement to a new roadway on a new alignment.

Public involvement coordination is a continual process throughout the entire *NEPA* process and through the Phase 2 design stage of the project.

Proposed actions “that significantly affect the environment” will require preparation of an EIS (23 CFR 771.115(a)). Significance of impacts requires consideration of context (existing environment and setting) and intensity (severity and degree) (40 CFR 1508.27). Early coordination with BLRS and FHWA will be necessary to determine if an action will likely “significantly affect the environment” and require preparation of an EIS (see [Chapter 25](#) – Environmental Impact Statements and [Chapter 26](#) – Special Environment Analyses in the *Bureau of Design and Environment (BDE) Manual*).

21-2.02 Significant Right-of-Way (ROW)

When a project is planned for new location, it will involve a “significant” amount of ROW in the context of 23 CFR 771.111(h)(2)(iii) and may have considerable impact on the area in which it is located. For those projects that use the existing alignment with minor relocations or require additional strips of ROW, the district/LPA must consider several factors in determining whether acquisition is a significant amount. When it is determined to be a significant amount, a public hearing or an opportunity for a hearing must be held or given.

Factors that may determine whether there is a significant amount of ROW include the following:

- Quantity and location of land to be acquired;
- Number of property owners from which ROW will be acquired;
- Usage of the property to be acquired.

21-2.02(a) Quantity

The first factor to consider is the quantity of land to be acquired. The significance of the quantity will vary depending upon the character of the surrounding land. In rural areas, the acquisition of several acres (hectares) per mile (kilometer) for a project may be insignificant. In urbanized areas, acquisitions involving less than 1 acre (0.5 ha) might be significant if high-occupancy properties will be affected. Each location must be evaluated separately considering the density of population, types of properties, and the remaining open space available.

21-2.02(b) Number of Property Owners

The number of property owners involved can also be a factor in determining the significance of the ROW taking. The number of affected property owners does affect the type of public involvement activity to be held; however, there is no specific number of affected property owners above which a public hearing or opportunity for a hearing is required. At a minimum, the LPA must contact individual property owners from whom land will be acquired, during the project development stage. At some point, it is practical to hold one meeting rather than to separately contact all the property owners involved. Generally, separate contacts of 10 or more property owners are not as cost effective as offering a public hearing or holding an informational meeting.

21-2.02(c) Usage

The use of the property to be acquired can result in a significant amount of ROW even if the number of owners involved is small. Other effects that could be considered significant are acquisitions that will impact improvements that have been made on the property. A typical example is the taking of storage tanks or pumps from service stations at intersections. Although the property taking might be minimal, the impact on the business, and perhaps on the neighborhood, may be considered significant. Other situations might involve water supplies or power supplies feeding particular communities or neighborhoods, or small takings along a street, which might affect a neighborhood or community commercial area.

If a property proposed for acquisition is used as a recreational area or wildlife refuge, or if it is a historic property (see [Section 20-5](#)), it may be protected under Section 4(f) of the 1966 Department of Transportation Act (see [Section 20-3](#)). The public must be offered an opportunity to review and comment on impacts to Section 4(f) property when FHWA intends to issue a “de minimis” finding for a transportation use of a Section 4(f) property. This requirement can be satisfied in conjunction with other public involvement procedures for the project or through one or more activities specifically for that purpose (e.g., a public hearing, public meeting, or a newspaper notice seeking comments on the Section 4(f) resource impacts).

21-2.03 Changes in the Layout or Function

Projects that change the layout of a facility or the layout of the roads and streets that connect to it could have considerable impact upon abutting properties and users of the facility. Generally, changes in layout will involve the acquisition of additional ROW, and the LPA should consider the factors discussed in Section 21-2.01. Projects that cause adverse travel and that affect service to abutting properties, including change in access, usually result in considerable public interest, regardless of the amount of ROW acquired. The development of a public involvement program is warranted to address these impacts and, if substantial changes will occur, a public hearing is required.

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Changes in the function of a street or highway, especially when not accompanied by the acquisition of additional ROW, result in more subtle impacts to abutting property owners and other citizens. These impacts, whether real or perceived, may create considerable public interest in a highway project. The district and LPA should carefully consider this when planning a public involvement program or the possibility of a public hearing.

There are several changes which are sufficient to cause a change in the function of a facility or of connecting roads and streets. These changes do not necessarily require the acquisition of additional ROW, but rather alter the character of use (e.g., changing from local access to through traffic). The following is a list of typical actions that are considered changes in function:

- change in access to individual properties, such as addition of frontage road, right-in/right-out;
- change from two lanes to four or more lanes;
- change from no median or a flush median to a raised median;
- changing to a one-way couple that involves a street not previously carrying through traffic;
- converting a conventional intersection into a roundabout;
- road closures; and
- removal of marked on-street parking.

The reverse of these actions also constitutes a change in the function.

Changes in function can result in many impacts that may create considerable controversy or public interest. The following are typical impacts that may result from the changes in the function of a facility or its connecting roads and streets:

- changes in traffic volumes;
- changes in the type and character of traffic (e.g., volume of trucks, local or through traffic, low- or high-speed traffic);
- change in commercial or residential development affecting the neighborhood character;
- change in property use;
- change in pedestrian accessibility such as constructing new sidewalk, on existing ROW, where none currently exists;
- change in accessibility to abutting properties; and
- changes in travel patterns.

The following projects will not normally require the holding or offering of a public hearing because of 23 USC 128:

- upgrading an existing road or street to current design criteria for 20-year traffic including the acquisition of additional ROW, but not including additional through traffic lanes;
- intersection improvements including signals, radius returns, throat widening, adding turn lanes, and other channelization;

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- widening less than a one-lane width and resurfacing, with or without additional ROW;
- changing from open ditches to closed drainage; and/or
- projects in rural areas that do not pass through or bypass a city, town, or village.

21-2.04 Social, Economic, Environmental Effects and Relocations

See [Chapter 19](#) of the *BDE Manual* for guidance in determining if a public hearing is warranted based on social, economic, environmental effects and relocations caused by a project.

21-2.05 Environmental Impact Statements (EIS)

Public involvement activities for an EIS must comply with 23 USC 139. See Chapters [19](#) and [25](#) of the *BDE Manual* for additional information. If during project development, FHWA determines an action will “significantly affect the environment”; the preparation of an EIS will be required (23 CFR 771.115(a)). In the context of *NEPA* determining the “significance” of impacts requires consideration of context (existing environment and setting) and intensity (severity and degree) (40 CFR 1508.27). Early coordination with BLRS and FHWA will be necessary to determine if an action will likely “significantly affect the environment” and require preparation of an EIS.

21-2.06 NEPA Re-evaluations and Project Development Report (PDR) Addenda

If, after *NEPA* approval has been granted (Categorical Exclusion (CE), Finding of No Significant Impact (FONSI), or Record of Decision (ROD)), the LPA discovers new impacts to cultural or biological resources, changes the scope of work, or if additional ROW and/or easements are needed, the *NEPA* decision must be re-evaluated to determine if the CE, FONSI, or ROD is still valid. The LPA shall consult with the District and CBLRS prior to requesting any major approvals or grants to establish whether or not the approved environmental document or CE designation remains valid for the requested FHWA action. These consultations will be documented when determined necessary by the FHWA (see 23 CFR 771.129(c)). Additional public involvement activities may be required during the re-evaluation. The proposed changes to the scope of work, environmental impacts or additional ROW will determine if additional public involvement activities are required. The LPA shall coordinate with the District and CBLRS to determine the level of required public involvement activities and required environmental clearances. See [Section 22-2](#) for more information about PDR addenda.

21-2.07 General Public Interest

Those projects in which there is a high public interest or controversy must be discussed at a district coordination meeting. The appropriate public involvement activities will be determined in consultation with the CBLRS and the FHWA. Public interest in a project, especially public controversy, may be sufficient enough to warrant a public hearing not otherwise warranted under Sections 21-2.01 through 21-2.06.

21-3 DESIGNING PUBLIC INVOLVEMENT PROGRAMS

An effective public involvement program can consolidate overall public support and contribute significantly to the timely completion of projects with the additional benefit of a positive attitude towards IDOT and the LPA. Providing advance notice and a public forum for the citizenry to receive information about a project and to comment where appropriate can avert much controversy or antagonism.

21-3.01 Types of Public Involvement Activities

The following are examples of public involvement activities that can be implemented during project development. LPAs should consider the context and intensity of the proposed action when selecting which activity, or combination of activities, are appropriate for each project.

- 1) Property Owner Notifications by letter – Notify all property owners that will have either temporary or permanent ROW acquired;
- 2) Individual property owner meetings – either the property owner requested meeting as a follow up to notification letter or LPA chooses to have a meeting;
- 3) Newspaper notice – *de minimis* Section 4(f), Section 106 marketing of historic bridges, and other required notices to the public;
- 4) Public Informational Meetings – substantial change in access (either temporary or permanent). Substantial amounts of ROW, substantial social, economic, and environmental impacts, substantial number of relocations of individuals, groups, or institutions; and/or
- 5) Public Hearing.
 - o Significant amounts of ROW (Section 21-2.02);
 - o Substantial changes to the layout or function (Section 21-2.03);
 - o Substantial adverse impact on abutting property (Section 21-2.02(c));
 - o Significant social, economic, environmental or other effect (Section 21-2.04); or
 - o FHWA determines that a public hearing is in the public interest (Section 21-2.07).

This *Manual* does not provide a fixed format or schedule of public involvement activities because a tailored approach is recommended to fit each project and achieve maximum effectiveness. The program may include any or all the above activities, or additional activities appropriate for a project. If a public hearing is deemed necessary, the LPA in consultation with FHWA and IDOT may determine when and in what format public hearings will be held.

There is sometimes a delay from the time public involvement activities have taken place to the time land acquisition or construction begins. When a project again becomes active, the project area should be reviewed to ensure that any new development or new property owners affected by the project are aware of the proposed improvement. It may be necessary to issue a press release or individually contact the new property owners. In some cases, an additional public involvement activity should be held.

21-3.02 Public Involvement Activities

If a project meets the public hearing criteria discussed in Sections 21-1 and 21-2, the LPA must include the holding or offering of at least one public hearing in the public involvement program. On all other Federal-aid projects several options for obtaining public involvement are available.

For those projects that involve additional ROW including the use of temporary easements, the LPA will have the following options available:

1. Property Owners Notification by Letter. This option is generally suitable when the project involves acquisition of minimal ROW from a small number of property owners (e.g., less than 10, depending on context). Under this option the LPA will contact each property owner from which ROW will be acquired and provide them with an opportunity to comment on the project. The LPA shall contact owners via certified mail with return receipt requested. For follow-up contacts, a representative of the LPA can make personal contact via telephone or on-site visits. All personal contacts are to be documented in a memorandum to the file. The letter should describe:
 - the reason for the contact;
 - policy on public involvement;
 - property affected;
 - scope of project;
 - reason the ROW is needed;
 - scheduling of the project;
 - how to comment;
 - options for commenting;
 - where to get more information; and
 - acquisition procedures.

See Figure 21-3A for a sample letter. The LPA should send two copies of the letter (i.e., one original and one copy), with an exhibit showing the property and proposed taking, by certified mail with a return receipt requested and a self-addressed stamped envelope for returning comments. Make a record of any comments from the property owner, whether contacted in person or by certified mail, and inform the owner of any actions taken to resolve any objections or suggested changes.

2. Individual Property Owner Meetings. These types of meetings are appropriate when either a property owner has requested a meeting as a follow up to a notification letter or the LPA chooses to have the meeting.
3. Public Information Meeting. This option is generally suitable when the project involves acquisition of more than minor amounts of ROW, involves the taking of improvements on affected properties, or involves known controversy, organized opposition, or potentially "significant" impacts in the context of NEPA. Under this option, the LPA will schedule and hold an involvement activity open to the public and advertise in advance.
4. Public Hearing Offer. Depending on the scope of work and with consultation with CBLRS and the FHWA, the LPA may determine the level of public interest in a project by publishing a notice in the newspaper of an offer to hold a public hearing. When

regulations require a public hearing, but other activities have apparently satisfied the need for public involvement, or when there is no apparent adverse impact or interest in a project, the regulations may be satisfied by publishing a notice in a newspaper offering an opportunity to request the LPA to hold a public hearing. The LPA should publish the notice of the offer at least twice, approximately one week apart in at least one newspaper of general circulation near the project. The deadline for requesting a public hearing must be at least 21 days after the notice announcing the offer first appears in a newspaper. When an offer for a public hearing has been published and the process completed, a letter must be sent to the FHWA certifying that the offer to hold a public hearing had been made and a resolution of any comments received. See Figure 21-4B for a sample letter that is to be sent to the FHWA.

5. Public Hearing. The decision to offer or hold a public hearing should be based on analyzing the factors in Sections 21-2.02 through 21-2.04. There could be circumstances when there is no public interest or no organized opposition, but the project still warrants a public hearing because there is “significant ROW”, or “changes in the layout or function” etc. required by the project.

On those projects which involve no additional ROW and for which no public involvement activity is planned, the LPA should determine what information will be released to the news media to inform the public of the project.

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[Project Identification]

[Date]

[Property Owner Identification]

Dear _____:

The purpose of this letter is to notify you that ***[LPA]*** is presently in the preliminary engineering phase of a study of the improvement of ***[identify project and termini]***. This project is tentatively scheduled for construction in ***[date]***.

It is the policy of the Illinois Department of Transportation (IDOT) and ***[LPA]*** to provide the public an opportunity to become acquainted with highway proposals of potential concern to them and to provide an opportunity for their input.

Based on a review of the tax record of ***[county name]*** County, you are identified as the owner of the property located ***[description]*** as shown on the attached ***[aerial photograph or drawing]***.

The proposed improvement generally consists of ***[project description]***. The proposed right-of-way that is to be acquired from your property for this improvement is indicated on the enclosed preliminary plan sheet. The right-of-way acquisition is needed to ***[give reason]***.

At the end of this letter is an area where you can indicate your comments, if any. You may also request further discussions with us, either via the telephone or a personal meeting. Please indicate the appropriate response and return one copy to us in the enclosed self-addressed envelope. If no response is received within 21 days, it will be construed as a "no comment" response.

Upon completion of our study, a report will be prepared describing the proposed work and submitted to IDOT for approval. After approval is received, we will proceed with the plan preparation and land acquisition phase. In that phase, a representative of ***[LPA]*** will contact you regarding any necessary acquisition.

Please note that your response or lack thereof will in no way influence the amount of compensation you will receive for your property if acquired as part of the project.

If you have any questions, please contact ***[LPA representative, email address, and phone number]***.

Very truly yours,

[LPA Representative]

SAMPLE PROPERTY OWNER CONTACT LETTER

(Sheet 1 of 2)

Figure 21-3A

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Check the appropriate response:

- I have no comments at this time.
- I have noted my comments below or on the back of this page.
- I would like to discuss this further in a telephone conversation.
- I will call you.
- Please call me. (Include telephone number and preferred day and time.)

- I would like to have a personal meeting to discuss this project.
Please call to arrange a date, time, and location.
(Include contact person and telephone number)

Signature of Owner

Date

[Property Owner Identification]

SAMPLE PROPERTY OWNER CONTACT LETTER

(Sheet 2 of 2)

Figure 21-3A

21-3.03 Format Options of Public Meetings and Hearings

There are several primary differences between a public information meeting and a public hearing. A public hearing requires the following:

1. A formal presentation to the public;
2. The public is allowed to make comments to the project representatives in a public forum;
3. Comments during the public forum must be recorded by either a court reporter or by electronic means;
4. The hearing shall be held after all the environmental studies are complete and prior to the conclusion of the *NEPA* process (CE determination, FONSI, Final EIS/ROD).
 - a. The approved EA shall be available at the public hearing and for a minimum of 15 days in advance (see 23 CFR 771.119(e)).

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- b. The approved Draft EIS shall be available at the public hearing and for a minimum of 15 days in advance (see 23 CFR 771.123(h)).
5. Submission to FHWA a transcript of each public hearing, and a certification that a required hearing or hearing opportunity was offered, and copies of all written statements from the public that were submitted at the hearing and during an announced period after the hearing (23 CFR 771.111(h)(2)(vi)).

While it is a good practice to provide the above activities at a public information meeting, the above is not required for a public information meeting.

The following information shall be explained at a public informational meeting or a public hearing:

- the project's purpose, need, and consistency with the goals and objectives of any local planning;
- the project's alternatives, and major design features;
- the social, economic, environmental, and other impacts of the project;
- the relocation assistance program and the ROW acquisition process; and
- the procedures for receiving both oral and written statements from the public.

Public hearings/meetings may use several formats to provide information to the public and receiving public input. The LPA should select the format for an activity according to the situation. Many people prefer one-on-one contact, which does not require speaking before large groups. The following provides a description of the more common formats. Other formats are discussed in [Section 19-3](#) of the *BDE Manual*:

1. Open House Public Information Meeting. An open house public information meeting offers the public an opportunity to meet with LPA representatives at a time and place that is reasonably convenient to discuss a proposed project. Appropriate members of the LPA will be available to discuss the project with the public and answer questions. Informational meetings are informal public gatherings that can blend the individual discussions of an open house with the group interaction of public hearings. They may include an informal one-on-one discussion period characteristic of an open house, a formalized presentation, a group question-and-answer period and, if questions remain, another informal discussion period. A transcript of the meeting is not required, however; notes on the questions and answers are kept.
2. Formal Public Hearings. Formal public hearings are proceedings conducted by appropriate officials to inform the public of proposed projects or programs, to explain the alternatives under consideration, and to receive and document public input. This format generally has a speaker addressing a large audience. Members of the audience in turn have an opportunity to address the speaker in a public forum. Depending on the size of the audience, the program must be structured allowing for very little informal exchange of information. 23 CFR 771.111(h) requires that, if a public hearing is held, a transcript of the proceedings must be recorded and a certification that a required hearing or hearing opportunity was offered, and copies of all written statements from the public that were submitted at the hearing and during an announced period after the hearing. This transcript can be advantageous because it eliminates conjecture and interpretation. Recording the proceedings must be by a court reporter or electronic means. A variety of

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governmental agencies have extensively used the formal public hearing format, and the public is generally familiar with the process and the role expected of them.

3. Hybrid Open House Public Hearings. These meetings are like an open house public information meeting in set-up and format. The difference is that the hybrid open house public hearing includes a formalized presentation and an opportunity for members of the audience to express their comments and concerns in front of other members of the public, as required for a public hearing. A transcript of the meeting is recorded by a court reporter or electronic means and notes on the question and answers are kept. FHWA has recognized the benefits of this format and encourages its use as an effective public involvement method that meets the requirements of a public hearing .

21-4 NOTIFYING THE PUBLIC

After the format of the public involvement program has been determined, the LPA must decide how to transmit information to the public, so it will be aware of the opportunities for involvement in project development.

The following Sections briefly discuss these topics. For a more detailed discussion, see the *BDE Manual*.

21-4.01 Announcements of Involvement Activities

Generally, activities to which the public is invited (e.g., open houses, information meetings, public hearings) should be advertised via the news media, mailing lists, websites, and other media as needed. Presentations to specific groups and other activities that the general public is not expected to attend do not require advanced advertising of the presentation.

21-4.01(a) Timing and Number

Each public hearing/meeting shall have a minimum of two newspaper advertisement / notices published as noted below. More than two notices may be published if a special effort is needed to ensure an adequate public response or if there is considerable public interest in the project. The first notice of a public hearing and for all other public involvement activities on a project being processed as a CE must be published at least 15 days in advance of the hearing/activity. In all cases, the second notice must be published 3 to 7 days before the meeting or hearing.

- For projects that are being processed as CEs, if a public hearing is required it should be held after environmental studies and the preliminary design have been completed, but before CE approval is given.
- An Environmental Assessment (EA) or Draft EIS must be approved and available for review a minimum of 15 days before the public hearing is held.
- The first notice of a public hearing on a project requiring an EIS must be published at least 30 days in advance of the hearing. The first notice of a public hearing on a project requiring an EA must be published at least 15 days in advance of the hearing/activity. In all cases, the second notice must be published 3 to 7 days before the activity.

21-4.01(b) Distribution

Before steps are taken to notify the public, the LPA must determine which groups or sectors will be contacted and what means, or media are most appropriate. When identifying groups to be notified, consider several general categories:

- those who live in the geographic area of the project and may be affected;
- groups who are known to be, or are likely to be, directly affected by property acquisition; and
- potential users of the facility.

Once the proper recipients of project information have been identified, the next action is to determine the most appropriate means of announcing the involvement activity to the public. It is not necessary to publish legal notices of upcoming activities. Paid advertisements in newspapers and on radio and television are acceptable and frequently more effective.

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However, where local news media are reluctant to carry these advertisements, a legal notice may be one means of ensuring verbatim publication and specific timing. It may also be necessary to advertise notices in more than one newspaper or on more than one radio or television (including cable) station to provide adequate coverage.

In areas where there may be limited newspaper delivery, notices should be posted at locations where the public are known to congregate or visit on a regular basis. These locations could include, but are not limited to, the local post office, restaurants, gasoline stations, or convenience stores. Every practicable effort should be made to ensure that the affected public receives notice and the opportunity for comment.

The use of social media such as LPA websites, Facebook or Twitter may augment an advertising campaign for the public involvement activity. However, it is not a substitute to the published notices.

21-4.01(c) Content

For an announcement in a newspaper to be effective, it must be strategically located and of sufficient size to attract attention. The announcement should state the type of activity, the purpose of the activity, and the time and location. It should state that all interested persons are invited to attend and participate and should also state that personnel will be present to receive input, provide information, and answer questions. The announcement should include a description of the proposed improvement. When individuals or businesses will be relocated, the notice must state that ROW acquisition and relocation assistance information will be available. It should further indicate the name, address, and telephone number of the person to contact to obtain additional information. As practical and economically feasible, a map should be included to further define the area affected by the project. Announcements also must contain information on accessibility for persons with a disability. Depending on the ethnicity of the area, the announcement may have to be printed in another language.

Figure 21-4A presents an example of an announcement for a public information meeting. Figure 21-4D presents an example of an announcement for a public hearing.

Public Information Meeting

Scheduled by

[LPA]For Improvement of **[Location]**

The **[LPA]** will hold a Public Information Meeting concerning the proposed improvement of **[project location]**. The public information meeting will be held at **[location]** on **[date]** at **[time]**. All persons interested in this project are invited to attend this meeting. Persons with disabilities planning to attend this meeting should contact the individual listed below by **[date]**. Persons with a disability desiring to participate in this activity should contact the person listed in this Notice by (date 5 days prior to meeting) to make arrangements for participating. The contact may be by telephone, in writing, by fax or by telecommunications device for the deaf (TTY).

This is a federally-funded project, and the public Information Meeting is being held in compliance with *National Environmental Policy Act (NEPA)* requirements and the Illinois Department of Transportation's public involvement policy.

[Add specific language as needed from Section 21-4.01(d)]

The meeting will be conducted on an informal basis. Representatives of **[LPA]** will be available from **[time]** until **[time]**. Representatives will answer individual questions and record comments offered by those in attendance. Verbatim comments will not be recorded. The LPA representatives will address topics such as the need for the project, the design alternatives under consideration, right-of-way acquisition and relocation assistance, and the tentative construction schedule. Preliminary reports, including environmental documents (*Environmental Impact Statement (EIS)* or *Environmental Assessment (EA)*, when applicable) and an engineering analysis with drawings, maps, and aerial photography, will be available for inspection and viewing during the entire time. The same material is currently available for review and inspection at **[location]**.

For more information, contact **[LPA representative, address, email address, and telephone number]**.

PUBLIC INFORMATION MEETING ANNOUNCEMENT EXAMPLE**Figure 21-4A**

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[LPA]
[Street Address]
[City, State, Zip]

[LPA]
[County]
[Section]
[Route]

[Name], Division Administrator
Illinois Division
Federal Highway Administration
U.S. Department of Transportation
3250 Executive Park Drive
Springfield, Illinois 62703

Dear **[Name]**,

In accordance with 23 CFR 771(h)(2)(vi), **[LPA]** certifies that an offer to hold a public hearing was published on **[date]** and **[date]** in the **[Newspaper]**. Attached are the following items:

- a. Newspaper announcement;
- b. Newspaper publication certifications;
- c. Written comments received during the public comment period and our responses; or
- d. If no comments are received, the LPA shall state "No written comments were received during the public comment period."

Sincerely,

[Name]
[Title of LPA Official]

CERTIFICATION TO FHWA ON AN OFFER FOR A PUBLIC HEARING

Figure 21-4B

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The notice offering a public hearing should state that a public hearing will be held if sufficient interest is demonstrated. The LPA, in consultation with the district, CBLRS and the FHWA, will make the determination of sufficiency. If sufficient interest is not demonstrated, each requestor will be contacted by a LPA representative or by certified mail with return receipt and informed of the lack of sufficient interest. The LPA will also advise the requestor that comments are welcome. If a personal contact is made, record all comments during the contact. If the contact is by certified mail, include a stamped, self-addressed envelope for returning comments and the name and telephone number of a contact person.

Public hearing offers can be announced by use of paid advertisements in newspapers. Although not required, legal notices may also be used to ensure verbatim publication and specified timing. Publishing a legal notice often includes a certification that the notice was published on specific dates. Public hearing offers should normally contain the following information:

- proposal and project description;
- information concerning the availability of the PDR, EIS or EA;
- an invitation to the public to request a hearing;
- the name and address where requests should be sent;
- the date by which all requests must be received;
- an announcement that data is available for viewing and inspection including the name, address, and telephone number of the person to be contacted for arranging to view that information and to obtain other information desired; and
- as practical and economically feasible, a map showing the location of the improvement.

Figure 21-4C presents an example of a typical offer of a public hearing.

21-4.01(d) Additional Required Language for Public Meeting and Public Hearing Notices

The following language is to be included, as applicable, in notices announcing a public information meeting, a public hearing or an offer to hold a public hearing.

1. Section 106 Effect Finding & Determinations

This meeting will also serve to involve and obtain the views of the public for purposes of Section 106 of the National Historic Preservation Act of 1966, as amended. Information will be available on known historic resources that may be affected by the proposed project and the historic resources protection process. IDOT requests comments from the public on effects to historic resources to assist in consultation with the Illinois State Historic Preservation Officer.

2. PM2.5 Hot Spot Analysis

The [LPA] is currently proposing improvements from [project limits]. The project scope includes [describe scope]. On March 10, 2006, the US Environmental Protection Agency issued new regulations on Particulate Matter (PM2.5 and PM10) Hot-Spot Analysis in Project-Level Transportation Conformity Determinations. A Hot-Spot analysis is defined in 40 CFR 93.101 as an estimation of likely future localized PM2.5 or

PM10 concentrations and a comparison of those concentrations to the relevant air quality standards.

The proposed project has been identified as a project of air quality concern requiring a Hot-Spot analysis as part of the project level conformity determination. [LPA] has completed a Hot-Spot analysis for the proposed improvement that is available for public comment. The Hot-Spot analysis is available for review on [date] or at [location]. A hard copy of this analysis can be obtained by contacting [LPA representative] at [address, email address, and telephone number]. Comments should be received no later than [date]. (Thirty days is recommended. For shorter time-periods consult BDE and FHWA.) Written correspondence related to this Hot-Spot analysis should be addressed to [LPA representative].

3. **Executive Order on Floodplains (EO 11988 as amended by EO 13690)**

The proposed project will require construction in a floodplain. Pursuant to EO 11988, as amended by EO 13690, public review and comment on this proposal and its alternatives are hereby requested.

4. **Section 4(f) de minimis Finding**

The [LPA] is seeking public comments on the effects that proposed improvements to [route] will have on the [Section 4(f) property name]. The [Section 4(f) property name], which is under the jurisdiction of the [Section 4(f) property owner], is a significant, publicly owned [describe land use of Section 4(f) property]. As such, it is subject to protection under Section 4(f) of the U.S. Department of Transportation Act of 1966. For the [route] project, [LPA] intends to seek a Section 4(f) "de minimis" impact finding from the Federal Highway Administration based on a determination that the project will not adversely affect the features, attributes, or activities that qualify the [Section 4(f) property name] for protection under Section 4(f).

Effects of the [route] project on the [Section 4(f) property name] will include [describe the project aspects that will affect the property and the nature and extent of the resulting effects]. Mitigation will include [describe proposed mitigation measures for the effects to the property]. Detailed documentation describing the impacts and mitigation associated with the effects of the [route] project on the [Section 4(f) property name] will be available for review at [location] from [date] to [date].

21-4.02 Mailing Lists

Each LPA should develop and maintain mailing lists for distributing information on highway projects. A general mailing list should include agencies, organizations, and appropriate individuals that are generally interested in being advised of all highway projects scheduled under the jurisdiction of a LPA. A project-specific list should include the general mailing list and any additional individuals or groups that are interested in specific highway projects. At the very least, a project specific mailing list should include all the affected property owners along the project limits.

Public Hearing Offer

The **[LPA]** is proposing to improve **[route]** from **[termini]** to **[termini]** in **[city]**. The project will consist of **[project scope of work]**. The project will include **[additional work needed to complete project]**. Alternatives under consideration have potentially significant impacts to **[sensitive site]**. A Project Development Report (or *an approved Environmental Assessment* or *an approved Draft Environment Impact Statement*) has been prepared for this project.

Any interested person who desires that a public hearing should be held for this project may request a hearing be held by contacting **[LPA representative]** at **[address, email address, and telephone number]**. To be considered, requests must be received by **[date]**. A hearing will be held if the public demonstrates sufficient interest.

This is a federally-funded project, and this hearing is being offered as part of the *National Environmental Policy Act (NEPA)* requirements and in accordance with the Illinois Department of Transportation's public involvement policy.

[Add additional language as necessary from Section 21-4.01(d)]

Maps, drawings, aerial photography, the Project Development Report (*or Environmental Assessment*) and project related information are available for viewing and inspection by the public are held by the **[LPA]** at the above address. If additional information is desired, contact the **[LPA representative]**.

PUBLIC HEARING OFFER EXAMPLE

Figure 21-4C

Public Hearing

Scheduled by

[LPA]For Improvement of **[Location]**

[LPA] will hold a Public Hearing concerning the proposed improvement of **[project location]**. The public hearing will be held at **[location]** on **[date]** at **[time]**. All persons interested in this project are invited to attend this meeting. Persons with a disability desiring to participate in this activity should contact the person listed in this Notice by **[date]** (*five days prior to meeting*) to make arrangements for participating. The contact may be by telephone, in writing, by fax or by telecommunications device for the deaf (TTY).

This is a federally-funded project, and this public hearing is being held in compliance with the *National Environmental Policy Act (NEPA)* requirements and IDOT's public involvement policy.

[Add specific language as needed from Section 21-4.01(d)]

A brief presentation on the status of the project, the proposals under consideration, and any alternatives under consideration will begin at **[time]**. After the presentation, there will be an opportunity for comments or questions to be made in a public forum. Representatives of **[LPA]** will be available from **[time]** until the presentation and after the presentation until approximately **[time]** to discuss the project. Representatives will answer individual questions and record comments offered by those in attendance. Verbatim comments will be recorded. The presentation will address topics such as the need for the project, the design alternatives under consideration, right-of-way acquisition and relocation assistance, and the tentative construction schedule. Preliminary reports, including environmental documents (*Environmental Impact Statement (EIS)* or *Environmental Assessment (EA)*, when applicable) and an engineering analysis with drawings, maps, and aerial photography, will be available for inspection and viewing during the entire time. The same material is currently available for review and inspection at **[location]**.

For more information, contact **[LPA representative, address, email address, and telephone number]**.

PUBLIC HEARING ANNOUNCEMENT EXAMPLE**Figure 21-4D**

21-5 PREPARING FOR AND CONDUCTING PUBLIC MEETINGS AND HEARINGS

The LPA must carefully prepare and develop public involvement activities not only to attract and hold the public's attention, but to create a pleasant atmosphere for discussion of highway projects.

This Section briefly discusses the process for planning an individual activity, whether it is an open house, an informational meeting, or a public hearing. See [Section 19-4](#) of the *BDE Manual* for a more detailed discussion on planning a public meeting.

21-5.01 Pre-Meeting Activities

While developing a public involvement program, the LPA generally will have gained some insights on the profile of the potential audience. The knowledge of which public sectors are most likely to attend, what they are likely to expect, and their likely positions may be helpful in selecting a format for the involvement activity that will be most effective.

After the meeting site has been selected and the timing of the activity has been set, an inspection of the site should be performed to ensure all the necessary equipment can be accommodated.

The LPA should ensure the site is ADA accessible; and if necessary, secure the appropriate language interpreters. If the LPA is holding a public hearing, secure a certified court reporter or electronic equipment to record verbatim comments. The site should also be accessible to those members of the public who rely on municipal transit systems for transportation.

21-5.02 Preparing the Meeting Site

When all personnel have reached the site, and set up the equipment, perform a final check to ensure all equipment, especially which is furnished at the site, is operational. Set up a table at each entrance. Assign personnel to each table to handle the registration and to direct attention to the available handout materials. Entrances used for the meeting should be properly signed. Place other signing determined necessary at the meeting location. Set up displays and orient them with the North arrow in the same direction on each. Ensure all the necessary steps are taken to facilitate the presentation information to all the attendees (e.g. non-English speaking persons and persons with disabilities).

21-5.03 The Presentation

21-5.03(a) General Requirements

Public participation and attitudes may depend on how well the personnel conducting the activity understand and react to the public's viewpoints and reasons for participation. With the proper approach, both the public and the LPA can use the involvement activity to benefit its interests.

21-5.03(b) Content

Generally, the format of the presentation should be as follows:

- opening remarks;

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- introductions;
- presentation of project design;
- purpose and need, consistency with goals and objective of any local planning organization;
- alternatives, and major design features;
- social, economic, environmental, and other impacts;
- tentative project schedule;
- ROW acquisition;
- procedures for receiving both oral and written statements from the public; and
- formal comment period.

The selected approach may vary somewhat, and the exact nature of the data presented may vary from activity to activity depending upon the anticipated participants. The presentation should describe the project in appropriate detail. If the purpose of the meeting is to collect data, the description should briefly outline the work that is proposed and describe the type of information that is desired from the participants. If the project is further advanced and the participants are expected to offer information concerning the development of alternatives, the description should include a discussion of some of the work completed to date. If the involvement activity occurs when the project is in an advanced stage and the purpose is to provide information that will facilitate a choice among alternatives, provide more information to indicate the status of the improvement and the scope of the options or alternatives that remain.

21-5.04 Post Activity Follow-Up

Those who attend a public involvement activity are normally interested in the results of the input provided. This includes the follow-up to questions for which answers were not available at the time of the activity. The public may determine the success or failure of a public involvement activity based on the actions taken after the activity. Therefore, the follow-up is a critical action to minimize opposition and create a positive relationship with the public. The LPA must respond in writing to all written and recorded oral comments received at a public hearing or public information meeting or received as part of an individual property owner contact letter. If other forms of communications (i.e. field meetings, phone calls, emails) are used, the LPA should document the discussions with a memo to the file and be included in the PDR.

21-6 RECORDS AND REPORTS**21-6.01 Recording Public Comments**

The LPA must record all comments received on a given highway improvement and maintain these comments in the project file. Encourage all commenters to put their comments in writing and include their name and address. This relieves personnel from the responsibility of interpreting the meaning of the commenter's spoken word in recording their input. Consider providing a Comment Form that commenters may complete and return. Include on the form the date by which the form should be returned.

Not all comments must be recorded verbatim. There will not be a transcript of most informal involvement activities, and LPA representatives therefore must ensure that all non-written comments are properly noted and documented. The recorder of comments may use tape recorders or each representative may carry a note pad and record comments during his/her conversations with the public. Two-person teams may be formed – one to interact with the public and one to record comments. Take notes during the receipt of comments to ensure that none are overlooked. Attempt to obtain the name and address of those persons offering comments so a response can be provided later.

Record comments when they are received, whether or not they were received as a part of an involvement activity. For example, if an individual visits or calls the LPA and comments on a project, record that comment in the project files. All comments received must be addressed.

There is sometimes a delay from the time public involvement activities have taken place to the time land acquisition or construction begins. When a project again becomes active, the project area should be reviewed to ensure that any new development or new property owners affected by the project are aware of the proposed improvement. It may be necessary to issue a press release or individually contact the new property owners. In some cases, an additional public involvement activity should be held.

21-6.02 Transcripts

A transcript is required for all public hearings, regardless of the format used. Transcripts also may be useful for other meetings and activities, especially if critical discussion or input is anticipated. This might include meetings with organized opposition or officials of agencies likely to be impacted by the project. These transcripts can be obtained by transcribing the record from a tape recorder, or utilizing certified shorthand reporters or court reporters. In this manner, important meetings can be recorded exactly and there is no summary or interpretation to be questioned.

For formal and open house public hearings, the record of the transcript will include a copy of:

- the newspaper announcement,
- newspaper publication certifications,
- handout,
- the attendance list,
- all written comments received at and during the public comment period after the hearing,

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- a written copy of the narrative from the general presentation,
- a written copy of the verbal comments recorded by the official recorder, written responses to any comments received at the public hearing or during the public comment period after the hearing, and
- written responses to any verbal comments recorded by the official recorder.

The LPA shall submit to the district the following:

- a copy of the public hearing transcript;
- a certification letter that a public hearing was held (See Figure 21-5A for a sample letter); and
- copies of all written statements from the public (both submitted at the public hearing or during an announced period after the public hearing).

CBLRS will submit this information to FHWA.

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21-6-3

[LPA]
[Street Address]
[City, State, Zip]

[LPA]
[County]
[Section]
[Route]

[Name], Division Administrator
Illinois Division
Federal Highway Administration
U.S. Department of Transportation
3250 Executive Park Drive
Springfield, Illinois 62703

Dear **[Name]**,

In accordance with 23 CFR 771(h)(2)(vi), **[LPA]** certifies that a public hearing was held on **[date]** at **[location]**. Attached is a copy of the official public hearing transcript. The copies of the following items are included in the transcript:

- a. Newspaper announcement;
- b. Newspaper publication certifications;
- c. Handout;
- d. Attendance list;
- e. Written copy of the narrative from the general presentation;
- f. Written comments received at the public hearing or during the public comment period after the hearing;
- g. Written copy of the verbal comments recorded by the official recorder;
- h. Written responses to any comments received at the public hearing or during the public comment period after the hearing;
- i. Written responses to the verbal comments recorded by the official recorder.

Sincerely,

[Name]
[Title of LPA Official]

CERTIFICATION TO FHWA ON A PUBLIC HEARING

Figure 21-5A

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21-6.03 Documenting Public Comments and Responses

All comments must eventually become a part of the project files and summarized in the PDR, EA/FONSI, or Final EIS/ROD. If a public hearing was held, the transcript and certification must be provided to the FHWA. The transcript is required to be included for public hearings. For other public involvement activities, if a transcript is not available, prepare a summary of the substantive comments that have been received from the public and include this in the PDR, EA/FONSI, or Final EIS/ROD. In either case, the report should also contain a response to each of the comments included in the transcript. If a comment is addressed in the body of the report, it is not necessary to repeat that information in the responses. Instead, refer to the applicable pages of the report.

21-6.04 Responding to Public Comments

The LPA shall acknowledge in writing all written and oral comments received from the public, including individuals, private organizations, or government agencies.

The acknowledgment should thank them for their input and provide a response to their questions or comments. If an answer will not be available for some time, acknowledge receipt of the comment with an indication that a final response will be forwarded later. Verbal comments should also be acknowledged and responded to when the name and address of the commenter is available.

To reduce the workload of responding to comments after scheduled public involvement activities, forward copies of the summary of comments and responses with a letter thanking them for their participation, to all who attended the activity. Separate responses need not be prepared.

The LPA should also acknowledge and respond to comments received from other governmental agencies.

21-7 CONTEXT SENSITIVE SOLUTIONS (CSS)

CSS ([605 ILCS 5/4-219](#)) principles place emphasis on the importance of an effective stakeholder involvement process for identifying the transportation and community concerns and values that need to be considered on each project. CSS also highlights the need for appropriate flexibility in the application of design criteria to accommodate the development of innovative solutions that effectively respond to the identified concerns and values. If a LPA decides to use CSS, the procedures outlined in the *BDE Manual* should be used.

While CSS is a LPA option on most projects, the District may require a LPA to use CSS under the following criteria:

- A LPA project on a highway under department jurisdiction;
- a project initiated by the LPA to be completed by the department; or
- a project initiated by the department to be completed by the LPA.

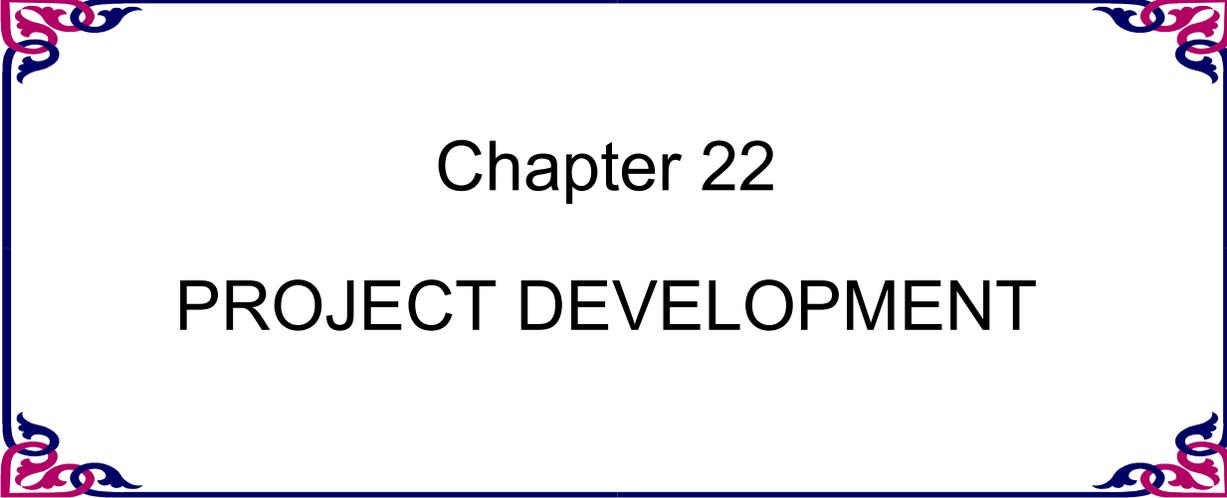
21-8 ACRONYMS

This is a summary of the acronyms used within this chapter.

BDE	Bureau of Design and Environment
BLRS	Bureau of Local Roads and Streets
CBLRS	Central Bureau of Local Roads and Streets
CE	Categorical Exclusion
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CSS	Context Sensitive Solutions
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
IDOT	Illinois Department of Transportation
<i>ILCS</i>	<i>Illinois Compiled Statutes</i>
LPA	Local Public Agency
<i>NEPA</i>	<i>National Environmental Policy Act</i>
PDR	Project Development Report (Form BLR 22210)
PM	Particulate Matter
ROD	Record of Decision
ROW	Right-of-Way
TTY	Teletype (preferred) or a Telecommunications Device for the Deaf (TDD)
<i>USC</i>	<i>United States Code</i>

21-9 REFERENCES

1. 23 USC 128, *Public Hearings*
2. 23 USC 139, *Efficient Environmental Reviews for Project Decision Making*
3. 49 USC 303, *Management Systems*
4. 23 CFR 93, *Determining Conformity of Federal Actions to State or Federal Implementation Plans*
5. 23 CFR 771, *FHWA Environmental Impact and Related Procedures.*
6. 40 CFR 1500-1508, *CEQ Regulations for Implementing NEPA.*
7. Section 106 of the *National Historic Preservation Act*
8. Executive Order 11988, *Floodplain Management*
9. Executive Order 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*
10. [Chapter 19](#) "Public Involvement Guidelines", *BDE Manual*, IDOT.
11. [Chapter 25](#) "Environmental Impact Statements", *BDE Manual*, IDOT.
12. [Chapter 26](#) "Special Environmental Analyses", *BDE Manual*, IDOT.
13. [Chapter 20](#) "Special Environmental Studies", *BLRS Manual*, IDOT.
14. [Chapter 22](#) "Project Development", *BLRS Manual*, IDOT.



Chapter 22

PROJECT DEVELOPMENT

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Chapter 22
PROJECT DEVELOPMENT - Federal Funds

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Chapter 22

PROJECT DEVELOPMENT - Federal Funds

22-1 COORDINATION

22-1.01 Airports/Railroads/Utilities

22-1.01(a) Airport Coordination

Highway and bridge improvements within 2 miles (3.2 km) of publicly owned airports, within 1 mile (1.6 km) of privately owned airports open to the public, and within 0.5 miles (0.8 km) of restricted-landing areas require coordination with the Illinois Department of Transportation (IDOT) Bureau of Aeronautics in the Office of Intermodal Project Implementation. These coordination requirements concerning distance to an airport are in conjunction with height obstructions of 15 ft (4.6 m) or more above the roadway. Additionally, the local public agency (LPA) must coordinate with the Bureau of Aeronautics for all realignments and construction improvements on new location regardless of the height of obstruction. [Section 10-2.01\(e\)](#) further discusses coordination requirements near airports.

22-1.01(b) Railroad Coordination

When a project is involved with an at-grade railroad grade crossing or grade separation, coordination with the affected railroad should take place at an early stage to determine if any improvement is necessary to the railroad facility and to determine funding responsibilities for the improvement. When a railroad crossing is within or near the terminus of a project, the crossing shall be evaluated per [Chapter 40](#). Improvements determined from the evaluation to the railroad crossing will be scheduled to be completed prior to or at the same time as the project. [Section 10-2.01\(f\)](#) discusses coordination requirements with railroads.

22-1.01(c) Procedure for Joint State-LPA Railroad Improvements

Where IDOT will be responsible for letting a roadway project with a railroad crossing, the LPA must coordinate with the district during the project's initiation. The railroad crossing portion of the project generally should be programmed as separate project. These projects must be identified and included in the district's annual program when the original program is developed. Crossing projects will generally be authorized much earlier than the roadway project due to the time required for the railroad to process the agreement and for the railroad to perform the work in a timely manner. IDOT will be responsible for the following:

1. Districts. The district will conduct the following:
 - Identify the need for railroads to adjust or alter their facilities when preparing original program submissions.
 - Submit the railroad work as a separate project in the program submission. It may be necessary to program the railroad work in the year preceding the roadway project.

- As soon as the work is identified, prepare a railroad agreement and forward it to the railroad and the appropriate LPA with a copy to the Central Bureau of Local Roads and Streets (CBLRS). Correspondence with the railroad should indicate the proposed letting schedule. If questions occur during the preparation of the agreement, contact the CBLRS.
 - Submit a project status sheet requesting authorization of the railroad work.
 - Cross-reference the roadway and railroad projects in the data base so that both projects can be coordinated and tracked.
 - Obtain signed railroad agreements from the railroad and LPA along with a copy of a detailed estimates and general layout plan and forward them to the CBLRS for execution.
 - Upon execution of the agreement, the CBLRS will notify the railroad to proceed with the ordering of materials and scheduling of the work.
2. CBLRS. The CBLRS will conduct the following:
- Upon approval of the Project Development Report (PDR) for the roadway work, remind the district that the railroad work must be coordinated early.
 - Review each district's annual program to ensure all roadway projects with railroad involvement that the railroad portion is programmed as a separate project.
 - If not already prepared, request the district to prepare a railroad agreement.
 - Check the project status sheets to ensure all necessary railroad agreements have been executed and the programming and authorization have been accomplished. Projects involving railroad crossing work will not be advanced to letting without a fully executed railroad agreement.

Occasionally a signal/circuitry project may require a nearby crossing to also be upgraded. The district and Bureau of Program Development (BDE) will be responsible for coordinating the designs between the crossings.

Where an IDOT project will affect a local railroad crossing, the district should contact the CBLRS to determine if Grade Crossing Protection Funds (GCPF) may be eligible for the local crossing; see [Section 10-2.01\(f\)](#). Where a local project affects a State highway crossing, federal safety funds set aside for local improvements or GCPF may be eligible for work on the State highway crossing.

22-1.02 District Coordination Meetings

The district conducts periodic coordination meetings, which involve personnel from the CBLRS, BDE, Federal Highway Administration (FHWA), and may involve personnel from other bureaus or agencies, as appropriate. The goal is to coordinate planning; identify social, economic, and environmental impacts; minimize these impacts through mitigation; and develop the best overall solution to satisfy the transportation needs. FHWA will usually concur with the processing of projects as Categorical Exclusions. The coordination meetings may also result in field approvals of design exceptions and PDRs.

22-1.02(a) Scheduling Coordination Meetings

Coordination meetings are regularly scheduled on a monthly basis in District's One and Eight and bi-monthly in the other districts. BDE will develop an annual coordination meeting schedule in cooperation with the districts, CBLRS, and FHWA to eliminate meeting conflicts and to allow appropriate central office personnel to be available. Additionally, the district may schedule special coordination meetings on an as needed basis. The LPA should complete reports eligible for field approval prior to coordination meetings to minimize project delays and transmittals to the CBLRS. The LPA should contact the district to schedule a project for discussion at a coordination meeting. A tentative agenda should be distributed at least 2 weeks in advance of each coordination meeting along with the initial coordination meeting data sheet (form [BLR 22410](#)).

22-1.02(b) Appropriate Representation

The LPA and/or their consultant must be present at the coordination meeting. Ensure the individuals having a role in project development and decision making (e.g., BDE environmental specialists, district environmental, geometric, or land acquisition specialists) are invited to the meeting.

If projects will significantly affect other agencies or require special expertise or coordination, the district should invite all affected agencies to the coordination meeting. Discuss this need with the appropriate Project Development Engineer in the CBLRS. Highlight the projects and issues requiring the expertise of other agencies in the invitations and agendas. State agencies (e.g., Illinois Department of Natural Resources (IDNR), Illinois Historic Preservation Agency (IHPA), Illinois Department of Agriculture (IDOA), Illinois Environmental Protection Agency (IEPA)) and federal agencies (e.g., Department of the Interior, Army Corps of Engineers) may be involved.

22-1.02(c) Topics for Discussion

Coordination meetings should address all necessary topics such as logical termini, environmental reports, special reports, commitments, public involvement requirements, typical sections, need for additional rights-of-way, design exceptions, and the environmental processing. The scoping of environmental issues is an appropriate topic for coordination meetings. When other agencies are present, the coordination meeting may serve as the scoping meeting.

The LPA should complete form [BLR 22410](#) for each scheduled project and send it to the district. The district should transmit an agenda, with a completed form [BLR 22410](#) attached for each project, to the intended participants at least 2 weeks prior to the meeting. Include all necessary documentation with the agenda to support the desired action for specific projects.

22-1.02(d) Information Presented

The information presented at a coordination meeting usually depends on the following issues:

- the scope of the project,
- the project development stage, and
- coverage at previous coordination meetings.

A major project or a project on new alignment may involve many topics and presentations at numerous meetings over the duration of the study. If a minor project requires discussion, a brief presentation may be sufficient.

If a project has been discussed at a previous coordination meeting, information that has been previously presented and discussed need not be repeated. However, the meeting should include a brief summary of important points previously discussed and any decisions reached on each project. Attach copies of the minutes from previous coordination meetings to the agenda.

If design exceptions are requested, include form [BLR 22120](#) and provide supporting documentation/justification. The supporting documentation/justification for design exceptions ultimately will be included in the PDR.

The LPA/consultant should also make available appropriate information on the mitigation of impacts, effects on sensitive areas, detours, and stream crossings.

22-1.02(e) Documentation

At all coordination meetings, the LPA or their consultant must maintain a record of who attended and what transpired. Although a verbatim transcript is not necessary for coordination meetings, a recording on tape may be useful if questions arise on the accuracy of typed minutes. The LPA or their consultant should promptly prepare minutes after the meeting and send them to the district. The district will submit the minutes to the CBLRS for review. FHWA will also be required to review the minutes. After the corrections are made, the LPA will send the minutes to all agencies and individuals that were in attendance.

The suggested format for the coordination meeting minutes is shown in Figure 22-1A. Identify each project discussed in the minutes, and provide special attention to any scoping actions because documentation may be required later. Each project should be covered on a separate page. Attach form [BLR 22410](#) and/or form [BLR 22120](#) to the minutes.

22-1.02(f) Recommended Practices

The following practices are recommended for coordination meetings to improve their effectiveness:

- Provide to FHWA and CBLRS an agenda with a completed form [BLR 22410](#) for each project at least two weeks in advance of the meeting.
- Use video-teleconference for meetings with minor discussion items.
- Allow time for projects eligible for field approval prior to or after the regular meeting. Indicate the schedule in the agenda and provide appropriate information for action in advance.
- Schedule separate meetings for large or complex project issues, including the review of report comments.
- Resolve minor issues over the phone or between the district and the LPA.
- Keep the discussion focused on the desired action.
- Use slides, photographs, aerial photos, and other visual exhibits to clarify issues.

- Provide appropriate handouts (e.g., location maps, ADT/DHV schematics, typical section drawings, crash history information, synopsis of environmental issues, critical path items).
- Provide draft meeting minutes to the districts within five working days of the meeting and the final minutes to participants within two weeks after receipt of comments on the draft.

MINUTES OF COORDINATION MEETING
(separate sheet for each project)

DISTRICT #

*(date)*LOCAL PUBLIC AGENCYSECTION NUMBERATTENDANCE

- Federal Agencies
- State Agencies
- Local Agencies
- FHWA
- IDOT Central Office
- BLRS Central Office
- District Office

TOPICS

- Information presented (e.g., environmental surveys, impacts, mitigation).
- Comments and input received, including scoping actions/information (see [Section 18-5.01\(b\)](#)).
- Design exceptions presented and action taken.
- Environmental processing.
- Required public involvement.
- Attach forms [BLR 22410](#) and [BLR 22120](#), as applicable.

EXAMPLE COORDINATION MEETING MINUTES**Figure 22-1A**

22-2 PROJECT STUDIES/REPORTS

Section 22-2 provides guidance for the preparation of various project studies and reports for Federal-aid LPA projects. The various reports and studies discussed in this Section are written summaries of design issues concerning a highway improvement. This Section pertains to procedural aspects involved in the completion of these studies and reports up to and including design approval. [Chapters 11](#) and [12](#) of the *BDE Manual* provide additional guidance on studies and reports required for federal projects.

22-2.01 General

The development of a federal project requires the preparation of various studies and reports. This necessitates an integrated engineering analysis to determine highway improvement needs. The scope and depth of the engineering analyses for preliminary studies will vary depending on the project scope of work. These studies may be less than that required for final plans, but they should be sufficiently accurate to preclude significant design or major cost estimate revisions during final construction plan preparation. When determining the scope, extent, and accuracy needed for a specific engineering study, the effects on adjacent property owners are often a good indicator.

To properly conduct engineering analyses and to develop a functional design, diverse sources of information must be used. Data for engineering analyses may be obtained from various sources. It is important that the designer be familiar with data available from outside sources and understands how to use it correctly in engineering analyses. Also, the designer must ensure that the scope, extent, and accuracy of the data requested from other sources are commensurate with the intended use of the engineering analysis being performed.

22-2.02 Information Sources

Engineering investigations determine if the proposed highway improvement satisfies the need for safe, economical, and efficient transportation and provides other relevant benefits (e.g., traffic benefits, public services, reduction of crashes, pedestrian facilities, transit considerations). The following Sections identify informational sources that are important in establishing the need for the highway improvement.

22-2.02(a) **Functional Classification**

The Office of Planning and Programming (OPP) is responsible for coordinating functional classification of all roads and streets with LPAs and FHWA. For additional information on functional classification contact the Bureau of Statewide Planning and Programming in OPP or see FHWA publication *Highway Functional Classification Concepts, Criteria and Procedures*. [Five Year Functional Classification Maps](#) for counties and urban areas can be found on the department's website or an interactive map is available at [Getting Around Illinois](#).

22-2.02(b) Highway Data Bank

OPP is responsible for maintaining the Illinois Roadway Information System (IRIS) and Illinois Structure Inventory System (ISIS). OPP can provide computer generated route log listings for State routes and local roads and streets. The available data is dependent on the highway system. The following major items may be available:

- administrative classification,
- physical dimensions,
- roadway characteristics,
- traffic data,
- geometric data,
- pavement cross sections, surface type, drainage, and shoulder conditions, and
- bridge inspection and appraisal data.

A complete listing of items is shown in the indices of the [IDOT Roadway Information and Procedure Manual](#) and the [IDOT Structure Inventory and Procedure Manual](#).

22-2.02(c) Urban Transportation Planning

The urban transportation planning process discussed in [Chapter 17](#) provides information on local governmental functions in urbanized areas of over 50,000 inhabitants. The Metropolitan Planning Organizations (MPO) administer a continuing, cooperative, and comprehensive transportation planning process that results in transportation improvement plans and programs consistent with the planned development of the urbanized areas. This process determines the transportation modal choice. In urbanized areas, the project must be consistent with local transportation planning. Major urban improvements must meet joint FHWA/FTA regulations for major highway improvements in urban areas. The urban transportation planning process also can provide other social, economic, environmental, and engineering information for preliminary studies.

22-2.02(d) Current and Projected Traffic Volumes

Under the general guidance of OPP, the districts count and classify existing traffic volumes on the State highway system and some local roads and streets. OPP also maintains data used to project future traffic volumes (e.g., annual traffic growth factors). The following traffic data may be available from the district:

- current hourly and daily traffic volumes,
- current turning movement volumes,
- traffic projections and assignments for new facilities, and
- traffic projections for future design years on existing facilities.

Similar data, developed in conjunction with the Urban Transportation Planning Process, also may be available from the MPOs. Because the design of a project greatly depends upon the projected design hourly volumes, these figures must be carefully examined and questioned before using for design purposes. Improper traffic projections can result in the construction of unnecessary or inadequate highway improvements.

22-2.02(e) Crash and Skid Reduction Analyses

During the preliminary study, identify High Accident Locations (HAL), rates, and all crash patterns (e.g., fixed objects) at various sites throughout the project. The Division of Traffic Safety regularly furnishes the district with crash information and provides crash information upon request. The following is a partial listing of available crash information:

- collision diagram printouts for roads and streets on the local system when the LPA is part of the Local Accident Reference System and for intersections with State highways. Collision diagram computer plots may also be requested for intersections;
- individual crash reports for above locations, upon request from a microfilm or imaging retrieval system;
- State highway HAL maps and computer generated listings that report supplemental data for high crash spots and roadway sections;
- wet pavement crash cluster sites for State highways (computer generated listings);
- county crash summaries;
- municipal crash summaries;
- statewide average crash rates, distributed annually, for comparison with existing project crash rates for proposed improvement justification; and/or
- summaries of Motor Vehicle Traffic Crashes and statewide average percentages by type of collision, light condition, and road surface. These percentages may be compared with project percentages from collision diagram summary sheets to help identify over-represented crash patterns.

22-2.03 Geometric Design Criteria

Part IV, Project Design, of this *Manual* presents the recommended geometric design criteria for the different types of highways. This is an important element for all preliminary studies. The following briefly summarizes the information provided in Part IV:

1. Basic Design Controls. [Chapter 27](#) discusses the design controls that have an overall impact on the geometric design of a highway facility. As discussed in [Chapter 27](#) and, as appropriate, the designer should evaluate the following:

- a. Project Scope of Work. The project scope of work will determine the type of design criteria to be used. [Section 27-2](#) defines the project scope of work for new construction, reconstruction, and 3R type projects. [Chapter 32](#) presents the design criteria that apply to new construction/reconstruction projects. For these projects, the designer often has the liberty of designing the highway to meet the most desirable criteria. However, available finances do not always permit the reconstruction of existing highways to this level. The geometric design of projects on existing highways must be viewed from a different perspective. These projects are often initiated for reasons other than geometric design deficiencies (e.g., pavement deterioration, crashes), and they often must be designed within existing right-of-way, financial limitations, and/or environmental constraints. As a result, the design criteria for new construction and reconstruction are often not attainable without major cost and, frequently, adverse impacts. At the same time, the LPA must make cost effective and practical improvements to existing highways and streets. For these reasons, the separate geometric design guidelines for 3R projects on existing highways are provided in [Chapter 33](#).
 - b. Functional Classification. [Section 27-3](#) discusses the application of the functional classification system in Illinois for geometric design applications. All highway improvements must be compatible with the functional classification of the highway under design. A highway's functional classification is an important factor in determining which design policies and criteria to use.
 - c. Design Speed. This is a critical highway design element and is therefore selected before initiating any studies. [Section 27-5.02](#) discusses the overall philosophy in design speed selection. [Chapters 32](#) and [33](#) present specific numerical criteria for project design speed based on functional classification, highway type, urban/rural location, and project scope of work.
 - d. Traffic Volume Analysis. [Section 27-6](#) provides definitions for highway capacity terms, selection of the design year, and design hourly volume for highway capacity analyses. It references the *Highway Capacity Manual* for detailed highway capacity techniques.
2. Sight Distances. [Chapter 28](#) presents the criteria for sight distances based on design speed. Stopping sight distance (SSD) is a determining factor in an acceptable highway design, especially for vertical alignment. Other sight distances which may be applicable include intersection sight distance and passing sight distance.
 3. Horizontal Alignment. [Chapter 29](#) discusses horizontal alignment for new construction/reconstruction projects (e.g., minimum radii, superelevation, horizontal sight distance).
 4. Vertical Alignment. [Chapter 30](#) discusses maximum and minimum grades, vertical alignment, and vertical clearances for new construction/ reconstruction projects.
 5. Cross Section Elements. [Chapter 31](#) presents the general criteria for cross section elements, and [Chapters 32](#) and [33](#) present specific numerical criteria for cross sections based on the highway type, design speed, traffic volumes, urban/rural location, and project scope of work. The designer must review the cross section criteria in these Chapters and determine the most appropriate design for the given conditions. The selected roadway cross section should be based on the type of operations and maximum allowable design speed, and will be a factor in determining the right-of-way needs of a highway facility. The proposed typical section should identify:

- the number and width of travel lanes,
 - the selection of an urban (curbed) or rural section,
 - the shoulder width, if applicable,
 - the gutter width, if applicable,
 - cross slopes,
 - the type and width of median,
 - parking lanes, if applicable,
 - sidewalks and bike lanes/paths, if applicable,
 - side slope configuration (i.e., fill slopes, cut slopes, roadside ditches), and
 - type of pavement.
6. Intersections. [Chapter 34](#) presents IDOT's criteria for the design of intersections.
7. Roadside Safety. [Chapter 35](#) presents the criteria for roadside safety, including clear zones, barrier warrants, barrier design and layout, impact attenuators, and glare screens. Most of the information in [Chapter 35](#) is applicable to the detailed design completed during the development of the final plans.

22-2.04 Environmental Issues

During project development, it is important for the designer to understand the environmental issues that may impact the project. Environmental reviews can be a significant portion of project development and project schedules can be greatly affected. For detailed information on environmental procedures, see [Chapters 10, 18, 19, and 20](#).

22-2.05 Highway Capacity Studies

22-2.05(a) General

The desired level of service (LOS) (e.g., mobility and freedom from delay and congestion) for a highway is determined by its functional classification and urban/rural location. The tables of geometric design criteria in [Chapter 32](#) present the recommended minimum LOS criteria for each functional class.

22-2.05(b) Responsibility

For LPA projects, the LPA or their consultant is responsible for conducting the capacity analysis. The District Geometric Engineer may be available as a resource to the LPA to assist in capacity analyses. The results are reviewed by the district before submission to the CBLRS.

22-2.05(c) Roadway Mainline Analysis

The following presents the simplified procedure for conducting a capacity analysis for the roadway mainline:

1. Select the design year; see [Section 27-6.02](#).
2. Determine the DHV; see [Section 27-6.03](#).

3. Select the level of service; see [Chapter 32](#) or [Chapter 33](#).
4. Document the proposed roadway geometric design (e.g., lane width, number and width of approach lanes at intersections).
5. Using the *Highway Capacity Manual*, analyze the capacity of the roadway element for the proposed design:
 - determine the maximum flow rate under ideal conditions,
 - adjust the maximum flow rate for prevailing roadway, traffic, and traffic conditions, and
 - calculate the service flow rate for the selected level of service.
6. Compare the calculated service flow rate to DHV. If DHV is less than or equal to the service flow rate, the proposed design will meet the objectives of the capacity analysis. If DHV exceeds the service flow rate, the proposed design may need further evaluation. The designer should either adjust the roadway design or adjust one of the capacity elements (e.g., the selected design year, level of service goal).

22-2.05(d) Intersection Design Studies

An intersection design study (IDS) is a graphic representation of a proposed treatment for the development or improvement of an intersection facility. It is based on an analysis of traffic needs and an evaluation of physical and economic elements at the intersection site. [Section 10-2.02](#) provides guidelines for when IDS should be prepared. [Chapter 14](#) of the *BDE Manual* provides guidelines for the preparation of IDS and the data that is required to be documented. [Chapter 34](#) provides the design criteria for intersections.

IDS's for federally funded projects will be submitted to the district for review. For intersections with State highways, the District Geometric Engineer will review the design to the extent appropriate and, if necessary, will obtain any approvals of exceptions to the geometric policies affecting the State highway from BDE before concurring with the design. The district may also submit a preliminary copy of IDS to the CBLRS.

22-2.06 Bridge Condition/Hydraulic Reports

22-2.06(a) Bridge Condition Report

The Bridge Condition Report (BCR) summarizes the findings of the investigation of a bridge and its components. It is used to establish the scope of work on the extent of repair, replacement (partial or total), widening or other improvements. BCR allows the LPA and IDOT to determine the most cost effective method of correcting the reported structural, geometric, or hydraulic deficiencies, and for restoring a bridge to a structurally adequate and functionally serviceable condition.

An abbreviated BCR may be used for structure replacements.

An in-depth BCR is required for all structures that are to remain. This report must include color photos. The following items are necessary in an in-depth report:

1. Introduction. The introduction should provide the reason for the report.

2. Administrative and Geographical Information. The report should include detailed administrative and geographical information (e.g., facility carried, feature crossed, age of bridge).
3. Inspection Information. Include what type of inspection was performed (e.g., visual, testing type, equipment), results of inspection, degree of impairment to structure, and any structural deficiencies. Precast prestressed deck beams should be sounded and scaled as part of the inspection.
4. Description. The report should include a description of the physical condition of the bridge and the deficiencies that require correction.
5. Verification. The ability and capacity of the existing structure for reuse should be verified and documented. This should at least include a statement that the structure is adequate for the required and stated design load. In addition, for structures to remain over waterways, BCR should verify the adequacy of the structure for scour.
6. Recommendations. Note all recommended repairs and any methods of repair.
7. Justification. Provide justification for any proposed work.
8. Photos. Include color photos of deficient areas.
9. Master Structure Report (S-107). This report is output from the Structure Information Management System (SIMS). The current Report S-107 should also be included with BCR.

For structures on 3R and resurfacing only projects that do not require any rehabilitation, provide a description of the structures as described in the Master Structure Report. These structures should be in good condition. A formal BCR then will not be required for these structures.

When the scope of the anticipated rehabilitation work is limited to bridge deck and minor structural repairs without need for a widening or replacement, only the preparation of a BCR for Deck Repair is required. Because the geometrics of the structure will not be altered, this type of work usually will not require a Type, Size, and Location (TS&L) submittal as discussed in [Section 10-2.03\(b\)](#).

Submit the BCR to the district. The district will forward the BCR to the Local Bridge Unit in the Bureau of Bridges and Structures for review and approval. BCR must be approved prior to or with the approval of the Preliminary Bridge Design and Hydraulic Report (PBDHR).

22-2.06(b) Preliminary Bridge Design and Hydraulic Report

The PBDHR contain the necessary information for use by IDOT personnel in reviewing the preliminary bridge design and processing the hydraulic reports for LPA bridge and culvert construction projects. [See Section 10-2.03\(b\)](#) for guidance on preparing PBDHR.

22-2.07 Hydraulic (Drainage) Studies

The roadway alignment is dependent on the interrelationships of several variables, including suitable stream crossing locations. The gradeline is directly influenced by high water elevations at stream crossings, and the depth of roadway ditch flow for surface drainage. Hydraulic structure sizes and storm sewer systems may significantly affect project cost estimates. For these and other reasons associated with drainage controls, a drainage study containing preliminary hydrologic and hydraulic analyses should be prepared where highway drainage and/or structures will significantly affect the design or cost of a project.

Where hydraulic structure sizes can affect the selection of alignments or grades, the LPA should perform a detailed hydraulic analysis. Rehabilitations that have no history of flooding or high water problems may be handled with detailed hydraulic computations to be completed in the design phase. Rehabilitations that have experienced hydraulic problems (e.g., severe scour, inundation, debris) will require a detailed hydraulic analysis during the preliminary study phase, as results may influence the scope of work.

Assessment of flood damage potential during location studies will include inspection of IDNR Office of Water Resources Regulatory Flood Plain Maps, Federal Insurance Administration Flood Hazard Boundary Maps, and/or Flood Insurance Rate Maps to determine if a proposed flood plain encroachment or hydraulic modification is within a special flood hazard area. Section 20-7 discusses the requirements that apply to federally funded and regulated projects when the project will involve a flood plain encroachment. Compliance with LPA flood regulations should also be discussed. Proposals to mitigate adverse effects and to resolve conflicts may also be described.

In addition to recommended improvements to hydraulic structures, the LPA should analyze and describe other proposed hydraulic improvements or modifications (e.g., unavoidable channel changes; the conversion of open ditches to storm sewer systems, including suitability of outfalls; pumping stations; detention facilities; highway embankments, including those parallel to stream flow; other flood plain encroachments). Analyses should include planning for future land use changes and development that could influence runoff rates and rural/urban cross section selections. Discuss the effects of restricted outlets, existing storm sewer capacities, and drainage constrictions (upstream or downstream) on highway drainage systems, particularly in rapidly developing urban areas.

A summary of the hydraulic design for each project will be prepared and submitted to the district for review. See [Chapter 36](#) for culvert designs and [Chapter 38](#) for storm sewer designs. The hydraulic design summary should include the following:

- the set of plans or a sketch showing the outline of the proposed drainage system for storm sewers, culverts, ditches, etc., and
- design computations that include criteria and procedures used, assumptions made with verification of those assumptions, and a listing of design exceptions.

For additional guidance on hydraulic and drainage design issues, see [Chapter 38](#) of this *Manual* and the [IDOT Drainage Manual](#).

22-2.08 Geotechnical Reports/Pavement Design

The purpose for a Geotechnical Report is to provide insight into area geology, pedology, and other engineering factors to be used by the designer. If soil stability problems are anticipated, a preliminary Geotechnical Report should be prepared during the preliminary study phase. Information on the geotechnical reports can be found in [IDOT Geotechnical Manual](#). While a final pavement design is usually not needed until plan preparation, a determination of pavement type and approximate thickness may be needed during the preliminary study phase. [Chapter 44](#) discusses pavement design procedures and when a Geotechnical Report is required.

22-2.09 Commitments**22-2.09(a) Definitions**

The following definitions apply:

1. **Commitment**. A commitment is a documented obligation or promise made by a properly authorized representative of the LPA for carrying out a specific action or actions affecting the planning, design, land acquisition, construction, or operation of a highway project that involves special consideration and action. Note that statements in the PDR and/or environmental reports to the effect that adverse impacts to wetlands or other sensitive resources will be avoided, minimized, or mitigated, will create an obligation to take specific actions (e.g., to follow-up on avoiding, minimizing, and mitigating impact) and should therefore be treated as commitments.
2. **Commitment List**. This is a cumulative list of commitments that states the date, a brief description of the commitment, who made the commitment, and when it was completed. This list is initiated during the Phase I study, included in the plan submittal, discussed at the pre-construction meeting, and checked during the final inspection of the project.
3. **Commitment File**. This is a file created by the LPA and maintained by both the LPA and district for each project. The file should include a commitment list, information on the nature of each commitment, the date when the commitment was made, the parties affected, permits or environmental clearances, and documentation showing that the commitment has been fulfilled. A commitment file must be kept for all Federal and State-funded local projects. These commitments may include:
 - funding arrangements between FHWA, IDOT, LPAs, and/or developers, which may include construction costs, signal maintenance, lighting agreements, etc.;
 - notification requirements to IDOT, public agencies, owners, local officials, etc., prior to construction;
 - requests for verification of the area to be disturbed by the project;
 - commitments to owners, IDOT, and/or other public agencies for plant replacement, removal, or retainage (e.g., trees, shrubs, wetland plants);
 - environmental commitments to IDOT, other public agencies, and/or other groups (e.g., wetland replacement, tree clearing restrictions, hazardous material removal);
 - relocation, removal, or replacement agreements/requests for existing buildings;

- drainage agreements, including detention areas, culvert locations, ditch construction, etc.;
- relocation, rebuilding, addition, or removal agreements/requests for private and commercial entrances;
- special construction requests (e.g., timing of construction, type of construction, limits of construction);
- existing sign removal and replacement; and/or
- any other special agreements made between the LPA and land owners during right-of-way negotiations.

22-2.09(b) Procedures

The LPA is responsible for maintaining the commitment file and ensuring that these commitments are incorporated into the final plans and agreements. The following procedures will apply:

1. Recording Commitments. Commitments can occur early in the design (e.g., Environmental Survey Request (ESR), PDR) through construction. The designer will need to carefully review all minutes of meetings, transcripts of public hearings, and the project study files to ensure all commitments have been listed. If there are any questions, the designer should contact the author of the PDR. During plan development, the designer will also add to the file any commitments made to property owners or others affected by the project.

When applicable, note the commitments in the project agreements and contract documents. The LPA is responsible for providing the district with a copy of their commitment file at the same time as the rest of the project file is submitted.

2. Discussion of Commitment Information. On federal projects, commitments should be discussed at the bi-monthly coordination meeting with FHWA (see Section 22-1.02), to ensure that all affected parties are aware of the nature and scope of the commitments.

When a preconstruction conference is held, commitments should be discussed to ensure awareness and understanding of any special considerations affecting construction, and to emphasize the importance of follow through as construction proceeds. Other parties affected by the commitments may be invited to attend the preconstruction conference.

3. Commitment Change. If it is discovered during project development, implementation, or maintenance that a change is required to a previous commitment or a commitment cannot be met, the designer must immediately notify the district and/or CBLRS so that appropriate action can be taken. Failure to provide the appropriate notification and review may result in project delays. All affected parties should be considered prior to making the final decision on the previous commitment.

The designer is responsible for updating the commitment file and providing documentation on the coordination with the affected parties and the ultimate decision on the proposed change.

4. Closeout. It is the LPA's responsibility to ensure and document that all commitments have been fulfilled. The LPA will provide the district with a copy of the commitment list at the final inspection after the project is completed. The district will forward a copy of the finalized commitment list to the CBLRS.

22-2.10 Design Exceptions

In general, the designer is responsible for making a reasonable effort to meet the design criteria presented in this *Manual*. However, recognizing that this will not always be practical or cost effective, [Section 27-7](#) discusses the process to evaluate and approve exceptions to the geometric design criteria. The process described in [Section 27-7](#) applies to all LPA new construction, reconstruction, and 3R type projects using federal funds.

Form [BLR 22120](#) is used to document the justification and approval of exceptions that are necessary for the completion of the project. Complete the form in its entirety for all LPA federal projects.

The information in the form may be presented at district project coordination meetings. Coordination meetings are discussed in Section 22-1.02. The minutes of the coordination meeting would serve as the documentation of the approval. Requests for exceptions may also be submitted in writing to the district on form [BLR 22120](#). A written response to the request will then be sent to the LPA.

22-2.11 Project Development Report (PDR)

22-2.11(a) General

A PDR is prepared to ensure environmental issues and design features are consistent with federal, State, and local goals and objectives. PDR is required for all projects that qualify for a Federal Approved Categorical Exclusion (CE) and for certain projects classified as State Approved CE; see [Chapter 19](#). Use form [BLR 22210](#) for CE PDRs.

22-2.11(b) Contents

The following information should be included in PDR, when applicable:

1. Location. Include a narrative description of the project location along with a location map.
2. Description of Existing Conditions. Describe the existing facility (e.g., alignment, typical sections, bridges, railroad crossings, utilities) within the improvement. For existing railroad crossings, PDR should document the number of trains per day, the existing warning devices, and the geometrics at the crossing. Also, describe the contiguous sections.
3. Design Traffic Data. Include current ADT, design ADT, DHV when applicable, and the percent trucks.
4. Purpose/Need for Project. Discuss the purpose and need for the project.
5. Design Guidelines. Indicate whether the project is being designed using urban or rural design guidelines for new construction/reconstruction or the 3R guidelines. Include the functional classification, the design speed, and the regulatory speed.
6. Description of Proposed Improvement. Include the following in the description of the proposed improvement:

- a. Roadway. The description should include a discussion of side slopes and the widths of through lanes, turning lanes, traffic control, non-motorized user facilities, parking lanes, and shoulders. Discuss any alignment changes and intersection improvements. Attach typical sections, plan and profile sheets, and intersection design studies, when appropriate.
- b. Structures. The degree of proposed bridge descriptions contained in PDR will depend on the type of improvement. A bridge rehabilitation project will need to discuss more individual bridge elements needing improvement and possible alternatives for widening under traffic, but not specifics (e.g., beam types). A structure on new location might only require enough details necessary to set approximate roadway profiles, assess hydraulic impacts including streambed environment, and develop a cost estimate. The recommended scope of work should address the approximate dimensions of the replacement structure envisioned, but not so precisely that configuration refinements resulting from subsequent hydraulic, soils, or structural-economic studies are restricted. This is necessary to determine approximate right-of-way requirements, assess environmental impacts, consider necessary hydraulic and flood plain effects, and to make a reasonable cost estimate. [Chapter 36](#) provides guidance on the design of bridges and structures.
- c. Hydraulics (Drainage). PDR should contain a summary of the preliminary hydrologic and hydraulic analyses where highway drainage and/or structures will significantly affect the design or cost of a project. Rehabilitations that have no history of flooding or high water problems may be handled with brief statements of past performance in PDR with detailed hydraulic computations to be completed in the design phase. Discuss the effects of restricted outlets, existing storm sewer capacities, and drainage constrictions (upstream or downstream) on highway drainage systems, particularly in rapidly developing urban areas. For additional guidance on hydraulic and drainage design issues, see [Chapter 38](#) of this *Manual* and the [IDOT Drainage Manual](#).
- d. Miscellaneous Highway Features. PDR should reflect, as appropriate, other elements as follows:
 - i. Utilities. Describe any proposed modifications, changes, or multiple uses of right-of-way. Prior to beginning of work, a written agreement must be made between the LPA and each utility, defining the work responsibilities and estimate of cost. See [Section 5-8](#) for guidance on preparing utility agreements and [Section 10-4](#) for guidance on utility coordination.
 - ii. Railroads. PDR must determine if crossings will be at-grade or grade-separated. This will be a collaborative effort between the LPA, IDOT, the affected railroad, and the Illinois Commerce Commission. In most cases for at-grade crossings, it will be appropriate in the preliminary stage to specifically determine the type and proposed location of warning devices at the crossing (e.g., automatic gates, flashing signals) and width of crossing surface. The CBLRS will review and approve the plans, specifications, and estimates without prices for all railroad crossing improvements. [Section 10-2.01\(f\)](#) provides additional information on the coordination with railroads. [Section 22-1.01\(d\)](#) and [Chapter 40](#) provide guidelines on the design of highway/railroad crossings.

- iii. Lighting. [Section 41-7](#) provides guidelines for highway lighting and illumination. In PDR, describe proposed illumination levels including uniformity ratios and glare levels.
- iv. Erosion and Sediment Control. Evaluate the need for erosion and sediment control measures. This may require additional right-of-way to accommodate erosion and sediment control implementation. See [Section 41-10](#) for guidelines on the design and implementation of erosion and sediment control.
- v. Hazardous Mailbox Supports. During the preparation of PDR, the LPA should address the problem of hazardous mailbox supports. Document the existence of potentially hazardous mailbox supports and their locations in PDR. Removal and replacement of mailboxes can be a sensitive issue and should be reviewed with the local postal authorities and the postal patron. The following evaluation process is required on federal projects and may be used on other projects:
 - Survey. Conduct an onsite survey to determine whether there are any hazardous mailbox supports within the clear zone of the project. Document these locations in PDR. If there are no hazardous supports on the project, note this in PDR.
 - Notification. If a mailbox box support is determined to be hazardous, the LPA is responsible for notifying the postal patron by certified mail that their mailbox may be potential hazard. The letter should discuss the following issues:
 - o type of hazard and the potential adverse safety effects,
 - o potential personal liability to the property owner,
 - o statement of the appropriate mailbox design issues (see [Section 41-8](#)),
 - o the recommended appropriate safety design,
 - o LPA's request to change the support to an acceptable design, and
 - o LPA's request to meet with the owner to ascertain the property's owner's decision.
 - Documentation. Ensure the following is documented in the project files:
 - o copies of all certified letters,
 - o meeting results,
 - o any subsequent verbal or written responses, and
 - o documentation of the LPA's effort to remove the hazardous mailbox.

Summarize all decisions relative to the owner's decision, either agreeing or disagreeing to remove the hazardous support, in PDR.

- Notification by Postmaster. If no response is received from a postal patron who has a hazardous mailbox support, or if the owner indicates that he/she does not wish to change the support, the LPA may contact the local postmaster and ask for the postmaster's help in getting the mailbox support removed. If the local postmaster is agreeable, the local postmaster has the authority to notify the patron in writing of the safety hazard of an existing support. Postal regulations require that box supports must bend or break away when struck by a vehicle and that supports are now readily available for purchase. The local postmaster can give the owner 30 days' notice, and if compliance is not achieved, the postmaster has the authority to suspend mail delivery to the box.
 - Project Field Reviews/Construction Phase. If a hazardous mailbox support is constructed or discovered after design approval, use the above procedures and add the appropriate documentation to the files and reports.
Section 41-8 contains additional information concerning hazardous mailbox supports.
- vi. Truck and Parking Restrictions. List any truck or parking restrictions or parking removal in PDR.
- vii. Mail Delivery. Indicate any mail delivery from a traffic lane.
- viii. Airports. PDR must indicate that the project will have no effect on airport operations. Section 10-6 discusses airport coordination.
- ix. Traffic Control. Many traffic engineering elements are addressed during detailed design in the final plans (e.g., selection and location of traffic signs and pavement markings). However, as appropriate for the project scope of work, PDR should discuss proposed traffic control, especially at intersections, and include justification of those traffic engineering elements (e.g., traffic signal and multi-way stop warrants). Chapter 39 provides guidance on several traffic engineering issues.
- x. Sidewalks and Pedestrians. Describe the reasons for providing, or not providing sidewalks, and the coordination needed with local governmental units. See Section 41-6 for a discussion on sidewalks and ADA compliance. PDR must contain a discussion on satisfying ADA requirements including, if applicable, the selection of accessible routes for disabled individuals.
- xi. Bicycle Facilities. Identify the travel needs of bicyclists in PDR. Chapter 42 provides guidelines for the placement and design of bicycle facilities.
- xii. ADA. Section 41-6 discusses implementation of the *Americans with Disabilities Act* (ADA). PDR must contain a discussion on satisfying ADA requirements including, if applicable, the selection of accessible routes for disabled individuals. Any intersection design study (see Section 10-2.02) prepared during the preliminary study must indicate the location of the curb-cut ramps to be provided. PDR must discuss any request for a design exception from policies on accommodating disabled individuals and the justification for the request. The request must discuss the impact on the access route.

- xiii. Geotechnical Considerations. Conduct preliminary studies in cooperation with soils specialists and geologists when these elements influence the location and/or design of a proposed improvement. Additionally, the location of foundations for structures or high embankments may be an important item in the highway location. See the *IDOT Geotechnical Manual* for information on geotechnical considerations.
 - xiv. Agreements. PDR should document the need for any agreements with the State, other LPAs, consultants, railroads, and/or utility companies. [Chapter 5](#) provides guidance on the preparation of these agreements.
 - xv. Maintenance Considerations. The designer should develop PDR in cooperation with bridge and highway maintenance personnel who are responsible for the highway section under design. [Section 25-2](#) provides additional guidance on maintenance issues.
7. Design Exceptions. List all design exceptions along with any approvals. Include form [BLR 22120](#). See [Section 27-7](#) for additional information.
 8. Cost Estimate. Prepare a cost estimate for the project including construction, utility adjustment, land acquisition, and engineering costs. For major projects requiring more than one construction contract, provide cost estimates for individual usable segments. [Section 11-6](#) discusses the required information needed to document project costs.
 9. Crash Analyses. PDR should include, as appropriate, the following crash analyses to assist in demonstrating the need for a highway improvement:
 - a. Spot Map. Provide a crash spot map as basic crash information in PDR. As applicable, include a comparison of the calculated project crash rates with the statewide average crash rates for the same class of highway. Collision diagram summary sheet percentages also may be compared with statewide averages.
 - b. High-Crash/Crash Pattern Analyses. During the preliminary study, identify High Accident Locations (HAL), rates, and all crash patterns (e.g., fixed objects) at various sites throughout the project. Additionally, include schematic collision diagrams, results of field checks, crash analyses, and recommended countermeasures for these items, or provide a statement that no high crash locations or other crash patterns that exist along the proposed improvement.
 - c. Wet-Pavement Crashes. Identify and analyze any wet pavement crash clusters in accordance with the *Procedures for Identifying, Analyzing, and Improving Wet Pavement Accident Locations Within Rehabilitation/Resurfacing Projects*. These procedures are discussed in the [Illinois Highway Safety Improvement Program](#) available online coordinated through the Bureau of Safety Programs and Engineering (BSPE). Include friction numbers, if available, in the analysis of critical wet pavement crash locations combined with the recommended traffic, existing geometric features, grooving, profiling, and/or high friction resurfacing countermeasure alternative. Specify a high-friction resurfacing type and mix design to be used during the development of the final plans.
 - d. Time Period. Analyze the traffic crash data available for the most recent five years and update the data accordingly.

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10. Right-of-Way Requirements. Describe the right-of-way acquisition including the existing land use, the total area required for permanent right-of-way, permanent easements, and temporary easements, the number of property owners affected, and anticipated effects on the remaining properties. Discuss any displacements to persons, businesses, and farms.
11. Environmental Issues. Discuss any involvement with environmental issues. Include the results of any environmental surveys. Include any signoffs and copies of other pertinent coordination. Discuss proposed mitigation measures and indicate any permit requirements.
12. Traffic Control and Alternative Routes During Construction. Include in PDR a discussion on the development of a conceptual plan to accommodate traffic during construction. If the highway is to be kept open to traffic during construction or if detours or runarounds are involved, indicate this in PDR. Discuss all feasible alternatives for handling traffic during construction and methods to provide pedestrian accommodations. For additional guidance on traffic control devices during construction, see [Chapter 39](#).

When deciding on alternative routes during a road closure, several factors should be considered. Some of these factors include the type of pavement and ability for the alternative route to handle the additional load, the impact that the additional ADT would have on the traffic control at intersections and railroad crossings, the effect of larger vehicles have on the turning radii at intersections, and the coordination with the agencies having jurisdiction of the alternative routes. If a marked detour is provided during a road closure, all agencies having jurisdiction of the detour route must approve the detour signing.

Before closing a road during construction, any affected emergency services, school districts, and post offices should be notified. It is recommended that these agencies be contacted prior to submitting the PDR, and documentation of the contacts be included in the report.
13. Public Involvement. Summarize public involvement activities. Discuss any opposition to the project and how public hearing requirements are being fulfilled. Attach any property owner comments or signoffs.
14. Other Coordination. Attach minutes of the early involvement coordination meetings and applicable coordination letter with other agencies, utility companies, and railroads, as appropriate.

22-2.11(c) Project Development Report Review

Typically, the LPA will send the draft PDR (form [BLR 22210](#)) to the District for review. After District review, the PDR may need to be sent to CBLRS for review and comment. Once the District and CBLRS comments have been addressed, the final PDR (form [BLR 22210](#)) may be submitted for approval.

22-2.12 Design Reports

A design report will be required for all projects that require a separate environmental document for which an EA or EIS was prepared. The purpose of a design study is to investigate all plausible alignments within the approved corridor. Public involvement activities and environmental studies are conducted concurrently with the design study.

The report shall discuss the alternatives considered, but not studied, with an in depth explanation of why these alternatives were eliminated. For the final alternatives under consideration, include major design details and discuss the social, economic, and environmental advantages and disadvantages of these alternatives. The environmental impacts do not need to be discussed in detail in the design report, but should be summarized. Additionally, summarize the result of public involvement activities. The report shall identify the recommended design alternative and the reason for its selection.

Additional guidance concerning design studies and reports are provided in [Chapters 11](#) and [12](#) of the *BDE Manual*.

22-2.13 Approvals

22-2.13(a) Categorical Exclusion Approval

The following approval process is required:

1. State Approved Categorical Exclusion Projects. For State Approved CE projects, CE Approval is given by the district after the environmental coordination and any public involvement activity have been completed and the project has been determined to have no unusual circumstances. This is accomplished by the approval of form BLR 19110 indicating the project does qualify as a State Approved CE. Projects including an existing structure or proposed structure, requiring inclusion in the NBIS will require the district to consult with CBLRS to determine CE approval. Approval of form BLR 19110 must occur prior to the approval of either form BLR 19100 or BLR 22210.
2. Federal Approved Categorical Exclusion Projects. For Federal Approved CE projects, CE Approval is required by the FHWA. After the final PDR has been reviewed, environmental coordination and public involvement activities have determined there are no unusual circumstances, and there is an agreement on any mitigation measures, the CBLRS will contact the FHWA with a request for CE Approval. The request for CE Approval to the FHWA may be made at a coordination meeting, through email, or other method of contact. Documentation of the CE Approval will be included in the PDR.

22-2.13(b) Design Approval

All projects that require the preparation of a PDR (form [BLR 22210](#)) or a design report will require design approval.

For all State Approved CE projects, design approval by the district will be required. For all Federal Approved CE projects, design approval will be given by the CBLRS after environmental and public involvement requirements have been completed and the project has been determined to have no unusual circumstances.

22-2.13(c) Direct Approval

The CBLRS Project Development Engineers have the authority to conduct some official actions in the districts and at coordination meetings. Specifically, these actions will consist of evaluating and approving, when satisfactory, requests for CE determinations and design approvals for certain projects. Direct approvals are means of expediting the processing phases.

Consider the following before requesting direct approval:

- The LPA has submitted a PDR (form [BLR 22210](#)) or other design report.
- Projects that involve other than minor geometric revisions are not normally eligible for direct approval. Some projects with design deviations may still qualify for direct approval if prior concurrence for design deviations has been obtained from the CBLRS.

22-2.14 Addenda to Project Development and Design Reports

All changes during the preparation of final plans that affect the original PDR such as revised scope of work, significant alignment revisions, additional right of way or major design features of an approved project must be submitted in the same manner as the first approval.

Some examples of work that would cause a PDR addendum include the following:

- Acquiring more ROW or easements than the original PDR proposed;
- Switching from a widening and resurfacing project to reconstruction project;
- Revising the type of a stream crossing structure, i.e. from a box culvert to a bridge;
- Proposing a new stream crossing;
- Adding auxiliary lanes or traffic signals at an intersection;
- Changing the typical section in the PDR;
- Changing layout, function or access to roadway.

Some examples of work that would not require a PDR addendum include the following:

- Altering the skew of a stream crossing structure to better fit the channel alignment;
- Revising the work zone traffic control scheme from a more restrictive arrangement, such as a road closure, to a more liberal plan, such as maintaining through traffic in some manner;
- Acquiring less ROW or easements than original PDR proposed;

The addenda can often be handled with a memo, submitted by the LPA, detailing the changes to the approved PDR. The memo should discuss the revised proposed scope of work and justification for the revision. Similar to the original PDR, the appropriate exhibits should be attached to the memo.

The environmental processing of the PDR Addenda will be similar to the original PDR. In all cases, an ESR addendum will be required to provide the necessary environmental clearances.

Refer to Chapter 21 for the required public involvement activities that are needed for a PDR addendum.”

22-2.15 Reports for LPA Projects Involving a State Highway

The following procedures for processing and approval of Design Reports, PDRs, and other related documents will apply for LPA projects involving a State highway.

22-2.15(a) State Highway System

The following applies with regard to jurisdictional transfers:

1. No Jurisdictional Transfer. Discuss all projects at district coordination meetings before finalizing and submitting any reports. Reports prepared by the LPA or their consultant should be submitted to the CBLRS for review, approval, or information. When the need for a design exception is discovered at the local coordination meeting on routes under State jurisdiction, the CBLRS will coordinate and discuss this information with BDE prior to approval action. If a LPA is preparing the report for a State highway on the National Highway System (NHS), BDE will review the highway geometrics and cross section design during the development of preliminary alternatives. Once the geometrics and cross section designs are agreed to, the CBLRS will review the report and process it accordingly.
2. Jurisdictional Transfer to a LPA. Submit PDR to the CBLRS for review and approval. When the State is providing matching funds, the CBLRS will coordinate the design requirements with BDE prior to approval. It is imperative that these projects be discussed at the district coordination meetings. This will allow BDE and the CBLRS to become aware of proposed design features and costs and to determine if the project is still the same as originally discussed during programming meetings.

22-2.15(b) Combined Systems

For projects that have substantial work on both highway systems, and the LPAs and their consultants prepare reports, process the PDR through the district to the CBLRS. The CBLRS will coordinate any design requirements with BDE.

22-2.15(c) Modified Procedures

Where special or unusual situations arise during project development, modified review and processing procedures may be necessary. In such cases, the LPA, district, CBLRS, and BDE should agree on the modified procedures to use.

22-2.16 Interstate Access Studies

BDE and FHWA must approve all proposed new access points to the Interstate system and all proposed changes in interchange configurations, even if the number of access points does not change. Any changes to access for non-Interstate fully access controlled facilities, must be approved by BDE. This applies to any change regardless of the funding source.

FHWA revised access approval constitutes a federal action and, as such, National Environmental Policy Act (NEPA) procedures must be followed. Compliance with NEPA procedures should proceed concurrently with the analyses to determine engineering acceptability and feasibility.

An Access Justification Report (AJR) must be prepared to confirm the future safety and traffic operations along the Interstate corridor. The required contents of this document can be found in [Chapter 37](#) of the *BDE Manual*. The report is submitted to BDE for review and approval by IDOT and, when required, by FHWA.

22-2.17 Work Zone Transportation Management Plans for Impact on State Highways

22-2.17(a) General

A well-planned method for maintaining traffic flow is critical for meeting the Department's mobility goals, minimizing complaints from the traveling public, residents, and businesses, and reducing unnecessary capital costs. Therefore, when a LPA project impacts a State highway (owned or maintained), [Chapter 13](#) of the *BDE Manual* will apply to any work on the State highway.

While a majority of local highways are considered non-Significant Routes, there are a few local highways in urban areas that may be considered Significant Routes. Therefore, for federally funded projects, [Chapter 13](#) of the *BDE Manual* will apply as well.

The LPA is responsible for making a request to the District for a determination if a highway is considered a Significant Route.

22-2.17(b) Significant Route

A Significant Route is a roadway segment where a lane closure on the roadway is expected to cause sustained work impacts that are not considered tolerable based on work zone mobility goals or public opinion (see IDOT's website under [Work Zones](#) for Significant Route Location Maps).

If work is going to be performed on any Significant Route, the LPA project should be taken to a FHWA/IDOT coordination meeting.

22-2.17(c) Requirements

[Figure 13.1-A](#) of the *BDE Manual* shows the Work Zone Safety and Mobility Process Flow Chart in order to determine the level of significance of a project along a State highway.

For a Significant Project – Short Term (work less than three days on a Significant Route), the LPA will be responsible for preparing a Permitted Lane Closure Map (PLCM) based on the Significant Route Location Map and the District's knowledge. See [Section 13-1.03\(c\)](#) of the *BDE Manual* for details.

For a Significant Project – Long Term (work more than three days on a Significant Route), the LPA will be responsible for an Impact Analysis (an analysis of the safety and mobility impacts of a road construction or maintenance project). A full Traffic Management Plan (TMP) will be prepared by the LPA and submitted to the District. The District will review the TMP and coordinate the Department's review and approval. See [Section 13-1.03\(c\)](#) of the *BDE Manual* for details.

For a Non-Significant Project (work on a non-Significant Route), an Impact Analysis is not required. The final design may proceed with a TMP that consists of only a Traffic Control Plan (TCP).

22-2.17(d) Exceptions

If the TMP strategies have been evaluated and incorporated into the project and the mobility and/or queue goals are not met, the LPA will prepare an exception to compliance. The Request for Exception to Compliance must include:

- all strategies including those in the TMP;
- justification why it is not feasible to meet the goals of the policy; and
- the proposed strategies to mitigate work zone impacts.

The request must be sent to the District Department and FHWA review and approval. See Section 13-7 of the *BDE Manual* for the Request for Exception to Compliance form.

22-2.17(e) Funding for Work Zone Traffic Management Plans

The LPA will be responsible for the cost of any required Work Zone Traffic Management Plans along a State highway when included on a LPA project.

22-2.18 Complete Streets for Impact on State Highways

For federally funded projects that impact State highways, the LPA shall follow procedures contained in [Section 10-2.09](#) except the LPA:

- should address any issues regarding Complete Streets at FHWA/IDOT coordination meetings; and
- shall include signed documentation of the Secretary's concurrence of exception to Complete Streets in the PDR.

22-3 RIGHT-OF-WAY

22-3.01 General

The LPA develops preliminary right-of-way cost estimates and relocation assistance plans as necessary and in accordance with the [IDOT Land Acquisition Policies and Procedures Manual](#).

Preliminary right-of-way costs are determined on a per acre (hectare) basis, or on a parcel-by-parcel basis, and include costs for persons displaced as a result of a proposed highway improvement (e.g., relocation, replacement housing). For major projects, a preliminary relocation plan is developed to estimate housing needs and available resources for persons displaced by a highway project. The steps in the land acquisition process are shown in the [IDOT Land Acquisition Policy and Procedures Manual](#).

When publicly owned facilities will be acquired, a decision should be made at the completion of PDR to either pay the market value for the property or to functionally replace it. Guidance on this issue is in the [IDOT Land Acquisition Policy and Procedures Manual](#).

In addition to securing cost estimates and relocation plans through the Land Acquisition Section, the designer should seek their assistance when determining special alignment and design features to avoid adverse property severance, undesirable access features, unnecessary damages, and odd-shaped takings. Additionally, consider existing property lines and the value of property to avoid excessive right-of-way costs. Often, alternative locations and designs can be selected with lower right-of-way costs.

When right-of-way is acquired for Federal-aid projects, full compliance with Title II and III of the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* is mandatory. There must be full compliance with the requirements of Title II and III on Federal-aid LPA projects whether or not Federal funds are used to pay a part of the right-of-way costs.

22-3.02 Definitions

The following definitions apply:

1. Right-of-Way. Land acquired for permanent ownership by the LPA for activities that are the responsibility of the LPA for an indefinite period of time. The LPA obtains the fee simple title to the property. Right-of-way is typically acquired for roadways, roadsides, etc.
2. Permanent Easements. Easements acquired with the perpetual right to construct and maintain a public highway and incidental facilities over and across the surface of lands. Types of permanent easements include:
 - utility easements,
 - storm sewer easements, and
 - scenic easements.

3. Channel Easements. Easements acquired specifically for stream channel construction and maintenance, which provides the LPA with a permanent right of ingress and egress. The property owner relinquishes the right to modify the channel dimensions (e.g., slopes).
4. Temporary Construction Easement. Easements acquired for the legal right of usage by the LPA to serve a specific purpose for a limited period of time (e.g., construction, maintenance and protection of traffic during construction). Once the activity is completed, the LPA yields its legal right of usage. Although located outside or beyond the proposed highway right-of-way lines, all temporary construction easements or permits are considered as right-of-way parcels and must be reported as right-of-way required for construction of a project for purposes of obtaining authorization to advertise the project for letting.

Acquisition of temporary construction easements should be accomplished in the same manner as the appraisal and acquisition of a fee-taking or a permanent easement with respect to appraisal and acquisition requirements. Temporary easements should always be obtained for detour roads, borrow pits, removal of remainders of buildings situation partially on acquired right-of-way, channel changes (requiring infrequent or no future maintenance), etc., where the specified use is essential to completion of construction of the proposed improvement.

5. Temporary Use Permit. The temporary use permit is used to describe a license acquired by a LPA to do a particular act or series of acts on the land of another without possessing any estate or interest in the land. A property owner may terminate the permit at any time.

Acquisition of temporary use permits should be confined to those areas of construction such as for sloping of lawns, extending back slopes beyond the proposed highway right-of-way lines, reconstruction of driveways, where a nominal amount of money is involved, the probability of termination is minimal and the effect of termination would not jeopardize completion of the highway improvement. When acquired as the only parcel from a property owner, it is not necessary for the appraiser to offer the owner, or designated representative, the opportunity to accompany the appraiser on the inspection of the property, nor is it necessary to furnish the owner with a written Summary of Right of Way Acquisition and Offer Purchase.

Although located outside or beyond the proposed highway right-of-way lines, all temporary construction easements or permits are considered as right-of-way parcels and must be reported as right-of-way required for construction of a project for purposes of obtaining authorization to advertise the project for letting.

22-3.03 Title II – Uniform Relocation Assistance

The purpose of this Title is to establish a uniform policy for fair and equitable treatment of persons displaced as a result of federal and federally assisted programs to prevent disproportionate injuries as a result of programs designed for the benefit of the public as a whole.

Wherever the acquisition of real property for a project will result in the displacement of any person, the LPA is responsible for providing a relocation assistance advisory program. The LPA's relocation assistance advisory program must be in accordance with requirements of the [IDOT Land Acquisition Policies and Procedures Manual](#). If the Relocation Assistance and Payments Program is administered by the LPA, the program must be approved prior to the public hearing or commencing negotiations for the property.

22-3.04 Title III – Uniform Real Property Acquisition Policy

In order to encourage and expedite the acquisition of real property by agreements with owners, to avoid litigation, relieve congestion in the courts, to ensure consistent treatment for owners, and to promote public confidence in land acquisition practices, a LPA should follow the policy requirements contained in the [IDOT Land Acquisition Policy and Procedure Manual](#).

22-3.05 Certified Appraisers

Where federal funding is used in any phase of the project and a detailed appraisal is required, the appraiser must be certified in accordance with the *Financial Institution Reform Recovery and Enforcement Act*. LPA staff appraisers and reviewers will not require certification to prepare or review detailed appraisals, but their qualifications must be consistent with the level of difficulty of the assignment. If a fee appraiser or fee reviewer is required for a detailed appraisal, their selection must meet the following classifications:

1. State Certified Residential Real Estate Appraiser. The appraiser is limited to appraising residential property containing one to four units and vacant single family land zoned residential that will accommodate no more than one unit.
2. State Certified General Real Estate Appraiser. The appraiser is allowed to appraise any type of real estate.

A detailed appraisal is defined as a complex appraisal problem that requires thorough documentation to support the values and conclusions contained in the report. An appraisal is considered detailed under the following circumstances:

- Where damages to the remainder, excluding non-complex cost to cure items (e.g., fence relocations, sign relocations) exceed \$10,000.
- The acquisition involves the acquisition of a principle building.
- On acquisitions involving only land or land with minor improvements, a staff reviewing appraiser will determine if the appraisal problem is complex. Examples of complex appraisal problems include:
 - the highest and best use is different than present use,
 - a complex specialty report is required,
 - market data is inadequate and consideration must be given to the cost and/or income approaches as appropriate, and/or
 - there is a complicated valuation problem involved.

22-3.06 Early Acquisitions

In general, no new right-of-way can be acquired for a project prior to completion of the environmental process and design approval. However, under some circumstances this requirement may be waived and will not jeopardize Federal-aid participation in future project costs. Early acquisition may be acceptable if it is shown that the acquisition is necessary to:

- alleviate particular hardship to a property owner, on their request, in contrast to others because of an inability to sell the property (hardship acquisitions); and/or
- prevent imminent development and increased costs of a parcel that would tend to limit the choice of highway alternatives (protective buying acquisitions).

Additionally, the following requirements must be met:

- The acquired property must not influence the need to construct the project or the selection of the location of the project.
- The acquisition must comply with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*, as amended, 42 U.S.C. 4601-4655 and 49 C.F.R. 24.
- The acquisition must comply with Title VI of the *Civil Rights Act of 1964*.
- The acquisition must not include lands protected by Section 4(f) of the *Department of Transportation Act*.
- The final project must meet all requirements for a normal Federal-aid project (e.g., compliance with the *National Environmental Policy Act*, the *Historical Preservation Act*, the *Endangered Species Act*, the *Wetlands Executive Order*).
- Advance acquisition must not be used to circumvent federal laws or regulations.

Because acquiring large quantities of right-of-way in advance of environmental and design approvals could likely influence project location or need, the LPA should be aware that any full scale acquisition is done at its own risk.

22-3.07 Land Acquisition Donations

A donation of right-of-way can be accepted after an owner has been fully informed of their right to receive just compensation. The LPA is not required to appraise the property or to offer compensation. Process donations only after the environmental study of the project is completed and design approval received.

22-3.08 Documentation and Certification

All property within limits of the proposed highway improvement must be cleared either by acquisition, easement, or permit, before receiving authorization to proceed to letting. Any deviation in this policy will require submittal of a written statement by the LPA to the district indicating the location and reasons for the deviation before authorization will be issued by FHWA.

The LPA is responsible for documenting and maintaining their files to provide the necessary evidence that they have complied with the provisions of the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*, as outlined in Section 22-3. The LPA's file must be available and open to inspection by IDOT and FHWA for a period of three years after the FHWA's payment of the final voucher on the project.

The district must certify prior to the State's advertising for bids that the LPA has acquired the necessary right-of-way and has provided relocation assistance, if applicable, in accordance with the requirements in Section 22-3.

22-3.09 Closing Right-of-Way Project

The LPA, upon completing the final transaction on a right-of-way project, will ensure that the proper certification forms have been completed and sent to IDOT for certification and acceptance.

Consider the following when closing right-of-way projects:

1. **Final Invoice.** Within 90 days after certification, submit a final invoice for the right-of-way cost to the district.
Statement of Cost of Right-of-Way. Include a Statement of Cost of Right-of-Way, see Figure 22-3A, with a copy of the appropriate cancelled checks with the submission of any progress or final invoice to provide documentation for the cost shown. Include the following in the Statement of Cost of Right-of-Way:
 - parcel number,
 - cost of parcel,
 - cost of excess land, if any, acquired from same ownership,
 - credits by parcel or project, and
 - incidental expense by parcel or project.
2. **State Job Completion Notice - Form BFM-336.** Upon receipt of the final invoice, the district will prepare form [BFM-336](#) to notify the appropriate offices of the project completion. Retain copies of all invoices and supporting documentation for auditing purposes for a period of three years after payment of the final voucher. Additional support documentation that is to remain on file includes:
 - right-of-way maps or plans showing the right-of-way authorized and the actual area acquired, including parcel identification numbers,
 - property lines of area actually acquired, and
 - any other pertinent data affecting cost (e.g., structures, improvements, fences).
3. **Audits.** IDOT will audit invoices in accordance with FHWA approved auditing procedures. Upon completion of the audit and resolution of any findings, IDOT will close out the Contract Obligation Document and submit a final voucher to FHWA.
4. **Form BLR 13510.** When MFT or TBP funds are used to pay a portion of the cost, the LPA is required to submit form [BLR 13510](#) upon completion of the project. This will close out the MFT or TBP portion of the project.

COLUMBUS DRIVE EXTENSION

River to Huron Street
 F.A.P. Route 525
 Federal Project M5000(55)
 City Section 80-B9003-00-RP
 State Job No. R-88-003-77
 Cook County

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COST OF RIGHT OF WAY					
Parcel	Parcel Cost		Incidental Expenses		Total
Parcel 1 — North side of Grand Avenue South side of Ohio Street and West side of Fairbanks Court Purchased from the American National Bank and Trust Company of Chicago Trust No. 39369	\$282,000.00		Appraisals and Title Costs	\$6,910.46	
	Interest on Judgment Order	4,172.05			
	Court Costs	17.00			
	TOTAL	\$286,189.05	TOTAL	\$6,910.46	\$293,099.51
Parcel 2 — 541 N. Fairbanks Court Purchased from 541 Fairbanks Corporation	\$250,000.00		Appraisals and Title Costs	\$8,663.45	
	Interest on Judgment Order	2,095.89			
	Court Costs	13.00			
	TOTAL	\$252,108.89	TOTAL	\$8,663.45	\$260,772.34

SAMPLE STATEMENT OF COST OF RIGHT-OF-WAY

Figure 22-3A

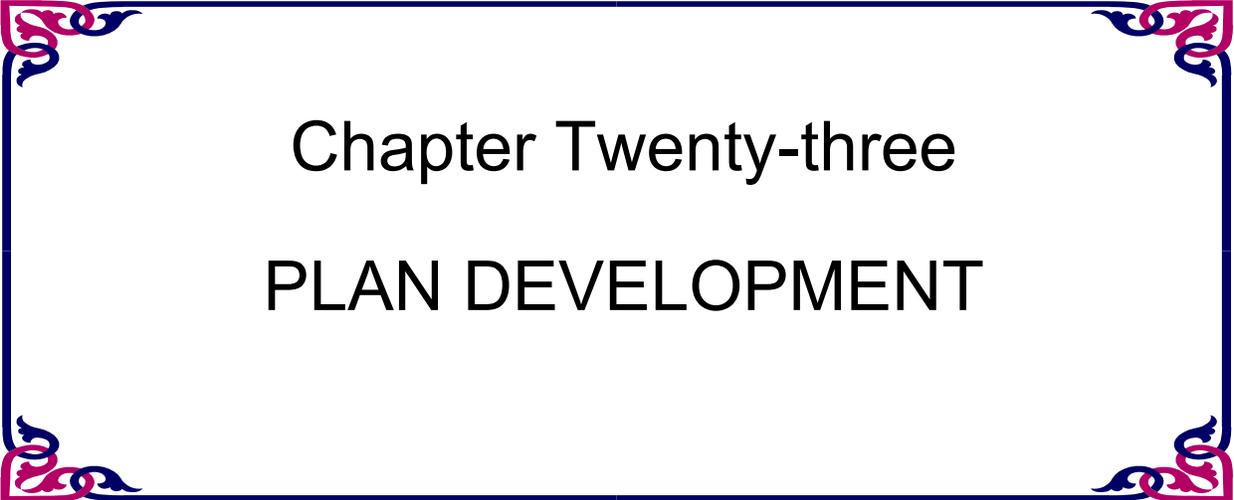
22-4 ACRONYMS

This is a summary of the acronyms used within this chapter.

AJR	Access Justification Report
BBS	Bureau of Bridges and Structures
BCR	Bridge Condition Report
BDE	Bureau of Design and Environment
BLA	Bureau of Land Acquisition
BMPR	Bureau of Materials and Physical Research
BSPE	Bureau of Safety Programs and Engineering
CBLRS	Central Bureau of Local Roads and Streets
CE	Categorical Exclusion
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESR	Environmental Survey Request
FHWA	Federal Highway Administration
GCPF	Grade Crossing Protection Funds
HAL	High Accident Location
IDNR	Illinois Department of Natural Resources
IDOA	Illinois Department of Agriculture
IDOT	Illinois Department of Transportation
IEPA	Illinois Environmental Protection Agency
IHPA	Illinois Historic Preservation Agency
ISIS	Illinois Structure Inventory System
LOS	Level of Service
LPA	Local Public Agency
MPO	Metropolitan Planning Organization
NEPA	<i>National Environmental Policy Act</i>
OPP	Office of Planning and Programming
PBDHR	Preliminary Bridge Design and Hydraulic Report
PDR	Project Development Report
PESA	Preliminary Environmental Site Assessment
ROW	Right of Way
SIMS	Structure Information Management System
TS&L	Type, Size, and Location

22-5 REFERENCES

1. [Chapter 11](#) "Phase I Studies", *BDE Manual*, IDOT
2. [Chapter 12](#) "Phase I Engineering Reports", *BDE Manual*, IDOT
3. [Chapter 13](#) "Work Zone Transportation Management Plans", *BDE Manual*, IDOT
4. [Chapter 37](#) "Interchanges", *BDE Manual*, IDOT
5. Highway Functional Classification Concepts, Criteria and Procedures, FHWA, 2013
6. [Roadway Information and Procedure Manual](#), OPP, IDOT
7. [Structure Inventory and Procedure Manual](#), OPP, IDOT
8. [Drainage Manual](#), BBS, IDOT
9. [Geotechnical Manual](#), BMPR, IDOT
10. [Land Acquisition Policies and Procedures Manual](#), BLA, IDOT
11. *Financial Institution Reform Recovery and Enforcement Act*
12. *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*
13. *Civil Rights Act of 1964*
14. *Department of Transportation Act*
15. *National Environmental Policy Act*
16. *Historical Preservation Act*
17. *Endangered Species Act*
18. *Wetlands Executive Order*



Chapter Twenty-three
PLAN DEVELOPMENT

BUREAU OF LOCAL ROADS AND STREETS MANUAL

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Chapter Twenty-three
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23-1 PLAN PREPARATION

The designer is responsible for preparing the plans so that they can be accurately constructed in the field. Chapter 23 discusses the procedures for plan preparation of federally funded projects.

23-1.01 Initiation

To properly prepare the plans, the designer must have a well defined scope of work. Section 11-1.01 discusses the required information and procedures for initiating a project.

23-1.02 Plan Types

Section 11-1.02 discusses the various plan types that are typically used to prepare a set of construction plans.

23-1.03 Plan Content

The designer should prepare the contract plans as simply as practical. Avoid the use of duplicated data and unnecessary cross-references. Section 11-1.03 presents guidelines for the various plan sheets used in the contract plans.

For State-let projects, include the contract number on each plan sheet.

23-1.04 Drafting Guidelines

See the *IDOT CADD Roadway Drafting Reference Guide* (CADD Manual) and Section 11-1.04 for a description on IDOT's drafting guidelines.

23-2 PLAN REVIEW

23-2.01 Preliminary Plan Review

This is the most appropriate design stage for IDOT and other agencies that may have a role in the project to conduct a major review of the plans. This also may include a plan-in-hand field review, if deemed necessary. The preliminary plan review will occur after the designer has essentially completed the plans including the Cover Sheet, Plan and Profile Sheets, Detail Sheets, Cross Section Sheets, determination of pay items, special provisions, etc. During this stage, the designer should address any utility conflicts and determine if adjustments and/or agreements are necessary. The purpose of the preliminary plan review is to ensure that the plans are compatible with the approved Project Development Report and are in conformance with the design criteria presented in this *Manual*, other IDOT and local agency documents, and are appropriate for the site. All major comments must be made during this review period. Section 11-2.01 discusses the information and procedures required for the preliminary plan review.

23-2.02 Pre-Final Plan Review

Pre-final plans should be considered as final plans for review. If there are no preliminary review comments, these plans may be finalized, sent to the district, and then forwarded to the Central BLRS and BDE for letting. Prior to this review, the designer should:

- incorporate and/or address all comments made during the preliminary plan review,
- set up a plan-in-hand field review, if necessary, and
- determine the cost participation arrangements (e.g., federal, State, and local shares). These cost breakdowns should be noted on the Summary of Quantities Sheet.

IDOT and other agencies should be given the opportunity to review the pre-final plans to ensure that:

- their comments from the preliminary plan review have been incorporated or addressed in the disposition memorandum,
- the changes to the preliminary draft do not conflict with their commitments, and
- the plans still conform to the design criteria.

23-2.03 Final Plan Review

The purpose of the final plan review is to ensure that the reviewer's comments from the pre-final plan review have been addressed. Revisions or changes should not be necessary. If changes are deemed necessary, the reviewer should contact the designer directly.

23-2.04 **Final Plan Approval and Release**

Section 11-2.04 details the final plan approval and release.

23-3 SPECIFICATIONS AND SPECIAL PROVISIONS

23-3.01 General

Section 11-3 provides guidance on:

- *IDOT Standard Specifications for Road and Bridge Construction* (IDOT Standard Specifications).
- Supplemental Specifications,
- Recurring Special Provisions,
- BDE Special Provisions,
- Guide Bridge Special Provisions,
- Contract Special Provisions,
- preparation of project specific Special Provisions,
- patented or proprietary items,
- guaranty/warranty clauses, and
- specifying material.

23-3.02 Experimental Projects or Features

When an experimental feature is included in a federally funded project, the local agency must prepare an Experimental Features Work Plan for approval by the Central Bureau of Materials and Physical Research (BMPR) according to Section 11-3.06. FHWA approval or concurrence must be obtained prior to the submission of the plans for approval. The Central BMPR or the appropriate Project Development Engineer from the Central BLRS will obtain approval or concurrence from FHWA.

23-4 HIGHWAY STANDARDS

The *IDOT Highways Standards* are developed by the Bureau of Design and Environment (BDE) in collaboration with other Bureaus, and are approved for general use by BDE. Districts and local agencies may submit ideas and details for the *IDOT Highways Standards* to BDE.

The *IDOT Highways Standards* provide details on various design elements that are consistent from project to project. They provide information on how to construct the various design elements. Design data and/or specifications are not included on the highways standards. The designer is responsible for providing a copy of the standard in the proposal for local-let projects.

If plans are prepared as Abbreviated Contract Plans (8.5 in x 11 in (216 mm x 279 mm) sheets), a copy of each standard shall be included in the proposal for local and State let projects.

23-5 QUANTITY ESTIMATES

In addition to preparing clear and concise plans, as described in Section 23-2 and Section 11-1, the designer must compile an accurate summary of the project quantities. This information leads directly to the Engineer's Estimate, which combines the computed quantities of work and the estimated unit bid prices. An accurate summary of quantities is critical to prospective contractors interested in submitting a bid on the project. Section 11-5 and Chapter 64 of the *BDE Manual* presents guidelines on calculating quantities for highway construction projects.

23-6 COST ESTIMATES

An estimate is the predicted project cost at the time of receipt of bids developed from a knowledge of cost of labor, materials, equipment, overhead, profit, and incidental items. See Section 11-6 for guidance on local let projects. The following guidance applies to State let projects. Individual cost estimates are to be prepared by both the local agency and the district for all State awarded and local day labor projects.

23-6.01 Local Agency Requirements**23-6.01(a) Project Estimates**

Section 11-6.01 provides guidance on preparing project cost estimates.

23-6.01(b) Specialty Items

Certain items will require additional details. These items may include the following:

1. Estimates for Utility Adjustments. Prior to beginning work, a written agreement must be made between the local agency and utility defining the work responsibilities and estimate of cost. See Section 5-8 for guidance on preparing utility agreements and Section 41-11 for guidance on utility adjustments.
2. Cattle Passes. On projects involving the construction of cattle passes, the local agency is responsible for providing the following information:
 - the estimated cost of the stock passes,
 - estimated land value taken from the property owner plus any damages to the land not taken, if any,
 - the amount paid to the owner for the land, either in cash or other considerations, and
 - the estimated value to the traveling public because the stock crossing is underneath the roadway rather than at grade.

Because cattle passes are generally constructed as a right-of-way consideration, FHWA will not participate in their construction cost unless federal participation is involved in the acquisition of the right-of-way. If federal funds are not involved in the acquisition of right-of-way for cattle pass located on a waterway or natural channel for water, federal participation will be limited to the cost of a drainage structure sized for the anticipated runoff.

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Where the improvement is on an existing road or street, the property owner will be responsible for the entire cost of the cattle pass. However, where the crossing is located on a waterway or natural channel for water, the owner will only be required to pay the additional cost required to increase the crossing beyond the cost of a drainage structure sized for the anticipated runoff. In special cases, the local agency may elect to join in the cost of the cattle crossing if it is more appropriate than an at-grade crossing. Where new or additional right-of-way is necessary, the value of the right-of-way can be considered as an offset on all or part of the cost.

3. Alternative Deliveries (Day Labor). On Federal-aid day labor projects, material proposals providing for the receipt of bids for a particular material for two or more alternative deliveries must have set forth therein unit price cost differentials for the purpose of determining the lowest bid favorable to the awarding authority.

This can be accomplished by predetermining and stipulating a certain unit price for unloading and a certain unit price for hauling the material in the material proposal. These unit prices, although estimated, should be as accurate as practical and be based on the best available estimate of cost for unloading and hauling.

23-6.01(c) Estimating Forms

Standard forms are available from each district for use by local agencies in preparing cost estimates for those pay items normally encountered during project construction (Form BDE-213). The information required to complete the forms can be obtained from the plans, material quotations, wage rates for the area, and the individual's knowledge of existing conditions.

23-6.02 IDOT Requirements

The local agency is required to prepare and transmit an "independent" estimate for the project to the district estimating engineer. The district estimator will review the local agency estimate and prepare a district estimate. This may be, but is not required to be, an independent estimate. If the district estimate is within 1% of the local agency's estimate, it will be entered into IDOT's Contract Management System (ECM). If the difference is greater than 1%, the district estimator will contact the local agency and negotiate an acceptable estimate for both parties. For guidance on IDOT's estimating procedures, see Chapter 65 of the *BDE Manual*.

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23-7 PLANS, SPECIFICATIONS, AND ESTIMATES (PS&E) PROCESSING

23-7.01 PS&E Submittal

The local agency will submit PS&E for all improvements, including traffic signal and illumination improvements, to the district for review and approval. All highway plans must be sealed by an Illinois licensed professional engineer, which includes the licensee’s written signature, date of signing, and expiration date of the license. The plans must also be signed by an appropriate local agency official.

23-7.02 Approval of Bridge Plans

Bridge plans that are included in PS&E will be approved as follows:

1. Structural Engineer’s Seal, Signature, and Certification. The following applies to the requirements for a structural engineer’s seal, signature, and certification:

a. Plans Prepared by a Structural Engineer. For plans prepared by an Illinois licensed structural engineer, the seal of the structural engineer responsible for the design must be affixed to the plans. The plans must include the licensee’s written signature, date of signing, and expiration date of the license. The seal of a licensed professional engineer is not an acceptable substitute to the structural engineer’s seal.

b. Plans Prepared by the County Engineer (Non-Standard). The Engineer of Bridges and Structures will seal structure plans for counties, provided the plans have been prepared by a county engineer who is an Illinois licensed professional engineer. Sufficient time must be allowed for the review by the Bureau of Bridges and Structures (BBS). The county engineer will place the following statement on the General Plan and Elevation Sheet of the structure plans:

These plans were prepared by me or by a full-time member of my staff working under my personal supervision.

(P.E. Seal) Date: _____

Date of License
Expiration: _____

County Engineer
Illinois Licensed Professional Engineer #

If the design is found to be structurally adequate, the structural engineer’s seal of the Engineer of Bridges and Structures will then be affixed to the plans.

c. Certified Bridge/Box Culvert Plans. Local agency simple span bridges, continuous span bridges, and multiple box culverts are considered structurally

adequate by IDOT when the plans are appropriately certified by an Illinois licensed structural engineer. These certified structures should follow the design, standard details, and guidelines shown in the *IDOT Bridge Manual* and other Manuals maintained by the Bureau of Bridges and Structures (BBS). Review by BBS for structural adequacy and economical design will still be required for structures of unusual or complicated design, or for structures involving a State highway.

Place the following certification on the first sheet of the bridge plans:

I certify that to the best of knowledge, information and belief, this bridge/box culvert design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current *AASHTO Standard Specifications for Highway Bridges*.

The designer's Illinois structural engineer seal, as well as the written signature, date of signing, and expiration date of the license must accompany the above certification. This certification does not limit the responsibilities of the designer under 225 ILCS 325.

- d. IDOT's Standard Bridge Plans. IDOT's standard bridge plans have been accepted as structurally adequate and do not normally require a structural engineer's seal or certification. However, when the standard plans have been altered (e.g., modification of the substructure for use with a standard superstructure plan), a structural engineer's seal and certification must be affixed to the individual plan sheets of the special design. The licensee's written signature, date of signing, and expiration date of the license must also be included.
- e. Foundations Review. A foundation review by the BBS Foundations Unit is performed for all structures using IDOT's Standard Bridge Plans, unless the local agency elects to have this review performed by an Illinois licensed structural engineer. The foundations review includes consideration of pile type, negative skin friction, seismic affects, liquefaction, settlement, and slope stability. In order to facilitate this review, submission of foundation borings must be included with the Preliminary Bridge and Hydraulic Report.

If, in order to expedite review, a local agency elects to employ an Illinois licensed structural engineer to perform the foundations review of the structure, the structural engineer must be identified at the time of the Preliminary Bridge Design and Hydraulic Report (Form BLR 10210) submission. The structural engineer should take into account the issues above that are normally included in the BBS Foundations Unit review. Place the following certification statement next to the structural seal, signature, and date on the Standard Plan GP&E sheet.

I certify these Standard Bridge Plans for foundation treatment only.

- f. Seismic Review. For multi-span bridges in Items 1.b. and 1.c., a complete seismic analysis is required to ensure adequacy of the substructure and of the superstructure to substructure connection under seismic forces. This review may be performed, by request, by BBS. The local agency may use a qualified Illinois licensed structural engineer to perform this review. If so, place the following certification statement next to the structural seal, signature, and date on the Standard Plan GP&E sheet:

I certify these Standard Bridge Plans for seismic adequacy.

If the structural engineer is sealing the Standard Plans for both seismic and foundations, use the following certification statement:

I certify these Standard Bridge Plans for seismic adequacy and foundation treatment.

2. Hydraulic Responsibility. The responsibility for hydraulic and hydrological analyses and the geometrics of a bridge/box culvert lies with an Illinois licensed professional engineer. Therefore, all structure plans (including certified and standard bridge plans) require a professional engineer's seal, signature, date of signing, and expiration date of the license. The local agency and the designer are responsible for ensuring that PS&E conform to the Division of Water Resources construction permit and the approved Preliminary Bridge Design and Hydraulic Report.
3. Modifications to Approved Submittals. Revisions to the structure type, loading, hydraulic opening, profile grade, geometry, or other pertinent items from those shown in the approved Preliminary Bridge Design and Hydraulic Report may require resubmittal and approval from BBS.

Certain modifications, left unapproved, may invalidate the previous permit or approval. The BBS Local Bridge Unit should be contacted to determine the materials necessary for resubmittal and approval.

4. Preliminary Bridge Design and Hydraulic Report (Form BLR 10210) Approval. After IDOT approval of form BLR 10210, the local agency will not be required to submit the design plans for review and approval except for the following situations:
- when the plans are to be signed and sealed by the Engineer of Bureau of Bridges and Structures, for local agencies who have prepared the plans using a non-structural engineer;
 - for complex, unique, or major bridges, and/or
 - for city streets over State highways.

23-7.03 Approval of Contract Plans

The district will review and approve the plans and specifications and the local agency's estimate without prices for all projects, excluding railroad crossing improvements. The Central BLRS will review and approve the PS&E documentation for all railroad crossing improvements.

Some structures require the approval of the Engineer of Bridges and Structures, see Section 23-7.02. For these structures, the local agency should submit the original mylar of the General Plan and Elevation (GP&E) Sheet only after the final plans and special provisions have been reviewed and approved by BBS, and the licensed professional structural engineer stamp and signature has been obtained.

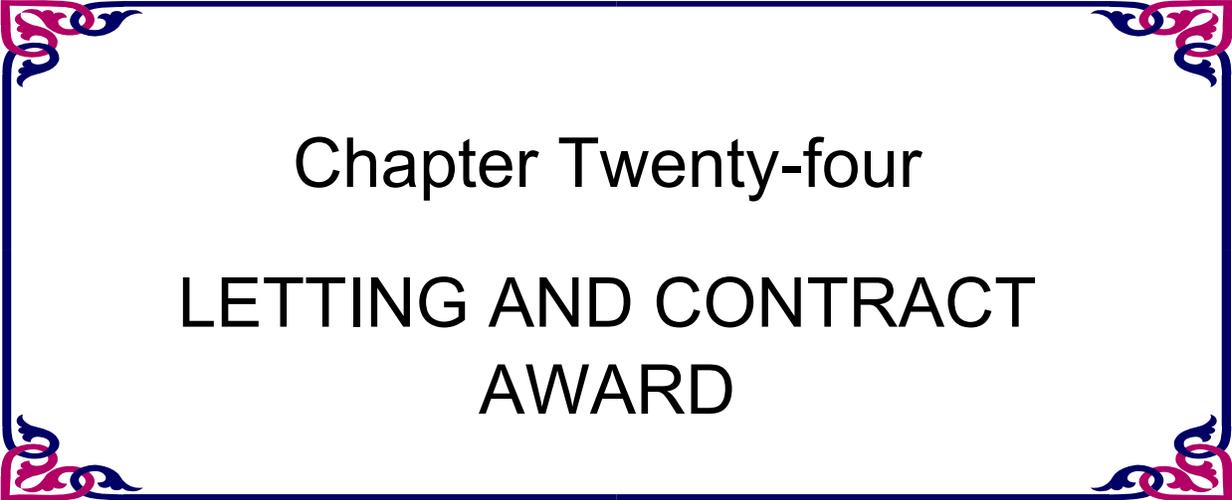
The seal, certification, and signature of the Illinois licensed structural engineer that is responsible for the project must be provided on the GP&E sheet prior to submittal to IDOT. Additionally, provide a space approximately 4 in x 4 in (100 mm x 100 mm) on the GP&E sheet for BBS approval.

23-7.04 Approval of Traffic Signal Plans

District One will review and approve the traffic signal PS&E for projects on the State Highway System. For other districts, submit the respective traffic signal PS&E for local agency projects to the Central BLRS for review and concurrence by the Central Bureau of Operations. After the Central Bureaus have completed their reviews, the district will approve plans. The district may approve all project plans based on the previously approved traffic signal prints after the review by Central Bureau of Operations.

23-7.05 Approval of Lighting Plans

See Section 11-2.01(c) and Section 11-7.04.



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Chapter Twenty-four
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Chapter Twenty-four

LETTING AND CONTRACT AWARD - Federal Funds

Chapter 24 discusses the letting and contract award requirements for State let projects and federally funded local let, and day labor projects.

24-1 STATE LET PROJECTS

24-1.01 Local Agency Submission

24-1.01(a) Content

For State let projects, the local agency is responsible for submitting PS&E to the district for approval. For all PS&E packages, include the following information:

- original plan sheets, paper, and mylar are both acceptable. If paper is used, the cover sheet and the summary of quantities must be mylar. Final plans submitted should not contain suffix pages. Total sheet count should match total sheets in set. Pay item names should not be abbreviated,
- a copy of the draft joint agreement,
- the estimate of time,
- construction cost estimate,
- any Special Provisions,
- a completed "Check Sheet of Supplemental Specifications and Recurring Special Provisions," BDE Special Provisions,
- the status of right-of-way and utilities, and
- rail agreements, U.S. Army Corps of Engineers permits, and Storm Water Pollution Prevention Plan, where applicable.

24-1.01(b) Plans and Specifications

The local agency should ensure the following is completed when submitting the plans and specifications:

1. Special Provisions. Submit 3 copies of the Special Provisions to the district. Ensure that the Special Provisions included in the submission are camera ready originals, not copies, printed on one side, and are on letter sized plain white bond paper.

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2. Estimate of Time Required. Exercise care when estimating contract time. Contract time, working days, and calendar days are defined in the *IDOT Standard Specifications*. Unreasonable time limitations will unnecessarily increase bid prices and the potential for claims, which is especially important if the proposal includes provisions for liquidated damages. However, time is of the essence on all construction projects. Once work has begun, the traveling public expects the construction to be completed in a timely manner with minimal delays. Excessive working days will allow the contractor to delay the completion of the project. The procedures and factors to consider when estimating contract time are discussed in Section 66-2 of the *BDE Manual*. Submit 4 copies of Estimate of Time Required (Form BDE-220).
3. IDOT Highway Standards. List the applicable *IDOT Highway Standards*, by number and title, in the index on the Plan Title Sheet. However, do not assign them a sheet number. These sheets will be inserted in the plans when they are printed.
4. Check Sheet. Submit the "Check Sheet for Supplemental Specifications and Recurring Special Provisions" with the applicable Special Provisions denoted by an "X." Show the route, section number, project number, and local agency name in the upper, right hand corner of the check sheet. Submit 4 copies of the check sheet.

24-1.01(c) Estimates

The local agency is responsible for preparing two separate Estimates of Cost Sheets (Form BDE-213), one with prices and one without. These are described as follows:

1. Estimate of Cost with Prices. Submit all estimates for local agency Federal-aid projects to be included in the State letting, directly to the district BLRS. Plainly mark the enclosing envelope "Confidential."
2. Estimate of Cost without Prices. Submit 3 copies (unless submitted electronically) of the Estimate of Cost without prices with the plans to the district. Include a summary of the quantities clearly listing the quantities, units, and pay items. Do not abbreviate pay item names.

24-1.02 IDOT Review and Approval

24-1.02(a) District Office

The district will perform the following functions:

1. Certification/Project Status. The district will complete the Certification/Project Status (Form BLR 24110) and include it with all PS&E submittals to the Central BLRS. This submission must be made at least 9 weeks before the scheduled letting date.

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2. Supporting Documentation. In addition to form BLR 24110, the district will include the following:
 - transmittal memo,
 - original plans,
 - project number, see Section 2-4,
 - 2 copies of the Special Provisions,
 - 2 copies of the Estimate of Time (Form BDE-220),
 - 2 copies of the "Check Sheet for Supplemental Specifications, Recurring Special Provisions" and BDE Special Provisions,
 - 2 copies of the Estimate of Cost without prices,
 - the status of utilities, if not addressed in the Special Provisions, and
 - rail agreements, U.S. Corps of Engineers permits, and Storm Water Pollution Prevention Plan, where applicable.

3. Independent Estimate. The district will prepare an independent estimate. The district estimate of cost will be compared to the completed estimate of cost prepared by the local agency. If the district's estimate varies by more than 1% from the local agency estimate, the district will contact the local agency to resolve the discrepancy.

24-1.02(b) The Bureau of Design and Environment Engineer of Estimates

The BDE Engineer of Estimates will review and approve all project estimates with prices. The BDE Engineer of Estimates will consult with the district to resolve differences.

24-1.03 Letting and Award

Adherence to the criteria contained in this Section is a necessary prerequisite to advance the construction of all Federal-aid projects. See Section 24-2 and 24-3, respectively, for additional information on federally funded local let and day labor projects.

24-1.03(a) Preparation/Assembly of Proposals

A proposal refers to the total compilation of pertinent bidding information relative to the project and assembled into a single booklet for issuance to prequalified bidders; see Section 24-1.03(d). The Project Support Unit in the Central BLRS is responsible for the preparation and assembly of proposals necessary for the successful completion of State-let projects. Consider the following:

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1. Contents of Proposals. See Chapter 66 of the *BDE Manual* for additional guidance on the proposal contents. The proposal will state the location and description of the contemplated construction and will show the pay items. The proposal will include:
 - Notice to Bidders,
 - Proposal Form,
 - Schedule of Prices,
 - State required *Ethical Standards Governing Contract Procurement Assurances, Certifications, and Disclosures*,
 - Bidder's Employee Utilization Form (Form BC-1256),
 - Signature Sheet,
 - Proposal Bid Bond Form,
 - Check Sheet for Supplemental Specifications and Recurring Special Provisions,
 - Special Provisions including Special Provisions for DBE, and EEO and Affirmative Action percentage goals/forms,
 - Required Contract Provisions, and
 - Wage Rates Notice.
2. Wage Rates. Federal wage rates define the payment of wages for laborers, mechanics, and other workmen involved during the project construction. These rates, as determined by the U.S. Secretary of Labor, will be included in all Federal-aid contracts. These wage rates do not apply to Transportation Enhancement projects not located on Federal-aid highways.
3. DBE Requirements. Local agency projects awarded by IDOT (e.g., projects advertised in the *IDOT Transportation Bulletin*) will follow the DBE Program developed by IDOT.

24-1.03(b) Advertisement for Bids

An advertisement is a public announcement, as required by law, inviting bids for work to be performed or materials to be furnished. All Federal-aid projects must be advertised for bidding. IDOT issues advertisements for proposed State let projects in the *Transportation Bulletin*.

24-1.03(c) Securing Right-of-Way Prior to Advertisement

All right-of-way must be secured before the project is authorized by FHWA and advertised for letting. For the right-of-way to be clear, the right-of-way must be secured, paid for, and vacated. Prior to each letting, the district must submit a right-of-way certification letter to the Central BLRS for each project involving right-of-way at least 2 days before authorization. This letter

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should originate from the district Land Acquisition Section. It is important that the district Land Acquisition Section review is completed by the scheduled date, because FHWA requires right-of-way certifications before projects are authorized for advertisement. For purposes of reporting the right-of-way status, right-of-way includes all fee simple acquisitions, permanent or temporary easements, and/or temporary use permits required for the construction, operation, and maintenance of any project that is being considered for advancement to the letting stage. Secured right-of-way that requires the displacement of any individuals, families, businesses, or farm operations, or any of their personal property situated thereon, is considered vacated only when those being displaced have relocated themselves and all their personal property from the acquired right-of-way. For further guidance, see *IDOT Land Acquisition Manual*.

24-1.03(d) Issuance of Proposals and Plans

IDOT has established the following requirements with respect to contractor participation in the bidding process for lettings.

1. Authorization to Bid. Authorization to bid is issued to prequalified contractors who have sufficient financial and work ratings that indicate their ability to complete work on which they wish to bid. Requests for authorization to bid are submitted to the Central Bureau of Construction's Prequalification Section using the forms provided in the *Transportation Bulletin* or on the IDOT website. The Prequalification Section analyzes each request for authorization to determine if the contractor has sufficient prequalification. Upon determination of sufficient prequalification, notification is given to the Proposals and Contracts Subunit to send letters of authorization to bid to the contractor.
2. Subcontractors and Material Suppliers. Subcontractors and material suppliers are not required to be prequalified and will not be considered authorized to bid.
3. Addendums to Proposals and Plans. When an addendum will be issued on a project, the Central BLRS Project Support Unit will issue the addendum. Addendums will be posted on IDOT's website.

24-1.03(e) Letting of Projects

A letting is the official, public opening and reading of submitted bids by the awarding authority for the purpose of determining the lowest responsible bidder. At the time and place specified in the *Transportation Bulletin*, the total amount of each bid, including any alternates and combinations, is read aloud to those parties present.

24-1.03(f) Award/Execution of Contracts

An award is the decision of IDOT to accept the proposal of the lowest responsible bidder for the work, subject to the execution and approval of a contract and receipt of a contract bond. The following applies to contracts:

1. Award of Contract. The award of contract will be made within 45 days after the letting to the lowest responsible, qualified bidder whose proposal complies with all prescribed requirements. If the contract is not awarded within this time limit, a bidder may file a written request to IDOT and withdraw the bid. The following applies to the awarding of contracts:

Concurrence. The local agency must concur with the award. To expedite the contract award process, form BLR 05310 states that executing the joint agreement constitutes concurrence in the award of the construction contract to the lowest responsible bidder. All non-standard agreements should contain similar language. The local agency is responsible for providing the district with verbal concurrence after the letting.

Post-Letting Review. On the day of the State letting, BDE will publish a post-letting review, indicating the preliminary intent to award. This list is available on the IDOT web page by 3:00 pm on the day of the letting and only indicates if a project is within the awardable range. The following applies:

For projects within the awardable range, it is the district's responsibility to verify and notify the Central BLRS that the local agency concurs in the award. The award process will be initiated when notification is received from the district.

For projects outside the awardable amount of the Engineer's Estimate, the Central BLRS will discuss with BDE the issues concerning the project. If BDE believes that an award may be possible, the district should then contact the local agency to obtain their concurrence and notify the Central BLRS of the local agency's consent. Depending on the issues involved, BDE may request a letter from the local agency justifying their desire to award a project.

Because the award committee will meet on the second Tuesday after the letting, the district should notify the Central BLRS of the local agency's desire by early that morning so that the Central BLRS can make recommendations to the award committee and not delay the award process.

Award and Rejection Letters. An award letter is sent to the low bidder stating the bid prices and indicating if railroad insurance is required. A rejection letter is sent only to the second low bidder. If all bids are rejected, both the low bidder and second low bidder are sent a rejection letter.

Preparation of Contract. When a project is awarded, a contract is prepared by BDE and sent to the low bidder for execution.

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2. Execution of Contract. The contract must be executed by the successful bidder and returned to BDE, together with the Contract Bond, within 15 days after the contract has been mailed to the bidder.

Failure of the successful bidder to execute the contract and file acceptable bonds within 15 days after the contract has been mailed to the bidder will be a just cause for cancellation of the award and forfeiture of the Proposal Guaranty. Award may then be made to the next lowest responsible bidder, or the work may be readvertised, as IDOT may decide. If the contract is not executed by IDOT within 15 days following receipt from the bidder of the properly executed contracts and bonds, the bidder may withdraw its bid without penalty.

3. Post Award Documents. After the project is awarded, the Central BLRS will prepare the detailed estimate, the project agreement, and the award notice. These are used as the basis for paying the contractor, billing the local agency for its share of the cost, and getting reimbursement from FHWA.

24-2 LOCAL LET FEDERALLY FUNDED PROJECTS**24-2.01 Candidate Projects for Local Letting (Federal Funds)**

Local let projects with federal funds may include:

- enhancement projects being constructed in conjunction with a larger MFT or local financed project
- projects so small that a local letting is more appropriate
- projects of a type not typically included in State lettings (e.g., buildings),
- non-highway projects (e.g., independent bikeways, sidewalks, landscaping), and
- projects for which federal funds are included in materials only.

Other instances will be determined on a case by case basis by the Central BLRS and the District Local Roads Engineer.

24-2.02 Approval of Local Agency to Local Let

If a local agency is found to be adequately staffed, IDOT may extend to the local agency the authority to let and award projects, but reserves the right for concurrence or rejection in the award. The district will submit to the Central BLRS a request from the local agency to administer a local letting. The memo will indicate that the district has determined the local agency is capable of administering a letting and contract for the type of project involved and include any district recommendations. The Central BLRS must concur in the request before any commitments to the local agency are made and prior to any the preparation of any documents.

24-2.03 Disadvantaged Business Enterprise Program (DBE)

The purpose of this program is to ensure the use of DBE's in all aspects of contracting by a local agency when federal funding is involved. The local agency will use this program for the procurement of consultant engineering and any procurement for construction projects that are awarded. This program should be circulated throughout the local agency's organization and to minority, female, and non-minority community business organizations. The following applies:

24-2.04 Contractor Prequalification Requirements

All prospective bidders on construction contracts estimated to cost more than \$50,000 must be prequalified. See Section 12-3.03(b) for additional information on prequalification. Consider the following:

1. Highway Projects. IDOT prequalification is required for highway related projects.

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2. Non-Highway Projects. For non-highway projects (e.g., independent bikeways, sidewalks, landscaping), the local agency may request approval to use established local contractor qualification procedures.
3. Building Projects. The Capital Development Board (CDB) prequalification is required for building construction projects. The local agency should obtain a list of prequalified contractors from CDB one week prior to issuing any proposals. The local agency should require contractors to provide a copy of their CDB prequalification letter prior to receiving bidding documents.

24-2.05 Proposal Submittal and Review

For local let federally funded projects, the local agency is responsible for submitting the proposal to the district for the Central BLRS approval. The following applies:

1. Contract Proposals. Include the following with the contract for local let projects with federal funds:
 - BID Cover Sheet (Form BLR 12210),
 - Notice to Bidders (Form BLR 12220),
 - Contract Proposal (Form BLR 12221),
 - Schedule of Prices (Form BLR 12222),
 - Proposal Signatures (Form BLR 12223),
 - Proposal Bid Bond (Form BLR 12230),
 - Affidavit of Availability (Form BC-57), if IDOT prequalification is required,
 - Modified DBE Special Provision, if applicable,
 - DBE Participation Statement (Form SBE-2025), if applicable,
 - DBE Payment Agreement (Form SBE-2115), if applicable,
 - DBE Utilization Plan Modified for Use by the local agency (Modified Form SBE-2026), if applicable,
 - Bidder's Employees Utilization Form (Form BC-1256),
 - Certification and Assurances,
 - Check Sheet for Supplemental Specifications and Recurring Special Provisions,
 - Contract Special Provisions,
 - Required and Applicable Local Roads Special Provisions, BDE Special Provisions including for DBE participation in local-let contracts, and Guide Bridge Special Provisions,

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- FHWA 1273 required Contract Provision,
 - Federal Wage Rates, and
 - Subcontractor Payment Agreement (Form BC 2115) if applicable (to be completed upon completion of the project).
2. Material Proposals. Include the following with material proposals for local let projects:
- BID Cover Sheet (Form BLR 12210),
 - Notice of Material Letting Material Proposal (Form BLR 12240),
 - Material Schedule of Prices (Form BLR 12241),
 - Check Sheet for Supplemental Specifications and Recurring Special Provisions,
 - Required and Applicable Local Roads Special Provisions, BDE Special Provisions, and Guide Bridge Special Provisions,
 - Contract Special Provision, and
 - Federal and State Prevailing Wage Rates, if applicable.
3. Environmental Requirements. All federal environmental requirements must be met for the entire contract as set forth in Chapters 18 and 19.
4. Right-of-Way. Federal right-of-way requirements must be met for the entire contract. This includes the Bureau of Land Acquisition certification.
5. Estimates. The District Estimator will review and advise the local agency and district of their findings. The Estimator will not need to establish an estimate in the BDE Contract Maintenance (ECM) System; however, standard pay item numbers should be used whenever possible to aid in estimate review.
6. EEO/DBE Considerations. The District BLRS Engineer will request the District EEO and the Labor Compliance Officer to review the project for compliance with the DBE requirements and establish required DBE percentage goals, where applicable. If DBE participation is assigned for the project, include the Special Provision “Modified DBE Special for Local Let and Awarded Projects” and the “Utilization Plan Modified for Use by local agency” in the bidding proposal. The contractor will submit its DBE Utilization Plan to the local agency within 7 working days of the letting.
7. Wage Rates. Federal wage rates apply to the entire contract. In any material proposals for day labor projects that contain bid items to be directly incorporated into the work with other than local agency forces (e.g., roadway components bid in place). The payment of prevailing wage rates relative to bid items in material proposals that are not directly incorporated into the work is governed by 820 ILCS 130/3 and may or may not apply. The current law appears to exempt hauling by material suppliers to a stockpile location. Wage rates included in material proposals apply only to that work performed by other than local agency forces. Do not include the wages of local agency forces in the bidding

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documents. However, the wages paid to employees of the local agency should also comply with the appropriate requirements of 820 ILCS 130/4.

8. Certification/Project Status (Form BLR 24110). The district will approve and submit to the Central BLRS a copy of the proposed bidding proposal, form BLR 24110, and the PS&E. Federal participating items need to be broken out on all plans and estimates.

The Central BLRS will review proposal submittals to ensure compliance with federal requirements. Any additional requirements that need to be included will be sent to the district for inclusion in the approved bidding proposal. The Central BLRS will request federal authorization after receipt of the locally executed joint agreement and obligation of funds when all requirements have been addressed.

24-2.06 Advertisement

The Central BLRS will notify the district in writing when the project may be advertised in the *Notice to Contractor's Bulletin* and locally. A twenty-one (21) day advertisement period is required. See Section 12-3.01 for guidance on advertisements. The local agency may also advertise building construction contracts in the Capital Development Board Bid Information Newsletter. The Central BLRS will contact CDB if the local agency wants to advertise in the CDB Newsletter. The Central BLRS will coordinate the advertisement with CDB. Notify the Central BLRS as soon as practical when intending to advertise in the CDB Newsletter.

24-2.07 Letting and Award

The district is required to attend the local letting to ensure compliance with IDOT procedures. The Central BLRS will concur in the award for local-let contracts based on submission of the following:

- Recommendation to Award from the local agency and the district,
- Tabulation of Bids,
- Affidavit of Availability (Form BC-57), if applicable, and
- DBE Utilization Plan Modified for Use by local agency, if applicable.

The Central BLRS will concur in the award for local let, material only projects based on submission of the following:

- Tabulation of Bids, and
- the recommendation to award from the local agency and the district.

The district will approve the executed contract or Acceptance of Proposal to Furnish Material and Approval of Award (Form BLR 12330) and forward one copy to the Central BLRS. The

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Central BLRS will then prepare the detailed estimate and project agreement used to obtain reimbursement from FHWA. |

24-3 LOCAL DAY LABOR PROJECTS (FEDERALLY FUNDED)

23 C.F.R. 635 provides that a local agency may perform federally funded construction work either by contract or by day labor. Section 24-3 of this Manual describes the procedures that will ensure compliance with legal requirements, the timely execution of project documents, and the completion of the proposed local day labor project. All environmental, public involvement, and design issues shall be addressed and the project included in IDOT's Annual Program in the fiscal year construction is anticipated.

24-3.01 Local Agency Assessment

A local agency desiring to perform Federal-aid work with its own forces will prepare an assessment of its capabilities. The assessment should include all day labor projects proposed for a program year. The assessment will identify the local agency, section number(s), project number(s), and the information presented in the following Sections.

24-3.01(a) Contents

The assessment should contain the following:

1. Proposed Work. Include a description of work to be performed for the section(s) (e.g., termini, length, scope, estimated costs, estimated working days, major construction pay items).
2. Previous Work. Include a description of work of this type that the local agency has previously performed with its own forces (e.g., section number if applicable, length, scope, working days). Previous work performance by the local agency must demonstrate that the local agency can perform the proposed work in accordance with the *IDOT Standard Specifications*.
3. Personnel. Include a list of key personnel and their related experience that qualifies them to carry on all phases of the work properly and economically. Identify the resident engineer/resident technician in charge of construction, along with any other inspectors and their documentation training, as well as other pertinent training; or provide documentation of the resident engineer's experience and past performance. The resident engineer/resident technician assigned to the project by the local agency must have successfully completed IDOT's documentation class, or the local agency must provide documentation of satisfactory past performance of the assigned personnel. The completion of appropriate Specific Task Training Program courses is desirable.
4. Equipment. List the equipment needed to perform the work and to perform necessary testing, and indicate if it is owned or leased by the local agency. Identify all agencies that will be used to perform special testing. Sufficient local agency owned or leased equipment and forces must be available to perform the work required, and the

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equipment must conform to the requirements prescribed in the *IDOT Standard Specifications*.

5. Other Information. Include any other information that will assist IDOT in its decision to approve this work to be performed by day labor forces.

24-3.01(b) Submittal

The local agency will submit the Local Agency Assessment to Perform Federal-Aid Work by Day Labor Forces to the district. Based upon the district's review of the local agency's capability, the district will forward the assessment with an appropriate recommendation to Central BLRS. In the case of counties, day labor projects will only be approved when a fully qualified county engineer is in place.

24-3.01(c) BLRS Review

The Central BLRS, once satisfied with the recommendation, will forward the local agency assessment to the Deputy Director of Highways for approval of projects estimated to cost greater than \$100,000. All other projects will be approved by the Central BLRS. Formal concurrence will be provided to the district.

24-3.02 PS&E Submittal

The local agency is responsible for submitting the PS&E to the district. The following applies:

1. Estimate. Estimates for day labor projects should be prepared using the BDE publication *Data for Cost Estimates of Highway and Street Construction*. The total estimate must be broken down into an estimate for proposed material costs and an estimate for proposed labor and equipment costs. If the local agency proposes to use existing stockpiled materials or material from approved quotations, documentation of costs established through competitive bidding will be required.

The BDE Engineer of Estimates will review the total estimate, accompanied by the material cost estimate, the labor, equipment cost estimate, and the supporting documentation. A comparison will be made to like pay items included in State let contracts that have been awarded in the area of the proposed work. For projects over \$30,000, it must be demonstrated that the use of day labor procedures is cost effective (e.g., contract construction versus day labor construction). If the proposed unit prices are not acceptable, the local agency will be notified to resolve differences and establish mutually acceptable pay items costs. A copy of the revised estimate will be sent to the district and local agency when applicable.

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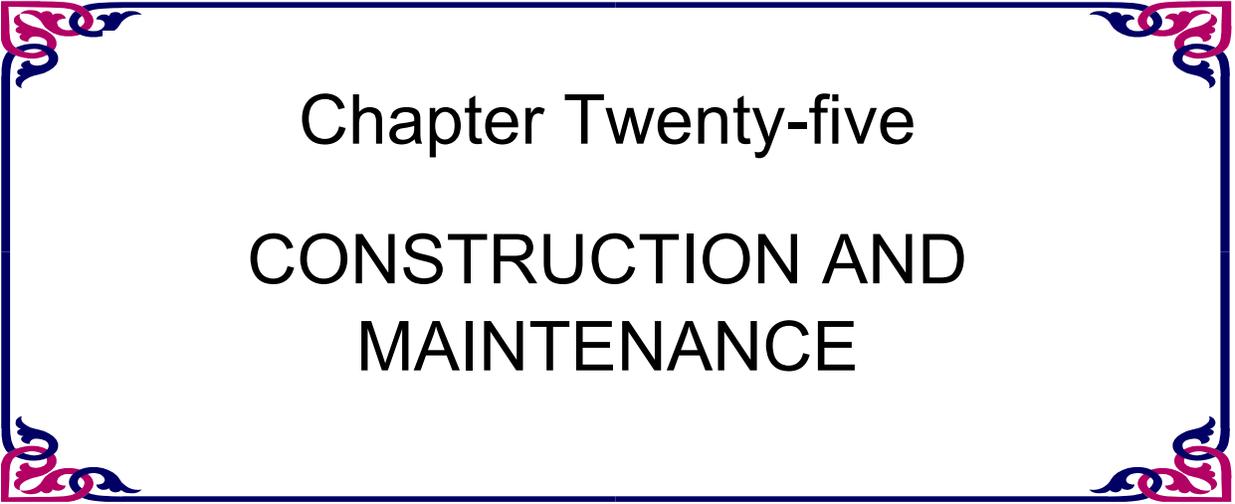
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2. Plans, Specifications, and Material Proposals. Submit the plans, specifications, and material proposal with supporting documentation to the district. See Section 24-2.05 for contents of the material proposal.
3. Local Agency Agreement of Federal Participation (Form BLR 05310). The local agency will execute and submit to the district form BLR 05310 (See Chapter 5).
4. Certification/Project Status (Form BLR 24110). The district will complete form BLR 24110 and include it with the PS&E submittal to the Central BLRS.
5. Federal Authorization. Federal authorization will be requested once the plans, specifications, and estimate are approved and form BLR 05310 has been executed.

24-3.03 Letting and Award

The following procedures will apply:

1. Advertisement. After FHWA authorization is received, the local agency will be given authorization to advertise for bids on the items contained in the material proposal. All material lettings will be advertised for letting in the *Notice to Contractor's Bulletin* for a period of 21 days.
2. IDOT Approval. The Regional Engineer may proceed with the approval of form BLR 12330 and written notice to proceed with construction if the total project cost does not exceed the approved estimate by more than 5%. Any adjustment of quotations should also be considered in this 5% limit. All other bids will be submitted to the Central BLRS for review and approval prior to district approval of the form BLR 12330 and notice to proceed with construction. The district must submit a copy of their notice to proceed, bid tabs, documentation to support quotations, and/or stockpile materials, and a copy of completed "Schedule of Prices," when applicable, to the Central BLRS for all projects.
3. Unit Prices Agreement. The acceptable labor and equipment costs and the acceptable low bid material prices are combined to establish a unit price for each pay item. The Central BLRS will issue a letter instructing the local agency to adopt at their next board/council meeting form BLR 24310. The agreement establishes the unit prices with extensions and the total cost. These unit prices remain fixed for the duration of the project. The district will submit form BLR 24310 to the Central BLRS for IDOT execution. The project is entered into the Bureau of Construction's pay system at this point to be used as a basis for reimbursing the local agency. Projects costing less than \$30,000 will not be issued through the Bureau of Construction. The Central BLRS will pay the invoices for these projects.
4. Post Award Documentation. The Central BLRS prepares the detailed estimate and award report.



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Chapter Twenty-five

CONSTRUCTION AND MAINTENANCE - Federal Funds

25-1 CONSTRUCTION

The Federal Highway Administration (FHWA) defines construction as:

“the supervising, inspecting, actual building, and all expenses incidental to the construction or reconstruction of a highway...and improvements which directly facilitate and control traffic flow...”

Section 25-1 briefly describes the policies and procedures for projects constructed with Federal funds.

25-1.01 Responsibilities

For the purposes of this Section, responsibilities are limited to activity between the preconstruction conference and the termination of construction by the contractor.

For information on the preconstruction conference, see Section 13-1.01 and the Bureau of Construction Memorandum No. 70, “Preconstruction Conference Guidelines.”

25-1.01(a) Contractor Responsibilities

The *IDOT Standard Specifications* and contract documents detail the contractor’s responsibilities.

25-1.01(b) Local Public Agency Responsibilities

If the construction is under the direct supervision of the local public agency (LPA), the LPA will provide a full-time LPA employee in responsible charge, a resident construction supervisor, and project inspectors to perform the functions outlined in Section 25-1.02 and the *IDOT Construction Manual*.

The full-time LPA employee in responsible charge and the resident construction supervisor represents the LPA and IDOT in dealings with the contractor, governmental agencies, and the public.

When a LPA uses its own forces to construct a project, the LPA also assumes the contractor’s responsibilities.

25-1.01(c) IDOT Responsibilities

IDOT has been designated as the official agency to administer Federal funds subject to FHWA review. The Regional Engineer is the project approval authority for construction matters coordinated with the Central Bureau of Construction for State-let and most local day labor projects.

25-1.01(d) Federal Responsibilities

The FHWA is the designated Federal agency to review highway project compliance with Federal rules and regulations.

25-1.02 Supervision and Inspection**25-1.02(a) General**

Federal Regulations provide that IDOT has responsibility for construction work involving Federal funds and requires that the work be satisfactorily completed according to the plans and specifications. All materials that are used for construction will be inspected and tested for compliance with the requirements of the *IDOT Standard Specifications*, the *Project Procedures Guide (PPG)*, and the project Special Provisions.

Supervision and inspection will be performed in accordance with the *IDOT Construction Manual* issued by the Bureau of Construction and the *PPG* issued by the Bureau of Materials and Physical Research. All reports will be on forms required for State construction contracts distributed in the manner indicated in the introduction to the forms and reports section of the *IDOT Construction Manual*.

25-1.02(b) IDOT Review

This general supervision by IDOT is not intended to replace the supervision and inspection required of the LPA. However, engineers from the district will make inspections on Federal-aid projects at times selected by them. LPA employees and consultants will cooperate with the IDOT representatives with their inspections. Any deviations from the plans and *Specifications* noted by the district will be called to the attention of the LPA. The district will note their comments in the project diary, and refer matters that require action promptly to full-time LPA employee in responsible charge and the resident construction supervisor. The district will also conduct progress and final documentation reviews in accordance with the documentation procedures in the *IDOT Construction Manual*.

The Regional Engineer will designate one or more staff engineers to be responsible for the supervision of construction for Federal-aid projects. The staff engineer's responsibilities are as follows:

- Inspect each contract at an early stage to determine that project personnel are knowledgeable of the *Specifications* and contract documents and are performing proper contract administration and documentation.
- Be present during or prior to the onset of major work items.
- Make final inspection in conjunction with the LPA.
- Notify FHWA of satisfactory completion of the contract.

25-1.02(c) Local Public Agency Construction Supervision

Supervision of construction is a function of the LPA and its engineers and inspectors.

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1. Local Public Agency Resident Construction Supervisor. Preferably, the county engineer, municipal engineer, or a full-time publicly employed registered professional engineer should be named the resident construction supervisor for the project. If this is not possible, the LPA will submit to the district for approval Form BC-775 that recommends a qualified full-time publicly employed individual or consulting engineer to serve as the resident construction supervisor.

If a consulting engineer is requested as the resident construction supervisor, the local public agency will:

- provide a full-time employee of the LPA to be in responsible charge of the project;
- require the consulting engineering firm to have Construction Inspection prequalification and for the consultant employee named as resident construction supervisor to have Documentation of Contract Quantities certification; and
- attach approved Form BC-775 to the appropriate LPA/consultant agreement form.

The full-time public employee in responsible charge of the project should perform the following duties and functions:

- Administer inherently governmental project activities, including those dealing with cost, time, adherence to contract requirements, construction quality and scope of projects;
- Maintain familiarity of day to day project operations, including project safety issues;
- Make or participate in decisions about changed conditions or scope changes that require change orders or supplemental agreements;
- Visit and review the project on a frequency that is commensurate with the magnitude and complexity of the project;
- Review financial processes, transactions and documentation to ensure that safeguards are in place to minimize fraud, waste, and abuse;
- Direct project staff, agency or consultant, to carry out project administration and contract oversight, including proper documentation; and
- Aware of the qualifications, assignments and on-the-job performance of the agency and consultant staff at all stages of the project.

The selection and Regional Engineer approval of the resident construction supervisor will be completed prior to the start of construction and the pre-construction conference minutes should reflect the name and position of the resident construction supervisor and the full-time public employee in responsible charge if different than resident construction supervisor.

2. Trained Technicians and Qualified Laboratories for Material Testing. Requirements for trained technicians and qualified laboratories are covered in IDOT's *Project Procedures Guide*.

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3. Local Public Agency Construction Inspectors. The individuals who perform the day-to-day duties of layout, inspection, quantity measurements, and documentation may be either public employees or consultant employees. It is the responsibility of the resident construction supervisor to ensure that adequate instructions have been given to the project inspectors concerning the requirements of the contract documents and the procedures contained in the *IDOT Construction Manual*.

The LPA will submit Form BC-776 to the district certifying that inspector(s) are trained and qualified to perform the day-to-day duties. If a consultant is selected as a project inspector, Documentation of Contract Quantities certification is required and the LPA will attach BC-776 to the appropriate consultant agreement form.

25-1.02(d) Inspection and Testing of Material

See Section 13-3 for detailed guidance on material inspection and testing.

25-1.03 Progress Billing

After the "Authorization to Proceed" has been given and a portion of the work has been completed, progressive billing (partial payments) may begin. The methods of payment will depend upon the type of work involved.

25-1.03(a) Utility Adjustments and Relocations

The LPA may pay the utility company for partial work completed in accordance with the provisions of the utility agreement. A request for reimbursement of the Federal funds should be sent to the district with supporting documentation.

25-1.03(b) Railroads

The railroad will conduct progressive billing in accordance with the stipulations and conditions included in the railroad agreement. The majority of agreements contain the following basic procedures:

The railroad company, for performance of its work, may bill IDOT monthly for the Federal share of the estimated work. In addition, the railroad company may bill the LPA monthly for the LPA's share of the expenses incurred. The progressive invoices will be rendered on the basis of the estimated expense, plus allowable additives. IDOT and the LPA, after verifying that the bills are reasonable and proper, will promptly reimburse the railroad company for the amount billed. Payment will not be claimed for any bill totaling less than \$500 excluding the final bill. If the agreement provides for the railroad to bill the LPA for the entire cost, the LPA should request reimbursement for the Federal share from the district. A copy of the railroad bill and a copy of the LPA's checks to the railroad must be submitted with the request.

25-1.03(c) Construction

Contractor payments for construction projects will be conducted in accordance with Construction Memorandum No. 76, "Contractor Payments – Articles 109.07 and 109.08." Retainage is not allowed on Federal-Aid construction projects.

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25-1.03(d) Construction Engineering

Payments for construction engineering will be submitted to the district for review prior to submittal to the Central BLRS for reimbursement. Any project using Federal funds for construction engineering must be audited by the Central BLRS. The construction engineering agreement between the LPA and consultant or construction engineering by the LPA must be approved by the Central BLRS prior to reimbursement of Federal funds.

25-1.04 Project Closeout and Final Acceptance

25-1.04(a) General

Closure and final acceptance occur after the completion of project activity. The district is responsible for the general construction supervision of the entire project and for ensuring Federal procedures are followed. The projects will not be entered into the Bureau of Construction pay system. The LPA will be reimbursed by the State, through the Central Bureau of Construction, for the Federal share of construction work on the basis of periodic billings, provided the billings contain sufficient cost information and show evidence of payment by the LPA. The bills should be broken down to reflect the MFT portion, non-participating items, and Federal participating items. Also, although several project numbers may relate to a common project, each project number must be closed out separately.

Documents required to close a local let project include the following:

- Form BLR 13231 (Engineer's Final Payment Estimate);
- Form BLR 13510 (Final Report), showing both MFT and Federal funds expended on the project; and
- material certification.

25-1.04(b) Utility Adjustment and Relocation Projects

When utility adjustments or relocations have been completed, the LPA is responsible for ensuring that all work has been accomplished in accordance with the approved agreement and the PS&E. All deficiencies should be corrected and accepted prior to notifying the district of the project completion. After receiving this notification, the district will schedule a final inspection with the LPA. If acceptable, the FHWA will be notified of the completion of the work. Consider the following when closing utility projects:

1. Final Invoice. A final invoice of costs incurred by the utility will be submitted to the district. This invoice should be submitted within 90 days of the completion of the work. The final invoice should follow as closely as practical the order of the items in the estimate and include the following:
 - description and location of the project;
 - the Federal-aid project number, section number, and job number;
 - the date the agreement was executed and the date on which the earliest item of billed expense was incurred;
 - the date on which the work was completed or the last billed expense was incurred;

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- the location of all supporting records; and
 - the summation of actual costs (see Item 2 below).
2. Summation of Actual Costs. When covered by an approved agreement for lump sum payment, the summation of actual costs will consist of copies of the approved utility agreement, estimate of cost, and the final invoice from the utility. The summation of actual costs will also include:
- a. Labor. Include the total cost and detailed breakout of labor.
 - b. Equipment. Include the total cost and detailed breakout of equipment.
 - c. Installation and Removal. Include the total cost of installation and removal.
 - d. Material. The final invoice must account for all materials used or removed in completing the adjustment. Recovered material will be processed as follows:
 - Suitable Condition. Materials recovered in suitable condition for reuse by the utility are to be credited to the project. The credit allowances are subject to audit.
 - Unsuitable Condition with Salvage Value. Recovered materials that are not suitable for reuse by the utility, but which have a salvage value, will be sold by solicitation of bids or by a regularly practiced disposal system used by the utility. IDOT or the LPA will be given the opportunity to inspect the material. The utility may be held accountable for material disposed of without notice.
 - Unsuitable Condition without Salvage Value. Recovered materials that are not suitable for reuse by the utility and have no apparent salvage value may be considered worthless providing the LPA is given the opportunity to inspect the material. This notice to the LPA of the proposed inspection is the responsibility of the utility. The utility will be held accountable for full value of materials disposed of without notice.
 - e. Administrative Cost. Include administrative costs as follows:
 - overhead;
 - preliminary engineering, shown separately; and
 - construction engineering, shown separately.
3. State-Job Completion Notice — Form AA-336. Upon receipt of the final invoice, the district will prepare Form AA-336 to notify the appropriate offices of the project completion.
4. Documentation. The LPA will retain copies of all invoices and supporting documentation for auditing purposes for a period of 3 years after payment of the final voucher.
5. Audits. IDOT will audit invoices in accordance with the FHWA approved auditing procedures. Upon completion of the audit and resolution of any findings, IDOT will close out the Contract Obligation Document (COD) and submit a final voucher to the FHWA.
6. Form BLR 13510. When MFT or State funds are used to pay a portion of the cost, the LPA is required to submit Form BLR 13510 upon completion of the project. This will close out the MFT or other State funds administered by IDOT portion of the project.

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25-1.04(c) Railroad Project

The railroad company, upon completion of its work, will promptly submit a certification of inspection of active protective devices and will render a detailed final statement of its actual expenses as incurred to IDOT. The LPA is responsible for performing an inspection to ensure that all work conforms to the approved agreement, including the final PS&E approved supplements. All deficiencies should be corrected and accepted prior to notifying the Central BLRS of the project's completion. After receiving this notification, the district will schedule a final inspection with representatives of the LPA. If acceptable, the FHWA will be notified of final acceptance of the project. Consider the following when closing railroad projects:

1. Final Invoice. The railroad company will submit to the Central BLRS or the LPA a final invoice for costs incurred on the project. This invoice should be submitted within 90 days of the completion of the work. The invoice should follow as closely as possible the order of items in the estimate and should also include the following:
 - description and location of the project;
 - the Federal-aid project number, section number, ICC order number (if applicable), and job number;
 - the date the agreement was executed and the date on which the earliest item of billed expense was incurred for the invoice;
 - the date on which the last work was performed or the last billed expense was incurred;
 - the location of all supporting records, including names and addresses; and
 - the summation of actual costs.
2. Summation of Actual Costs. The summation of actual costs will require the following:
 - a. Labor. The total cost and detailed breakout of labor.
 - b. Equipment. The total cost and detailed breakout of equipment.
 - c. Transportation. Include the following transportation costs:
 - Employee Transportation/Subsistence. The company's cost, consistent with the company's overall policy, of necessary employee transportation and subsistence directly attributable to the project.
 - Materials/Supplies/Equipment. The most economical movement of materials, supplies, and equipment to and from the project site, including loading and unloading. This may include the company using its own lines at the actual rate the company charges its customers.
 - d. Installation and Removal. The total cost of installation and removal of the railroad warning devices and/or crossing surface.
 - e. Materials and Supplies for Crossing Surfaces. Materials and supplies, if available, are to be furnished from company stockpile, except they may be obtained from other sources near the project site when available at a lesser cost. When not available from company stockpile, they may be purchased either under competitive bids or existing continuing contracts, under which the lowest available prices are developed. Include the costs for materials and supplies as follows:

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- Company Stockpile. Materials and supplies furnished from company stockpile will be billed at current stock price of new or used material at the time of issue.
 - Non-company Material. Materials and supplies not furnished by the company will be billed at actual cost to the company, delivered to the point of entry on the railroad company's line nearest the source of procurement.
- f. Materials Recovered. Recovered material will be processed as follows:
- Reusable. Materials recovered from temporary use and accepted for reuse by the company will be credited to the project at prices charged to the job, less a consideration for loss in service life at 10% for rails, angle bars, tie plates, and metal turnout materials, and 15% for all other materials. Materials recovered from the permanent facility of the company that are accepted by the company for return to stock will be credited to the project at current stock prices of used material.
 - Non-Reusable. Materials recovered and not accepted for reuse by the company, if determined to have a net sale value, will be sold to the highest bidder following an opportunity for inspection and appropriate solicitation for bids, or if the company practices a system of periodic disposal by sale, credit to the project will be at the going prices supported by the records of the company. Where applicable, credit for materials recovered from the permanent facility in length or quantities in excess of that being placed should be reduced to reflect any increased cost of railroad operation resulting from the adjustment.
- g. Overhead and Indirect Construction Costs. Overhead and indirect construction costs are not directly identified with a single, final cost objective. These costs will be distributed to all applicable work orders and other functions on an equitable and uniform basis in accordance with generally accepted accounting principles. The costs must be reasonable and those actually incurred.
- h. Administrative Cost. The company will include and show separately the construction engineering and preliminary engineering costs. If the LPA is billed, they should request reimbursement of the Federal share from the district.
3. State-Job Completion Notice — Form AA-336. Upon receipt of the final invoice, the district will prepare Form AA-336 to notify the appropriate offices of the project's completion.
4. Payment. IDOT and the LPA will reimburse the railroad company an amount equal to the total billing minus previous payments.
5. Documentation. The railroads will retain copies of all invoices and supporting documentation for auditing purposes for a period of 3 years after payment of the final voucher.
6. Audits. IDOT will audit invoices in accordance with FHWA approved auditing procedures. Upon completion of the audit and resolution of any findings, IDOT will close out the COD and submit a final voucher to the FHWA.
7. Form BLR 13510. When MFT or other State funds are used to pay a portion of the cost, the LPA is required to submit Form BLR 13510 upon completion of the project. This will close out the MFT or State-funded portion of the project.

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25-1.04(d) Construction Project

Upon completion of a construction project, the LPA is responsible for ensuring that all work has been accomplished in accordance with the approved agreement and the PS&E, including any approved changes. Any deficiencies on the project should be corrected and re-inspected before acceptance. Construction projects will be closed as follows:

1. Forms BC-71, BC-111, and BC-608. After acceptance, the LPA should submit Forms BC-71, BC-111, and BC-608 to the district.
2. Supporting Documentation. Include the following information with Form BLR 13231:
 - field measurement books;
 - Inspector's Daily Report (Form BC-628), if identified as a "Final Field Measurement";
 - cross sections;
 - weight tickets, bound and summarized by means of an adding machine tape;
 - project diary, not individual's diary;
 - calculation file for such items as concrete and reinforcement bars;
 - Form BC-981;
 - force account file with Form BC-635 with the contractor's invoice; and
 - Form SBE-1014 file with signed reports for "TRAINEES."

Use the *IDOT Construction Manual* to assist with documentation preparation. The *IDOT Construction Manual* contains detailed explanations of various documentation, project checklists, and forms.

3. Final Inspection. Upon receiving Items 1 and 2, IDOT will schedule a final inspection with representatives of the LPA. If acceptable, the FHWA will be notified of the final acceptance of the project.
4. Form BC-111. Prior to submittal of the final payment estimate, IDOT will review the project documentation using Form BC-111 and prepare a certification of materials.
5. Form BC-107 and Form AA-336. After final acceptance and documentation review, the final payment estimate will be processed for payment. At this time, the Central Bureau of Construction will complete Form BC-107 to notify the LPA and the contractor of the final acceptance of the project. The district will complete Form AA-336 to notify the appropriate IDOT offices of the project completion.
6. Audits. IDOT, in accordance with FHWA approved audit procedures, will audit all project costs. Upon completion of the audit and resolution of findings, a final voucher will be submitted to the FHWA, and the COD will be closed out. The LPA must keep copies of all payment estimates and supporting documentation on file for a period of 3 years after payment of the final voucher.
7. Form BLR 13510. When MFT or State funds are used to pay a portion of the cost, the LPA is required to submit Form BLR 13510 upon completion of the project. This will close out the MFT or State-funded portion of the project.

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25-1.05 Miscellaneous

25-1.05(a) Borrow, Use, and Waste Areas

See Section 13-4.02 for information on borrow, use, and waste areas.

25-1.05(b) Work Zone Traffic Control

See Section 13-4.03 for information on work zone traffic control.

25-1.05(c) Temporary Sidewalk

See Section 13-4.04 for information on temporary sidewalks.

25-1.05(d) Erosion and Sediment Control

See Section 13-4.05 for information on erosion and sediment control.

25-1.05(e) Equipment

See Section 13-2.05 for information on equipment used on construction projects.

25-1.05(f) Mobilization

See Section 13-4.06 for information on mobilization.

25-2 MAINTENANCE OF PROJECTS

25-2.01 General

The State highway department is responsible for maintaining or causing to be maintained any project constructed with Federal-aid funds (23 USC Section 116). It also requires that IDOT enter into a formal agreement for the maintenance of projects under LPA jurisdiction. Form BLR 05310 is used to establish this agreement between IDOT and the LPA.

An additional provision of the *United States Code* provides that if the Federal authorities find that any project is not being properly maintained, the highway agency will be notified. If the project is not restored to a proper condition of maintenance, authorization of additional Federal-aid projects for the highway agency will be withheld until the project is properly maintained.

“To maintain” is considered as to perform normal maintenance operations for the preservation of the entire project, including roadway surface, shoulders, roadsides, structures, and traffic control devices that are necessary for its safe and efficient utilization.

Federal funds may be used for selected maintenance activities as mutually determined by the LPA and IDOT.

25-2.02 Maintenance Monitoring

Local roads field engineers from the districts, during official highway travel over LPA projects, are responsible for observing general compliance with the provisions of this Section.

Either during official highway travel throughout the year or during a special review, the District Local Roads Engineer, or designated representative, will review completed LPA Federal-aid projects to determine the LPA’s maintenance effort. The district will review each county and urban area at least once in every 4-year period. More frequent reviews should be made if discovered deficiencies warrant.

The primary concern is whether or not Federal-aid projects are being maintained at an acceptable level of physical integrity and operation. The maintenance review is not meant to be a detailed review of a roadway system, but rather a brief review to observe the overall status of maintenance. The local roads field engineers should include positive comments when appropriate.

After the review, the district will forward a report of their findings during the calendar year to the LPA by December 1. The Maintenance Review Check Sheet, or similar format, will be used for this purpose.

Should an unsatisfactory condition be observed that threatens the integrity of a project constructed with Federal funds, it should be brought to the attention of the appropriate LPA officials. LPA officials will take corrective measures to avoid further deterioration. Based on further inspection, if within 90 days after receipt of the notice the highway or street has not been restored to a condition satisfactory to IDOT, IDOT may, with FHWA consent, withhold approval of any Federal projects.

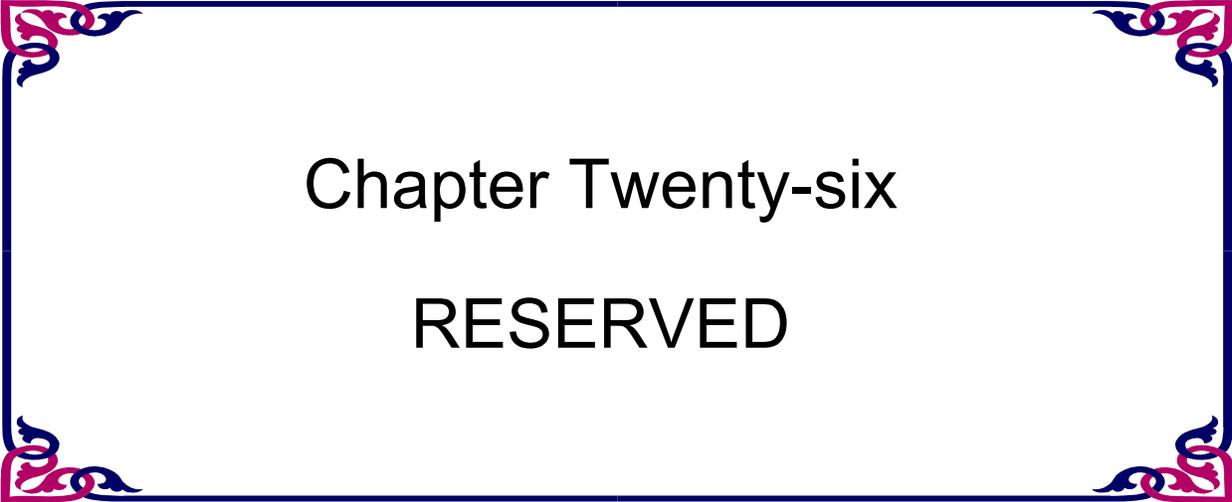
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| The district should retain a copy of the maintenance report sent to the LPA and ensure it is available to representatives of the FHWA and Central BLRS upon request.

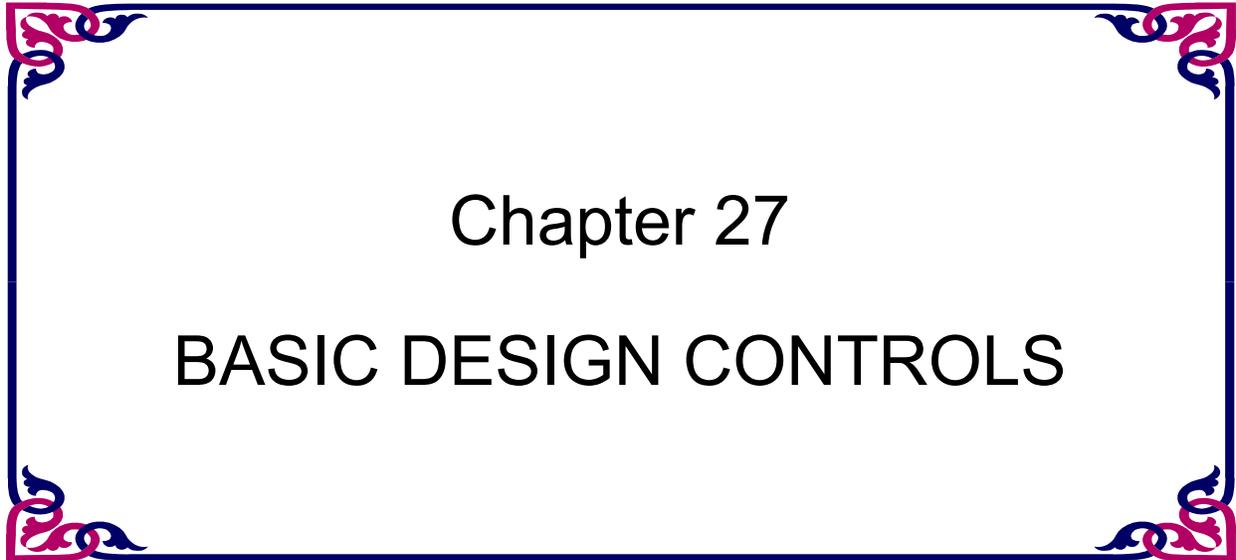


Chapter Twenty-six

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Chapter 27

BASIC DESIGN CONTROLS

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Chapter 27
BASIC DESIGN CONTROLS

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Chapter 27

BASIC DESIGN CONTROLS

Road and street design is predicated on many basic controls that establish the overall objective of the facility and identify the basic purpose of the project. Chapter 27 presents the basic controls that impact road design. The design criteria in Part IV “Project Design” of this *Manual* applies to all local public agency (LPA) projects funded with Federal, State, and Motor Fuel Tax (MFT) funds that are processed through the Central Bureau of Local Roads and Streets (CBLRS).

27-1 TERMINOLOGY

Many qualifying words are used in road and street design and in this *Manual*. For consistency and uniformity in the application of various design criteria, the following terms are in order of hierarchy from mandatory to permissive. Depending on the term used within a design criterion, it is possible for the hierarchy to change when a specific condition is met or not met as noted in a footnote or elsewhere.

Shall, require, will, must. A mandatory condition. Designers are obligated to adhere to the criteria and applications presented in this context or to perform the evaluation indicated. A design exception is required if the criteria and applications cannot be met. See Section 27-7 for Level of approval.

Limits (minimum, maximum, lower, upper). Provides a range of values generally accepted within the design community with the understanding these limits are not necessarily inviolable. However, when the criteria presented in this context are not met, a design exception is typically required. See Section 27-7 for the Level of approval.

Should, recommend. An advisory condition. Designers are strongly encouraged to follow the criteria and guidance presented in this context unless there is reasonable documented justification not to do so. A design exception is not required if the criteria or guidance is not followed.

Desirable, preferred. An advisory condition. An indication that the designer should make every reasonable effort to meet the criteria and that the designer should only use a “lesser” design after due consideration of the “better” design. A design exception is not required if the criteria or guidance is not followed.

May, could, can, suggest, consider. A permissive condition. Designers are allowed to apply individual judgment and discretion to the criteria when presented in this context. The decision is based on a case-by-case assessment. A design exception is not required.

The remaining terms are strictly in alphabetically order.

Acceptable. Design criteria that may not meet desirable values, but yet is considered to be reasonable and safe for design purposes.

Criteria. A term typically used to apply to design values, usually with no suggestion on the criticality of the design value. Because of its basically neutral implication, this *Manual* frequently uses “criteria” to refer to the design values presented.

Exception. Approval from the Illinois Department of Transportation (IDOT) for using design criteria which do not conform to the minimum criteria as set forth in this *Manual*.

Guideline. Indicating a design value that establishes an approximate threshold that should be met if considered practical.

Ideal. Indicating a standard of perfection (e.g., traffic capacity under “ideal” conditions).

Insignificant, minor. Indicating that the consequences from a given action are relatively small and not an important factor in the decision-making for road and street design.

Justified. Indicating that some set of conditions has been shown to be valid, sound, or conforming to fact or reason. This may be applied to either objective or subjective evaluations.

Policy. Indicating practice that IDOT generally expects the designer to follow, unless otherwise justified.

Possible. Indicating that which can be accomplished. Because of its connotation, this word will rarely be used in this *Manual* for the application of design criteria.

Practical, feasible, cost-effective, reasonable. Advising the designer that the decision to apply the design criteria should be based on a subjective analysis of the anticipated benefits and costs associated with the impacts of the decision. No formal analysis is intended, unless otherwise stated.

Significant, major. Indicating that the consequences from a given action are obvious to most observers and, in many cases, can be readily measured.

Standard. Indicating a design value that cannot be violated without severe consequences. This suggestion is generally inconsistent with geometric design criteria. Therefore, “standard” will not be used in this *Manual* to apply to geometric design criteria.

Transportation Facility / Facility. A transportation facility / facility may include but not limited to roads or streets, structures, shared-use lanes, shared-use paths, sidewalks, railroad crossings, and their respective appurtenances.

Typical. Indicating a design practice that is most often used in application and which is likely to be the “best” treatment at a given site.

Warranted. Indicating that some well-accepted threshold or set of conditions has been met. Note that, once the warranting threshold has been met, this is an indication that the design treatment should be considered and evaluated — not that the design treatment is automatically required.

27-2 PROJECT SCOPE OF WORK

The project scope of work reflects the basic intent of the LPA and determines the overall level of improvement. This scope, in combination with the roadway functional classification (see Section 27-3), determines which criteria in the *Manual* apply to the geometric design of the project. The following Sections provide the general scopes of work for the different types of construction. Each of the following Sections also references the applicable chapters in Part IV “Project Design” of this *Manual*.

27-2.01 New Construction

Generally, new construction is the construction of a transportation facility on new location. The project is usually based on at least a 20-year design period. Typically, the project will have a significant length and should connect logical termini. New construction also includes any intersection or interchange that falls within the project limits of a new facility. IDOT’s criteria for new construction by LPA’s on local facilities are presented in Chapters 27 – 32, Chapters 34 – 42, and 44.

27-2.02 Reconstruction

Reconstruction of an existing local facility will typically include the addition of travel lanes and/or reconstruction of the existing horizontal and/or vertical alignment, but the road or street will remain essentially within the existing corridor. These projects usually require some right-of-way acquisitions. The primary reasons for reconstruction of an existing facility are because:

- the facility cannot accommodate its current or future traffic demands,
- the existing alignment or cross section is significantly deficient, and/or
- the service life of the pavement has been exceeded.

Any intersection that falls within the limits of a reconstruction project will be reconstructed as needed.

Because of the significant level of work for reconstruction, the design of the project is generally determined by the criteria for new construction based on a 20 year design period. Chapters 28 – 32 and Chapters 34 – 42 apply to reconstruction projects.

27-2.03 3R Projects

3R projects (rehabilitation, restoration, and/or resurfacing) are primarily intended to extend the service life of the existing facility and to enhance safety. In addition, 3R projects should make cost-effective improvements to the existing geometrics, where practical. Typically, 3R work on the mainline or at an intersection is within the general constraints of the existing right-of-way and existing alignment. Right-of-way acquisition is occasionally included for:

- flattening slopes,
- changes in horizontal alignment,
- changes in vertical profile, and

- safety enhancements.

The overall objective of a 3R project is to perform the work necessary to return the facility to a condition of acceptable structural and/or functional adequacy. 3R projects may include any number of the following types of improvements:

- providing pavement resurfacing, and/or rehabilitation (full-depth pavement replacement may be justified in some instances);
- providing lane and shoulder widening (without adding through lanes);
- providing intersection improvements (e.g., adding turn lanes, flattening turning radii, corner sight distance improvements);
- rehabilitating or replacing existing structures;
- adding a Two-Way Left-Turn Lane (TWLTL);
- adding pavement markings;
- converting an existing uncurbed urban street into a curbed street;
- replacing existing curb and gutter;
- flattening an occasional horizontal or vertical curve;
- adjusting the roadside clear zone;
- flattening side slopes;
- providing landscaping;
- revising the location, spacing, or design of existing driveways along the mainline;
- adding, widening, or resurfacing parking lanes;
- adding or replacing sidewalks;
- adding bicycle accommodations;
- implementing improvements to meet the *Americans with Disabilities Act (ADA) / Public Rights of Way Access Guidelines (PROWAG)* accessibility criteria (e.g., sidewalk curb ramps);
- adjusting utility facilities;
- upgrading guardrail and other roadside safety appurtenances to meet current criteria;
- implementing drainage improvements; and/or
- upgrading highway/railroad grade crossings.

[Chapter 33](#) presents IDOT criteria for the design of 3R projects on local roads and streets.

27-2.04 Full-Depth Pavement Replacement

The extent of pavement replacement on an existing facility is one significant factor in determining if the project scope of work is “reconstruction” or “3R.” The more extensive the pavement work, the greater the opportunity to incorporate geometric improvements (e.g., lane and shoulder widening). However, the practical level of geometric improvements is dependent on many other factors (e.g., available right-of-way, environmental impacts, and/or construction costs).

Therefore, if a proposed project includes pavement replacement for a significant portion of the project length, the project scope of work is determined on a case-by-case basis.

27-2.05 Pavement Preservation Projects

These projects consist of repairing and resurfacing existing paved roadways on local facilities, both urban and rural. The purpose of pavement preservation projects is to extend the life of existing pavements. Pavements with significant and extensive structural distress are not eligible for these projects. A successful pavement preservation project improves the ride quality and reduces the life-cycle costs of pavement rehabilitation.

Because the project’s purpose is primarily to improve pavement serviceability, roadway design improvements are extremely limited for the project scope of work. These projects shall use the Local Agency Pavement Preservation policy as discussed in [Chapter 45](#).

27-3 FUNCTIONAL CLASSIFICATION SYSTEM

27-3.01 General

27-3.01(a) Terminology

1. Functional Classification. The classification of a road or street based on the character of service it is intended to provide.
2. Rural Areas. All areas outside of urbanized and small urban areas are rural areas.
3. Urban Areas. These are areas identified by the U.S. Bureau of Census and further defined by the Federal Highway Administration (FHWA) as having a contiguous population of 50,000 or more (urbanized areas) or 5,000 or more but less than 50,000 (small urban areas). The urban area boundaries are established by the State, in cooperation with the Metropolitan Planning Organizations (MPOs) and other appropriate local officials and approved by the FHWA.

27-3.01(b) Background

The *Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991* required that every State functionally reclassify its public roads and streets. The [Illinois Highway Information System – Roadway Information and Procedure Manual \(IRIS\)](#) is used to identify routes for the National Highway System (NHS), for administering the Federal-aid programs, and for assessing the extent, conditions, and performance of the highway system. Figure 27-3A presents IDOT’s functional classification terminology.

Description	IRIS Code
Principal Arterial System	
Interstates	1
Other Freeways and Expressways	2
Other Principal Arterials (OPA)	3
Minor Arterials	4
Collector	
Major Collector	5
Minor Collector	6
Local (Roads & Streets)	7

IDOT FUNCTIONAL CLASSIFICATION TERMINOLOGY

Figure 27-3A

In order to maintain a 5 year anticipated functional usage of the street/highway network, the district, in cooperation with the appropriate local officials, is responsible for continually monitoring the need for functional classification revisions. These revisions must be based on changes in travel characteristics, new growth and development of an area (i.e., commercial, industrial, residential), new roadways, and/or significant roadway realignments. For proposed roads on new alignment, classification will occur once construction has been completed.

The Bureau of Statewide Program Planning in the Central Office of Planning and Programming is responsible for the final review and processing of all changes to the functional classification system. Once the appropriate local officials approve the change, the Bureau of Statewide Program Planning will process the district's request and will make the formal written request for approval for all revisions Statewide to the FHWA. For roads within a Metropolitan Planning Area (MPA), the LPA must present proposed changes to the functional classifications first to the MPO for approval. Additional information on MPO's can be found in [Section 17-2](#).

27-3.01(c) Relationship to Roadway Design

The functional classification concept is one of the most important determining factors in roadway design. The concept recognizes that the public highway network in Illinois provides two basic and often conflicting functions — access to property and travel mobility. Each road or street provides varying levels of access and mobility, depending upon its intended service. The overall objective of the functional classification system, when viewed in its entirety, is to yield an optimum balance between its access and mobility functions. When this balance is achieved, the benefits to the traveling public are maximized.

The functional classification system provides the foundation for highway planning functions and the framework for determining the geometric design of individual roads and streets. Once the function of the facility is defined, the designer can select an appropriate design speed, roadway width, roadside safety elements, amenities, and other design values. All of Part IV of this *Manual* is based upon this systematic concept to determine roadway design.

Before initiating project work, the designer should review the most recent highway functional classification data for the proposed project from [IRIS](#), the [Geographical Information System \(GIS\)](#), [Illinois Roadway Analysis Database System \(IROADS\)](#), or [Getting Around Illinois](#).

27-3.02 General Functional Classification Categories

The following identifies the basic characteristics of the three general categories within the functional classification system:

1. **Arterial**. Arterial highways are generally characterized by their ability to quickly move relatively large volumes of traffic, but often with restricted accessibility to abutting properties. The arterial system typically provides for high travel speeds and the longest trip movements. The rural and urban arterial systems are connected to provide continuous through movements at approximately the same level of service (LOS).
2. **Collector**. Collector routes are characterized by a relatively even distribution of access and mobility functions. Traffic volumes and speeds are typically lower than those of arterials.
3. **Local**. All public roads and streets not classified as arterials or collectors are classified as local roads and streets. The many points of direct access to adjacent properties characterize local roads and streets. Speeds and volumes are usually low and trip distances short.

The users of this *Manual* must understand that the term “local roads and streets” within the functional classification system differs from the term “local roads and streets” when referring to the jurisdiction for the facility. Many “local” facilities not on the State highway system are functionally classified as collectors, and a few are functionally classified as arterials. When applying the criteria in Part IV of this *Manual*, base the design on the facility’s functional classification.

The percent of mileage allocated nationally in each category is documented in the US DOT/FHWA’s Manual, *Highway Functional Classification — Concepts, Criteria and Procedures*. Roadway information is collected on all public highways and is in [IRIS](#).

The following Sections more explicitly describe the characteristics of these three general categories for rural and urban areas.

27-3.03 Functional Classification Categories

27-3.03(a) Principal Arterial System

In general, the principal arterial system carries the highest traffic volumes and accommodates the greatest trip lengths. These are subdivided into routes functionally classified as Interstates, other freeways and expressways, and OPAs.

In urban areas, these routes consist of a connected urban network of continuous routes having the following designations and characteristics:

- provide service to, through, or around urban areas from minor arterial routes in the rural area, and may be connecting links;
- serve generally as an extension of minor arterial routes in the rural area, and may be a major two-way city street or a one-way couple system;
- may warrant management of access to the highway;
- serve long-distance traffic within a city by connecting major regional activity centers not served by connecting links;
- in urbanized areas (50,000 population or greater), provide for significant urban and suburban travel demands. These trips would be between central business districts and outlying residential areas, between major inner city communities, or between major suburban centers;
- in urbanized areas, are located at spacing that are closely related to the trip-end density characteristics of specific portions of the urban area. The spacing may vary from 1 mile (1.5 km) between routes in the densely developed central business district areas to 5 miles (10 km) or more in the sparsely developed urban fringes;
- in smaller urban areas (under 50,000 but greater than 5,000 population), may be limited in the number and extent of routes. The importance of these routes is primarily to serve the central business district and to accommodate through travel at an appropriate LOS; and
- provide for an integrated network serving the entire urban area.

The rural system criteria are expressed primarily in qualitative, rather than quantitative terms. Because of varying geographic conditions (e.g., population density, spacing and size of cities, density and pattern of roadway network), it is not feasible to define uniform criteria of size of population centers, on length of trip and traffic volume, or on spacing of routes that would apply to all systems in all counties. The principal arterial system in a rural area provides connections between the major urban areas and OPAs and provides a LOS suitable for Statewide or Interstate travel.

27-3.03(b) Minor Arterials

When compared to the principal arterial system, minor arterials may provide lower travel speeds and accommodate shorter trip lengths and lower traffic volumes, but they provide more access to property. These routes have the following general characteristics:

- interconnect and supplement the principal arterial system by forming an integrated network of routes connecting to the OPAs and should provide inter-regional or inter-county service. Stub sections are seldom justified;
- connect with routes of the same function in adjacent States;
- be spaced at intervals consistent with population density, so that all developed areas of the State are within a reasonable distance of an arterial route;
- provide service to corridors with trip lengths and travel density greater than those predominantly served by major collectors, minor collectors, or local routes; and
- provide a design with relatively high overall travel speeds with minimum interference to through movements.
- may carry local bus routes and provide intra-community continuity (but will not, for example, penetrate neighborhoods);
- may be urban extensions of major collector routes from the rural area;
- may be partial access control; and
- considered together with all arterial routes in an urban area, are located from 2 - 3 miles (3 - 5 km) between routes in suburban fringes, but should not be more than 1 mile (1.5 km) apart in fully developed areas. Within the central business district, a spacing of 650 – 2,500 ft (200 - 800 m) is typical.

27-3.03(c) Major Collectors

The major collector road system generally includes those routes where the predominant travel distances are shorter than trips on arterial routes but greater than the shorter trips characteristic of the local road functional system. Consequently, more moderate speeds may be typical on the average. These routes have the following general characteristics:

- provide service to any county seat not on an arterial route;
- serve the more important intra-county or intra-regional travel corridors not served by higher route classifications;
- serve larger towns not directly served by higher route classifications nor other traffic generators of equivalent intra-county importance. These routes link nearby larger cities or other routes of higher classification;

- form an integrated network; however, stub sections are not uncommon. Consolidated school districts, shipping points, recreational areas, important mining and agricultural areas, or other equivalent traffic generators can be used to justify the inclusion of these stubs in this classification; and
- provide all-weather service for reliable and safe travel that considers both access and mobility.
- provide both access and traffic circulation within residential neighborhoods and commercial and industrial areas;
- may penetrate residential neighborhoods or commercial/industrial areas to collect and distribute trips to and from the arterial system;
- in the central business district, may include the routes that are not classified as arterials;
- have spacing of routes dependent on the density of development. In fully developed areas, spacing together with higher classifications should provide approximately 2,500 ft (800 m) between routes and, within the central business district, provide a spacing of 650 ft to 2,500 ft (200 m to 800 m); and
- may be urban extensions of minor collector routes in the rural area.

27-3.03(d) Minor Collectors

These are characterized as follows:

- provide service to any remaining small communities;
- are located at intervals, consistent with population density, to collect traffic from local routes and to connect all developed areas within a reasonable distance from a major collector route;
- include more stub sections than the major collector classification; and
- are designed for relatively reliable and year-around safe travel, with more emphasis on property access than mobility.

27-3.03(e) Local

The routes functionally classified as local roads or streets generally have the following characteristics:

- constitute mileage not designated as part of higher classifications;
- serve primarily to provide access to abutting property and connections to higher classified routes;
- typically will have a lower Average Daily Traffic (ADT);
- reflect minimal design criteria with primary consideration to access needs.
- offer the lowest level of mobility and usually contain no bus routes; and
- discourage through traffic movements.

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Except for the replacement or rehabilitation of existing structures greater than 20 ft (6 m) in length, projects for improvements on routes with a local functional classification are not eligible for Surface Transportation Program (STP) funds.

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27-4 TYPES OF DEVELOPMENT AREAS

The functional classification system is based in part on the urban or rural designation. In many cases, this is not sufficient to determine the appropriate roadway design criteria. Therefore, the type of area where the project is located further divides the criteria in this *Manual*. The refinement to the roadway design process allows the designer to better tailor the project to the constraints of the surrounding environment.

The following Sections briefly discuss the types of areas for rural and urban locations. Select the type of area that is most appropriate for the project under design.

27-4.01 Rural Highways and Roads

Many roads in Illinois are classified as rural but frequently pass through relatively developed areas. Therefore, [Chapters 32](#) and [33](#) present design criteria based on the extent of roadside development. The tables in the chapters provide criteria for the average number of access points per mile (kilometer) per side. These criteria provide some guidance, but they should not be considered rigid. In addition, consider the following narrative descriptions of roadside development:

1. Open. This fits the traditional concept of a rural area. The driver has almost total freedom of movement and is generally not affected by occasional access points along the road. For the purpose of determining the open classification, access points will average less than 15 per mile (10 per kilometer) per side. Right-of-way is usually available.
2. Low/Moderate Density. The roadside development has increased to a level where prudent drivers will instinctively reduce their speed as compared to an open roadway. Drivers must be more alert to the possibility of entering and exiting vehicles, but they are still able to maintain a relatively high travel speed. The estimated number of access points will average between 15 and 30 per mile (10 and 20 per kilometer) per side. Right-of-way may be difficult to obtain.
3. Moderate/High Density. The roadside development has increased to a level that is comparable to a suburban area within the urban limits or may be an incorporated municipality with a population less than 5,000. The extent of the development will have a significant impact on the selected travel speed of a prudent driver. Exiting and entering vehicles are frequent, and traffic signals are typical at major intersections. The estimated number of access points will average greater than 30 per mile (20 per kilometer) per side. Right-of-way is usually quite difficult to obtain.

27-4.02 Urban Roads and Streets

27-4.02(a) Suburban Roads and Streets

Suburban areas are within urban areas as defined in Section 27-3.01(a); however, they suggest a degree of development greater than that of an open rural area but less than that of a high-density urban area. The predominant character of the surrounding environment is usually residential, but it may also include a considerable number of commercial establishments and a few industrial parks. On suburban roads and streets, drivers usually have some freedom of maneuverability; nonetheless, they must devote some of their attention to entering and exiting vehicles. Roadside development is characterized by low to moderate density. Pedestrian and bicycle activity is often a design factor. Right-of-way may be more readily available for roadway improvements.

Local and collector streets in suburban areas are typically located in residential areas but may also serve a commercial area. Posted speed limits typically range between 30 mph and 45 mph. The majority of intersections will have stop or yield control, but there will be an occasional traffic signal.

A typical suburban arterial will have strip commercial development and perhaps a few residential properties. Posted speed limits usually range between 35 mph and 50 mph, and there will be a few signalized intersections along the arterial.

27-4.02(b) Urban Streets

For design purposes, urban areas (not including those considered suburban) are characterized by moderate/high density. These facilities are subdivided as follows:

1. Central Business Districts (CBD). On streets in the CBD or downtown area, abutting building development often prohibits space for off-street parking and entrances for individual businesses. Right-of-way is usually very limited. The streets may include high-density commercial or residential development (e.g., apartment complexes, row houses). Access to property is the primary function of the street network in CBDs. The designer often must select the cross-sectional criteria that will fit into the existing right-of-way. Pedestrian and bicycle considerations may be as important as vehicular considerations, especially at intersections.

Because of the high density of development in CBD areas, the primary distinction among the functional classes is often the relative traffic volumes and, therefore, the number of lanes needed. As many as half of the intersections may be signalized, and posted speed limits typically range between 25 mph and 30 mph.

2. Fringe Area/Outlying Business District (FRNG/OBD). These areas generally have off-street parking and driveway entrances which usually are quite numerous. Right-of-way may be restricted and will typically limit the practical options for roadway improvements. The extent of roadside development will have a significant impact on the selected speeds of drivers. Pedestrian and bicycle activity is common and warrants significant consideration in design.

Local and collector streets in FRNG/OBD areas typically have posted speed limits between 30 mph and 45 mph. The frequency of signalized intersections is substantially higher than in suburban areas. An arterial in FRNG/OBD areas will often have strip commercial development along its roadside, and posted speed limits will range between 35 mph and 45 mph.

27-5 SPEED

27-5.01 Terminology

1. Design Speed. Design speed is the selected speed that is used to determine the various geometric design features of the roadway. Design speed does not necessarily have to equal posted speed.
2. 85th-Percentile Speed. The 85th-percentile speed is the speed below which 85% of vehicles travel on a given facility. The most common application of the value is its use as one of the factors for determining the posted, legal speed limit of a roadway section. In most cases, field measurements for the 85th-percentile speed will be conducted during off-peak hours when drivers are free to select their desired speed. Legal posted speed limits are discussed in [Section 3-2](#).
3. High Speed. For geometric design purposes, high speed is defined as greater than 45 mph (70 km/h).
4. Low Speed. For geometric design purposes, low speed is defined as 45 mph (70 km/h) or less.
5. Pace Speed. Pace speed is the specified increment of spot speed that includes the greatest number of speed measurements.

27-5.02 Design Speed

27-5.02(a) Range/Increments

Design speeds for local projects typically range between 20 mph and 60 mph (30 km/h and 100 km/h), and they are selected in 5 mph (10 km/h) increments.

27-5.02(b) Selection

Each project will have a design speed selected that establishes criteria for several geometric design elements including horizontal and vertical curvature, superelevation, cross sectional features, and sight distance. [Chapter 32](#) presents the design speed criteria for new construction and reconstruction projects. [Chapter 33](#) presents the design speed criteria for 3R non-freeway projects. In general, the selected design speed is based on the following road design elements:

1. Functional Classification. The higher-class facilities (i.e., arterials) are designed with a higher design speed than the lower class facilities (i.e., collectors and locals).
2. Urban/Rural. Design speeds in rural areas are generally higher than those in urban areas. This is consistent with the typically fewer constraints in rural areas (e.g., less development).
3. Terrain. The flatter the terrain, the higher the selected design speed can be. This is consistent with the typically higher construction costs associated with more rolling terrain.
4. Traffic Volumes. On some facilities (e.g., rural collectors), the design speed varies by traffic volumes (e.g., as traffic volumes increase, higher design speeds are used).

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For geometric design application, the relationship between these road design elements and the selected design speed reflects general cost-effective considerations. For example, the higher the traffic volumes, the more benefits to the traveling public from a higher design speed. In addition, the anticipated posted/regulatory speed limit should be one factor when selecting the design speed.

Avoid artificially selecting a design speed low enough to eliminate any design exceptions. For example, if BLRS criteria dictates a design speed of 50 mph (80 km/h) and one or more geometric features are adequate only for 45 mph (70 km/h), the project design speed should be 50 mph (80 km/h) and not 45 mph (70 km/h). In this case, consider requesting design exceptions for the 45 mph (70 km/h) geometric features.

27-6 CAPACITY METHODOLOGY

27-6.01 Terminology

1. Actuated Control. A defined phase sequence in which the presentation of each phase is on recall or the associated traffic movement has submitted a call for service through a detector.
2. Annual Average Daily Traffic (AADT). The total yearly volume in both directions of travel divided by the number of days in a year.
3. Average Daily Traffic (ADT). The calculation of average traffic volumes in both directions of travel in a time period greater than one day and less than one year and divided by the number of days in that time period. Although not precisely correct, ADT is often used interchangeably with AADT. The use of an ADT could produce a bias because of seasonal peaks and, therefore, the user should be aware of this.
4. Back of Queue. The maximum backward extent of queued vehicles during a typical cycle, as measured from the stop line to the last queued vehicle.
5. Capacity. The maximum number of vehicles that can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and traffic control conditions. The time period most often used for analysis is 15 minutes. "Capacity" corresponds to a LOS E.
6. Cycle. A complete sequence of signal indications.
7. D-Factor. The portion of traffic moving in the peak direction of travel on a given roadway during the peak hour.
8. Delay. Additional travel time experienced by a driver, passenger, bicyclist, or pedestrian beyond that required to travel at the desired speed. The primary performance measure on interrupted flow facilities.
9. Demand Flow Rate. The count of vehicles arriving at the system element during the analysis period, converted to an hourly rate. This manual uses the term design hourly volume (defined below) in a similar manner as demand flow rate.
10. Density. The number of vehicles occupying a given length of lane, averaged over time. It is usually expressed as vehicles per mile per lane.
11. Design Hourly Volume (DHV). The one-hour volume in both directions of travel in the design year selected for determining the dimensions and configuration of the roadway design elements. For capacity analyses, the DHV is typically converted to an hourly flow rate based on the maximum 15-minute flow rate during the DHV. The term DHV is not used in the *Highway Capacity Manual (HCM)*, but its utility is similar to how demand flow rate (defined above) is used.
12. Directional Design Hourly Volume (DDHV). The traffic volume in peak direction of flow during the design hour.
13. Directional Distribution (D). A characteristic of traffic that volume may be greater in one direction than in the other during any particular hour on a highway.

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14. 85th-Percentile Speed. The 85th-percentile speed is the speed below which 85% of vehicles travel on a given facility. The most common application of the value is its use as one of the factors for determining the posted, legal speed limit of a roadway section. In most cases, field measurements for the 85th-percentile speed will be conducted during off-peak hours when drivers are free to select their desired speed. Legal posted speed limits are discussed in [Section 3-2](#).
15. Flow Rate. The equivalent hourly rate at which vehicles or other roadway users pass over a given point or section of a lane or roadway during a given time interval of less than one hour, usually 15 minutes.
16. Free Flow. A flow of traffic unaffected by upstream or downstream conditions.
17. Green Time (g/c) Ratio. The ratio of the effective green time of a phase to the cycle length.
18. Heavy Vehicles. A vehicle with more than four wheels touching the pavement during normal operation.
19. K-factor. The portion of AADT that occurs during the peak hour (DHV/AADT).
20. Lane Group. A lane or set of lanes designated for separate analysis.
21. Level of Service (LOS). A quantitative stratification of a performance measure or measures that represent quality of service, measured on an A to F scale, with LOS A representing the best operating conditions from the traveler's perspective and LOS F the worse.
22. Passenger-Car Equivalent. The number of passenger cars that will result in the same operational conditions as a single heavy vehicle of a particular type under specified roadway, traffic, and control conditions.
23. Peak Hour. The hour of the day in which the maximum volume occurs.
24. Peak-Hour Factor (PHF). A ratio of the volume occurring during the peak hour to the maximum rate of flow during a given time period within the peak hour (typically 15 minutes).
25. Pedestrian. An individual traveling on foot.
26. Permitted Turn. A left or right turn at a signalized intersection that is made by a vehicle during a time in the cycle in which the vehicle does not have the right-of-way.
27. Phase. The part of the signal cycle allocated to any combination of traffic movements receiving the right-of-way simultaneously during one or more intervals. A phase includes the green, yellow, and red clearance intervals.
28. Progression. The act of various controllers providing specific green indications in accordance with a time schedule to permit continuous operation of groups of vehicles along the street at a planned speed.
29. Protected Turn. The left or right turns at a signalized intersection are made by a vehicle during a time in the cycle when the vehicle has the right-of-way.
30. Queue Storage Ratio. The maximum back of queue as a proportion of the available storage on the subject lane or link.

31. Red Clearance Interval. A brief period of time following the yellow indication during which the signal heads associated with the ending phase and all conflicting phases display a red indication.
32. Saturation Flow Rate. The equivalent hourly rate at which previously queued vehicles can traverse an intersection approach under prevailing conditions, assuming that the green signal is available at all times and no lost times are experienced.
33. Semi-Actuated Control. A signal control in which some approaches (typically on the minor street) have detectors and some approaches (typically on the major street) have no detectors.
34. Service Flow Rate. The maximum directional rate of flow that can be sustained in a given segment under prevailing roadway, traffic, and control conditions without violating the criteria for LOS *i*.
35. Service Measure. A performance measure used to define LOS for a transportation system element.
36. Volume-to-Capacity (v/c) Ratio. The ratio of flow rate to capacity for a system element.
37. Weaving. The crossing of two or more traffic streams traveling in the same direction along a significant length of highway, without the aid of traffic control devices (except for guide signs).

27-6.02 Design Year Selection

27-6.02(a) Roadway Design

The geometric design of a highway should be developed to accommodate expected traffic volumes during the life of the facility assuming reasonable maintenance. This involves projecting the traffic volumes to a selected future year. For new construction/reconstruction projects, 20 years is the usual design period. For current low volume roadways with ADTs of 400 or less, current traffic volumes may be used. However, if there is known development planned which may increase traffic to an ADT greater than 400, the traffic should be projected out based on the design period. For 3R projects, current traffic volumes for the year of construction are typically used, but the design period may be 10 years or longer. In all cases, the design year is measured from the expected construction completion date.

27-6.02(b) Other Highway Elements

The following presents the recommended criteria for selection of a design year for highway elements other than road design:

1. Bridges. The structural life of a bridge may be 75 years or more (e.g., substructure, superstructure). For new bridges (including bridge replacements), the clear roadway width of the bridge is based on the 20 year traffic volume projection beyond the construction completion date. For low volume roadways (i.e., ADT of 400 or less), the design criteria may be based on current traffic volumes. For bridges within the limits of 3R projects, see [Chapter 33](#).
2. Underpasses. The design year used for the geometric design of underpasses is determined on a case-by-case basis.

3. Drainage Design. Drainage appurtenances are designed to accommodate a flow rate based on a specific frequency of occurrence. The selected frequency is based on the functional class of the facility, the ADT, and the specific drainage appurtenance (e.g., culvert). See [Chapter 36](#) for more detailed information on drainage design.
4. Pavement Design. The pavement structure is designed to withstand the vehicular loads during the design analysis period without falling below selected terminal pavement serviceability. [Chapter 44](#) presents the criteria for selecting a design year for pavements.
5. Intersections. Use both AM/PM peak volumes for intersection analyses in suburban and urban areas where traffic volumes are high.
6. Traffic Signals. Use current traffic volumes for traffic signal analyses in suburban and urban areas where traffic volumes are high. Base the analyses on the criteria for warrants presented in the [Illinois Manual of Uniform Traffic Control Devices \(ILMUTCD\)](#).

27-6.03 Design Traffic Volumes

Most geometric elements are determined by traffic volumes projected for the design year. The traffic volumes may be either the ADT or the DHV depending on whether the road or street is located in a rural or an urban area, the functional classification, and the geometric criteria. Obtain projected traffic volumes from the district or from regional transportation studies.

27-6.03(a) ADT Selection

On two-lane urban collectors and local streets and on rural roads, ADT is used to determine most geometric design items including design speed and lane and shoulder width.

27-6.03(b) DHV Selection

The peaking characteristics are significant for most geometric design elements on arterials and multilane collectors in the urban area and for intersections. The local facility should be able to accommodate the DHV (adjusted for the peak-hour factor) at the selected LOS. This DHV will affect many design elements, including the number of through travel lanes, lane widths, and intersection geometrics. Analyze the proposed design using the AM and PM DHVs separately. This could have an impact on the geometric design of the facility. The *HCM* uses the term demand flow rate similarly as DHV.

Traditionally, the 30th highest hourly volume in the selected design year has been used to determine the DHV for design purposes. However, at the discretion of the district and LPA for urban facilities, it may be more appropriate to base the DHV on the 10th to 20th highest hourly volume in the selected design year. Because the design of the project is significantly dependent upon the projected DHV, carefully examine these projections before using them for design purposes.

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27-6.04 Level of Service (LOS)

LOS describes a quantitative stratification of a performance measure or measures that represents quality of service, measured on an A to F scale. A designated LOS is described in terms of service measures such as speed, density, delay, or percent time-spent-following.

Because drivers will accept different driving operational conditions, including lower travel speeds on different facilities, it is not practical to establish one LOS for application to every type of highway. Therefore, various levels of service have been established for the different types of highways facilities, location (i.e., rural or urban) and the scope of the improvement.

The *HCM* has established service measures used to define LOS for transportation system elements on various types of facilities. These are presented in Figure 27-6A for those elements on local roads and streets. For each service measure, the *HCM* provides the analytical tools to calculate the numerical value. Note that highway capacity service measures may be segregated into two broad categories: (1) uninterrupted flow, or open highway conditions, and (2) interrupted flow, as at stop-controlled or signalized intersections. Uninterrupted flow occurs on facilities where the influence of intersections and abutting property development is not significant, and the design volume can be determined by an hourly rate of flow.

Type of Facility	Service Measures
Vehicular	
Interrupted Flow Urban Street Segments Signalized Intersection Two-way Stop Intersection All-way Stop Intersection Roundabouts	Travel Speed, Base of Free Flow Speed Delay Delay Delay Delay
Uninterrupted Flow Two-lane Highway Multilane Highway	Percent Time-Spent-Following, Average Travel Speed, Percent of Free Flow Speed Density
Other Highway Users	
Pedestrian Bicycle Transit	Space, Delay, LOS Score LOS Score LOS Score
Off-Street Pedestrian or Bicycle Facility	
Pedestrian Bicycle	Space, Events LOS Score

SERVICE MEASURES FOR LOS

Figure 27-6A

The *HCM* provides the LOS (A to F) criteria for the capacity analysis for each highway element, including:

- multilane rural highways
- two-lane, two-way rural highways;
- signalized intersections;
- unsignalized intersections; and
- urban and suburban arterials.

[Chapters 32](#) and [33](#) present LOS criteria for each facility type based on the project scope of work.

27-6.05 Capacity Analyses

Design the roadway mainline or intersection to accommodate the DHV at the selected LOS. The methodologies in the HCM uses the DHV, or demand flow rate, and the various highway factors which affect capacity to determine the LOS. The service flow rate should be accommodated by adjusting the various highway factors which affect capacity until a suitable design is determined. The detailed calculations, factors, and methodologies are presented in the *HCM*.

The *HCM* provides the analytical techniques to determine the LOS for all highway elements (e.g., for basic roadway segments, intersections) for a given set of traffic and roadway conditions. For a major highway segment, for example, the capacity analysis will determine if an existing roadway will accommodate future traffic demands at the desired LOS or if roadway improvements are necessary (e.g., the addition of travel lanes).

Capacity analyses are normally required only at intersections. An analysis for uninterrupted flow may be required in urban areas to determine the number of through traffic lanes needed.

27-7 ADHERENCE TO DESIGN CRITERIA

Part IV "Project Design" of this *Manual* presents geometric design criteria for application to individual projects. In general, the designer is responsible for making a reasonable effort to meet these criteria in the project design for LPA projects. This will ensure that a local road and street system meets the transportation needs of the public and provides a reasonable level of safety, comfort, and convenience for the traveling public. However, recognizing that this is neither always practical nor cost effective, the following process evaluates and approves exceptions to the geometric design criteria.

27-7.01 Hierarchy of Design Criteria

The design criteria presented in the *BLRS Manual* have varying levels of importance. Therefore, IDOT has established Level One and Level Two design criteria for designers. These two levels of design criteria are intended to assist the designers in summarizing compliance and providing documentation for the proposed project design.

27-7.01(a) Level One Design Criteria

Level One design criteria are judged to be those design elements that are the most critical indicators of a highway's safety and its overall serviceability. Level One design criteria elements include:

- design speed;
- LOS for the mainline;
- lane widths (through lanes, turn lanes, parking lanes, bike lanes);
- traveled way cross slopes;
- shoulder widths;
- horizontal curvature (minimum radius);
- superelevation rates;
- maximum grades;
- intersection sight distance;
- stopping sight distance (vertical curvature (K values), horizontal clearances);
- clear roadway bridge widths;
- freeboard above design high water;
- vertical clearances;
- accessibility for individuals with disabilities;
- pedestrian and bicycle accommodations;
- roadside clear zones;
- LOS for intersection(s);
- warrants for stop signs and signals;

- guardrail; and
- angle parking.

27-7.01(b) Level Two Design Criteria

Level Two design criteria include additional important indicators of a facility's safety and serviceability but are not considered as critical as the Level One criteria. Level Two design criteria elements include:

- design period (design year);
- horizontal alignment (superelevation transition lengths, superelevation distribution);
- vertical alignment (minimum grades, minimum length of vertical curves, maximum K values);
- cross section elements (parking lane cross slopes; sidewalk widths, cross slope, and grades; median type and width; shoulder cross slopes, rollover factors, curb and gutter types, side slopes);
- drainage (flood frequency),
- intersections (LOS for individual movements, skew angle, approach gradients, design vehicle, turning radius, minimum island size, turn lane lengths and tapers, entrances);
- railroad crossing protection and widths;
- highway lighting;
- pavement design; and
- other items deemed important.

27-7.02 Identification of Design Criteria and Design Exceptions

The following procedure identifies project design criteria and design exceptions that will apply to all Federal, State, and MFT funded projects on local facilities for new construction, reconstruction, and 3R projects. Pavement preservation projects are not covered. The determination of whether or not the proposed project design meets the controlling design criteria is dependent upon the project scope of work (e.g., for a 3R project, the criteria in [Chapter 33](#) will apply). The following will apply:

1. Initial Documentation of Design Exceptions (Form [BLR 22120](#)). Form [BLR 22120](#) assists the designer in determining if any design element meets the design criteria presented in this *Manual*. Completing Form [BLR 22120](#) will ensure that any design exceptions being considered are evaluated appropriately. The LPA must fully document its evaluation of the project's design and clearly demonstrate that a design exception is justified. The designer should include a statement that:
 - a. identifies the design element,
 - b. identifies BLRS design criteria,
 - c. discusses the proposed design, and

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- d. provides justification for the design exception.
2. Submission. Submit Form [BLR 22120](#) and all justification to the district as early as possible in the project's development. For Federal funded projects, submit the form prior to submission of the Project Development Report; see [Chapter 22](#). For MFT and State funded projects, complete the form prior to submitting the plans to the district.
 - a. When requesting a design exception, the following will apply:
 - b. Federal Funded Projects. Complete Form [BLR 22120](#) in its entirety.
 - c. MFT and State Funded Projects. For LPAs that do not have an Illinois licensed professional engineer on its staff, complete Form [BLR 22120](#) in its entirety. This includes projects that are designed by a consultant even if there is a professional engineer on the consultant's staff. For projects where there is an Illinois licensed professional engineer on the LPA's staff, the designer only needs to complete the sections for the criteria on Form [BLR 22120](#) for which there is an exception.
 - d. Pavement Preservation Projects. Completion of Form [BLR 22120](#) is not required for these projects; however, the design exception process as described in this Section still applies.
3. District Coordination Meetings. Any contemplated design exceptions should be coordinated with the district early on in the project development phase. Many districts will discuss design exceptions at the district coordination meetings with attendance by representatives from the FHWA, CBLRS, and the LPAs and their consultants. The minutes of the coordination meeting may serve as documentation of the approval. These meetings are usually scheduled bi-monthly and monthly in Districts One and Eight,

When evaluating exceptions to design criteria, the primary considerations are:

- safety,
 - capacity,
 - compatibility with adjacent sections,
 - time to construction of ultimate improvement,
 - construction costs, and
 - impacts to the natural and built environment.
4. Approval. Exceptions from Level One design criteria must receive approval from CBLRS. Exceptions from Level Two design criteria will receive approval from the districts. LPAs operating under an Agreement of Understanding ([Section 5-1](#)) will be allowed to determine the acceptability of Level Two design exceptions without district approval. Exceptions which are denied should be returned to the LPA with reasons for the denial in writing. Exceptions denied by CBLRS will be sent to the district.

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5. Final Documentation. For Federal funded projects, include Form [BLR 22120](#), the approval or denial, and copy of the minutes from the coordination meeting in the Project Development Report (PDR). For all other projects, include Form [BLR 22120](#), the approval, and a copy of the minutes from the coordination meeting in the LPA's project file.

For LPA projects which require improvements on facilities under the jurisdiction of the State and a design exception is being contemplated, it follows a similar process as on the local facilities except:

1. Policy and Procedure. [Section 31-8](#) of the *Bureau of Design & Environment (BDE) Manual* must be followed.
2. Documentation / Submission. Form [BDE 3100](#) must be submitted to the district for review, who will forward the form and the district's recommendation to BDE.
3. District Coordination Meetings. The LPA project may need to be brought to the state-side of the district coordination meeting for discussion among FHWA, BDE, various district staff, the LPA and their consultants.
4. Approval. The approval of Form [BDE 3100](#) is by BDE and in rare cases may require FHWA's approval.
5. Final Documentation. For Federal funded projects, include Form [BDE 3100](#), the approval, and copy of the minutes from the coordination meeting in the PDR. For all other projects, include Form [BDE 3100](#), the approval, and a copy of the minutes from the coordination meeting in the LPA's project file

27-7.03 Accessibility Standards for Individuals with Disabilities

[Section 41-6](#) presents the IDOT application of the Federal standards for accessibility for individuals with disabilities as promulgated in *ADA / PROWAG*. The following applies when accessibility standards cannot be met, but they are designed to the maximum extent practicable (MEP) within the scope of the project (non-compliant element):

1. Procedure. Where site conditions and/or topography creates a non-compliant element, an in-depth evaluation with documentation is required. However, approval of funding for projects with non-compliant elements are extraordinarily rare and, therefore, a LPA should pursue this option only as a last resort.

If the non-compliant element is on facilities under the jurisdiction of the State, the LPA shall follow the procedure in [Section 31-8](#) of the *BDE Manual* and document it on Form [BDE 3101](#).

2. Documentation / Submission. The LPA must fully document its evaluation of the project site conditions and must clearly demonstrate that the standards cannot be met and the design is to the MEP within the scope of the project. The content of the submission will vary on a case-by-case basis. Include the following information as appropriate:
 - location of the affected property,
 - a set of plans showing the location and the proposed deficient element, location of the affected property,

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- photographs of the non-compliant element,
- what work is required to achieve the *ADA / PROWAG* standard, and
- the cost of achieving the *ADA / PROWAG* standards.

If the district concurs the LPA has properly documented the non-compliant element and cannot meet the standards and will be designed to the MEP, the district will submit the LPA's documentation to CBLRS with a request to concur the LPA has documented the MEP properly. If the request is on facilities under the jurisdiction of the State, the LPA's documentation shall be submitted to BDE.

3. District Coordination Meetings. Any contemplated non-compliant element shall be discussed at the district coordination meetings, if federal funds are included in the project. It is recommended an onsite field visit be scheduled to evaluate non-compliant elements.
4. Concurrence. IDOT concurrence is whether or not the LPA has properly documented that the non-compliant element is designed to the MEP and will be by CBLRS with concurrence from FHWA for requests on facilities under the LPA's jurisdiction. Facilities under the jurisdiction of the State shall follow the procedure in [Section 31-8](#) of the *BDE Manual*.
5. Final Documentation. For Federal funded projects, include the LPA's documentation, IDOT's concurrence in the LPA's documentation, and copy of the minutes from the coordination meeting in the Project Development Report. For all other projects, include the LPA's documentation and IDOT's concurrence in the documentation in the LPA's project file.

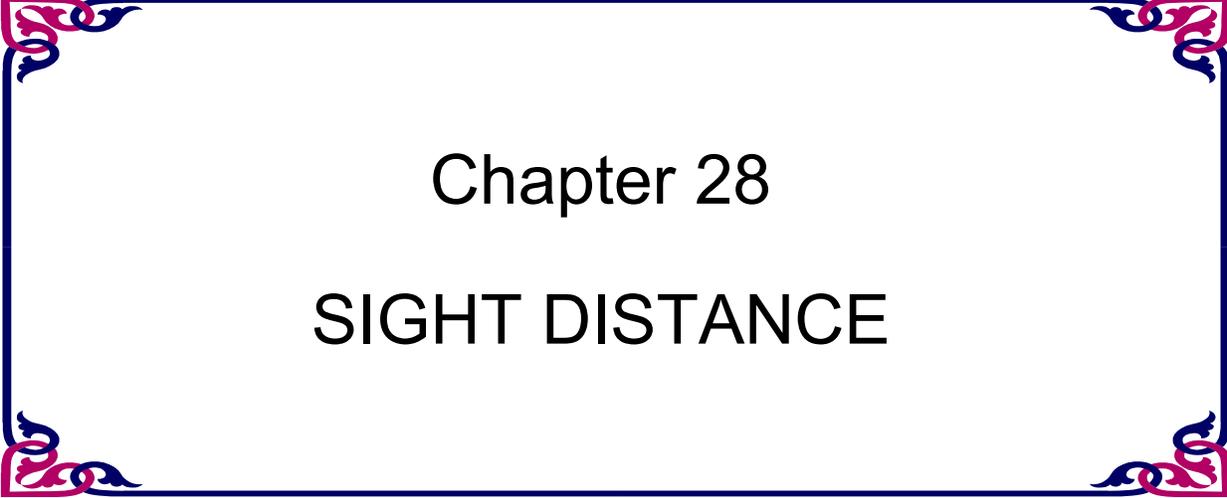
27-8 ACRONYMS

This is a summary of the acronyms used within this chapter.

3R	Rehabilitation, Restoration, and/or Resurfacing
AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
<i>ADA</i>	<i>Americans with Disabilities Act</i>
ADT	Average Daily Traffic
BDE	Bureau of Design and Environment
BLRS	Bureau of Local Roads and Streets
CBD	Central Business Districts
CBLRS	Central Bureau of Local Roads and Streets
DDHV	Directional Design Hourly Volume
DHV	Design Hourly Volume
GIS	Geographical Information System
FHWA	Federal Highway Administration
FRNG/OBD	Fringe Area/Outlying Business District
<i>HCM</i>	<i>Highway Capacity Manual</i>
IDOT	Illinois Department of Transportation
<i>I-ROADS</i>	<i>Illinois Roadway Analysis Database System</i>
<i>ILMUTCD</i>	<i>Illinois Supplement to the Manual of Uniform Traffic Control Devices</i>
<i>IRIS</i>	<i>Illinois Highway Information System – Roadway Information and Procedure Manual</i>
<i>ISTEA</i>	<i>Intermodal Surface Transportation Efficiency Act</i>
LPA	Local Public Agency
MEP	Maximum Extent Practicable
MFT	Motor Fuel Tax
MPA	Metropolitan Planning Area
MPO	Metropolitan Planning Organization
NHS	National Highway System
OPA	Other Principal Arterials
PHF	Peak-Hour Factor
<i>PROWAG</i>	<i>Public Rights of Way Access Guidelines</i>
STP	Surface Transportation Program
TWLTL	Two-Way Left-Turn Lane

27-9 REFERENCES

1. *A Policy on Geometric Design of Highways and Streets*, AASHTO, 2011.
2. [Chapter 31](#) “Basic Design Controls,” *BDE Manual*, IDOT.
3. *Highway Functional Classification — Concepts, Criteria, and Procedures*, FHWA.
4. [Roadway Information and Procedure Manual](#), IDOT.
5. *Policy on Establishing and Posting Speed Limits*, Bureau of Operations.
6. *HCM2010 Highway Capacity Manual*, TRB, 2010.



Chapter 28
SIGHT DISTANCE

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Chapter 28
SIGHT DISTANCE

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Chapter 28

SIGHT DISTANCE

28-1 STOPPING SIGHT DISTANCE (SSD)

SSD is the sum of the distance traveled during a driver's brake reaction time (i.e., perception / reaction time) and the braking distance (i.e., distance traveled while decelerating to a stop). To calculate SSD on level grade, use the following formulas:

$$\text{SSD} = 1.47 Vt + 1.075 \frac{V^2}{a} \quad (\text{US Customary}) \text{ Equation 28-1.1}$$

$$\text{SSD} = 0.278Vt + 0.039 \frac{V^2}{a} \quad (\text{Metric}) \text{ Equation 28-1.1}$$

Where:

SSD	=	stopping sight distance, ft (m)
V	=	design speed, mph (km/h)
t	=	brake reaction time, 2.5 s
a	=	driver deceleration, ft/s ² (m/s ²) – recommended at 11.2 ft/s ² (3.4 m/s ²)

The following briefly discusses the basic assumptions within the SSD model:

1. **Brake Reaction Time.** This is the time interval between when the obstacle in the road can be physically seen and when the driver first applies the brakes. Based on several studies of observed driver reactions, the assumed value is 2.5 seconds.
2. **Braking Action.** The braking action is based on the driver's ability to decelerate the vehicle while staying within the travel lane and maintaining steering control during the braking maneuver. A deceleration rate of 11.2 ft/s² (3.4 m/s²) is considered to be comfortable for 90% of the drivers.
3. **Design Speed.** The local facility's design speed is used to determine the initial driver speed.

Figure 28-1A provides SSD for vehicles on level grade (-3 to +3 percent). Figure 28-1B provides SSD for vehicles on downgrades or upgrades 3 percent or steeper. When applying the SSD values, the height of eye is assumed to be 3.5 ft (1.080 m) and the height of object 2 ft (600 mm).

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US Customary				Metric			
Design Speed (mph)	Brake ¹ Reaction Distance (ft)	Braking ² Distance On Level (ft)	Design SSD (ft)	Design Speed (km/h)	Brake ¹ Reaction Distance (m)	Braking ² Distance On Level (m)	Design SSD (m)
20	73.5	38.4	115	30	20.9	10.3	35
25	91.9	60.0	155	40	27.8	18.4	50
30	110.3	86.4	200	50	34.8	28.7	65
35	128.6	117.6	250	60	41.7	41.3	85
40	147.0	153.6	305	70	48.7	56.2	105
45	165.4	194.4	360	80	55.6	73.4	130
50	183.8	240.0	425	90	62.6	92.9	160
55	202.1	290.3	495	100	69.5	114.7	185
60	220.5	345.5	570				

Notes:

1. Brake reaction distance based on a time of 2.5 s.
2. Driver deceleration based on a rate of 11.2 ft/s² (3.4 m/s²).

STOPPING SIGHT DISTANCE ON LEVEL ROADWAYS

Figure 28-1A

US Customary							Metric						
Design Speed (mph)	Design SSD (ft)						Design Speed (km/h)	Design SSD (m)					
	Downgrades			Upgrades				Downgrades			Upgrades		
	3%	6%	9%	3%	6%	9%		3%	6%	9%	3%	6%	9%
20	116	120	126	109	107	104	30	32	35	35	31	30	29
25	158	165	173	147	143	140	40	50	50	53	45	44	43
30	205	215	227	200	184	179	50	66	70	74	61	59	58
35	257	271	287	237	229	222	60	87	92	97	80	77	75
40	315	333	354	289	278	269	70	110	116	124	100	97	93
45	378	400	427	344	331	320	80	136	144	154	123	118	114
50	446	474	507	405	388	375	90	164	174	187	148	141	136
55	520	553	593	469	450	433	100	194	207	223	174	167	160
60	598	638	686	538	515	495							

STOPPING SIGHT DISTANCE ON GRADES

Figure 28-1B

28-2 PASSING SIGHT DISTANCE (PSD)

PSD considerations are limited to two-lane, two-way highways. On these facilities, vehicles may overtake slower moving vehicles, and the passing maneuver must be accomplished on a lane used by opposing traffic.

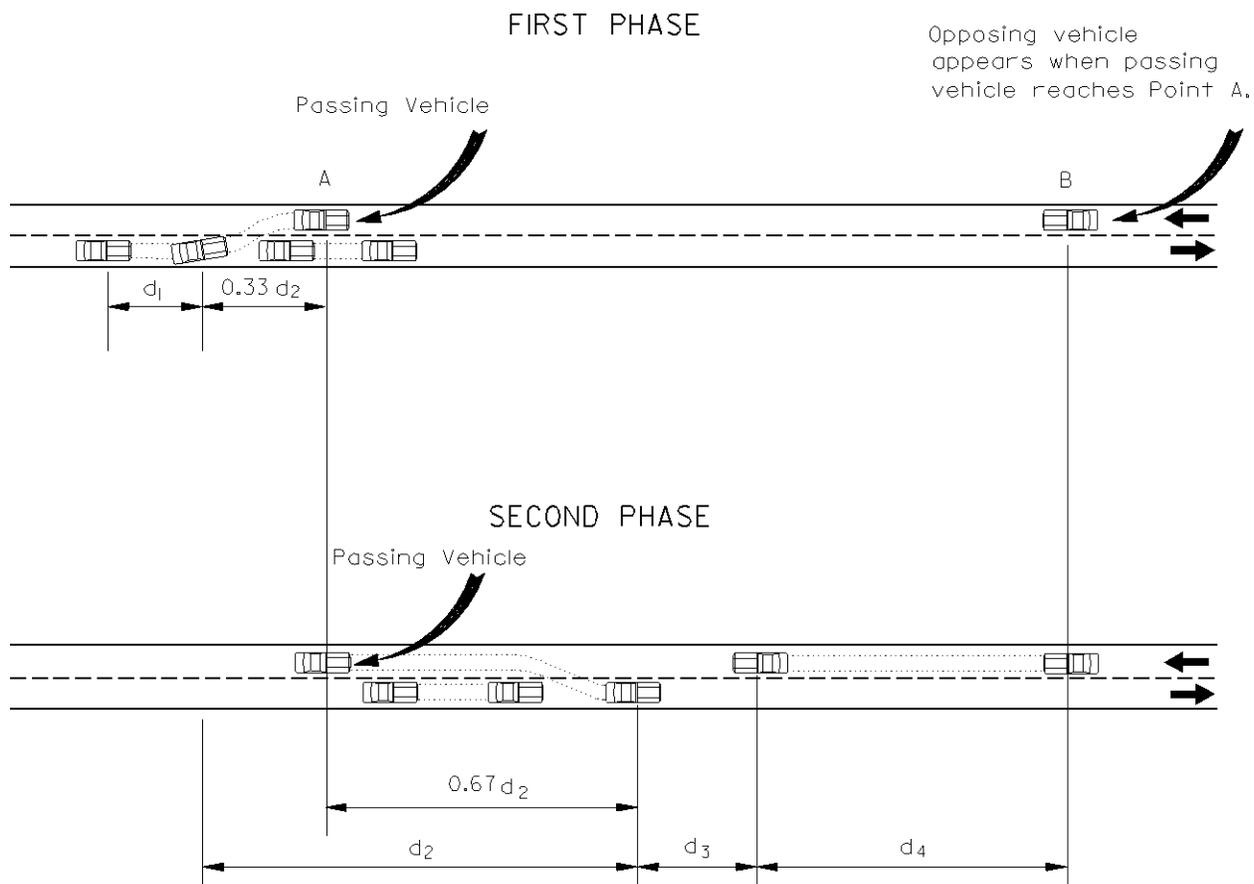
The minimum PSD for two-lane highways is determined from the sum of four distances as illustrated in Figure 28-2A. For a discussion on how to determine these four distances, review the American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets (The Green Book)* and/or [Section 47-2](#) of the *Bureau of Design and Environment (BDE) Manual*.

Figure 28-2B provides the minimum PSD for design on two-lane, two-way highways. These distances allow the passing vehicle to safely complete the entire passing maneuver. These values should not be confused with the values presented in the [Illinois Supplement to the Manual of Uniform Traffic Control Devices \(ILMUTCD\)](#) for the placement of no-passing zone stripes. These values are based on different operational assumptions (i.e., distance for the passing vehicle to abort the passing maneuver). The designer should also realize that the highway capacity adjustment in the *Highway Capacity Manual (HCM)* for two-lane, two-way highways is based on the [ILMUTCD](#) criteria for marking no-passing zones. It is not based on the percent of PSD from *The Green Book* and shown in Figure 28-2C.

PSD for passenger cars is measured from a 3.5 ft (1.080 m) height of eye to a 3.5 ft (1.080 m) height of object. The 3.5 ft (1.080 m) height of object allows the opposing driver to see the top of a typical passenger car. The recommended value of truck driver eye height for design is 7.6 ft (2.330 m) above the roadway surface.

On rural new construction / reconstruction projects, the designer should attempt to provide PSD over the length of the project consistent with the percentages shown in Figure 28-2C. In determining the percentages, each PSD segment should be greater than 1,500 ft (450 m). It is generally not cost effective to make significant improvements to the horizontal and vertical alignment solely to increase the available PSD.

Appreciable upgrades can increase the sight distances required for safe passing maneuvers. Where these upgrades are encountered in the design of the project, take this into account when selecting the appropriate PSD.



- d_1 = Initial maneuver distance, ft (m)
- d_2 = Distance while passing vehicle occupies left lane, ft (m)
- d_3 = Clearance length, ft (m)
- d_4 = Distance traversed by the opposing vehicle, ft (m)

Notes:

1. To determine d_1 , d_2 , d_3 , and d_4 , see *The Green Book* and/or [Section 47-2](#) of the *BDE Manual*.
2. The *ILMUTCD* definition for passing sight distance uses only the second phase of signing and pavement markings distances.

**ELEMENTS OF PASSING DISTANCE
(Two-Lane Highways)**

Figure 28-2A

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US Customary		Metric	
Design Speed (mph)	Design Passing Sight Distance (ft)	Design Speed (km/h)	Design Passing Sight Distance (m)
20	710	30	200
25	900	40	270
30	1090	50	345
35	1280	60	410
40	1470	70	485
45	1625	80	540
50	1835	90	615
55	1985	100	670
60	2135		

**MINIMUM DESIGN PASSING SIGHT DISTANCE
(Assumes Entire Maneuver is Completed)**

Figure 28-2B

Terrain	Minimum Percent Passing Sight Distance		
	Arterials	Collectors	Local
Level	60%	50%	40%
Rolling	40%	30%	20%

**GUIDELINES FOR PERCENT PASSING DISTANCE
(Rural)**

Figure 28-2C

28-3 INTERSECTION SIGHT DISTANCE (ISD)

28-3.01 General

In general, ISD refers to the corner sight distance available in intersection quadrants that allows a driver approaching an intersection to observe the actions of vehicles on the crossing leg(s). ISD evaluations involve establishing the needed sight triangle in each quadrant by determining the legs of the triangle on the two crossing roadways.

Within this clear sight triangle, the objective is to remove or lower any object that obstructs the driver's view, if practical. Sight obstruction may include:

- buildings,
- parked vehicles (see [Section 31-1](#)),
- vegetation (trees, hedges, bushes, un-mowed grass, tall crops)
- fences,
- roadside hardware,
- highway structures, railroad structures,
- retaining walls, and
- the actual ground line.

The additional costs and impacts of removing sight obstructions are often justified. If it is impractical to remove an obstruction blocking the sight distance; consider providing traffic control devices or design applications (e.g., warning signs, turn lanes) which may not otherwise be considered.

In general, point obstacles (e.g., traffic signs, utility poles) are not considered sight obstructions (i.e., the driver can move slightly to avoid these obstacles). Crops and un-mowed grasses are considered seasonal / non-permanent obstructions, give consideration to crops and un-mowed grasses within the corner sight distance triangle.

The height of eye for passenger cars is assumed to be 3.5 ft (1.080 m) above the surface of the minor road. The height of object (approaching vehicle on the major road) is also assumed to be 3.5 ft (1.080 m). An object height of 3.5 ft (1.080 m) assumes that a sufficient portion of the oncoming vehicle must be visible to identify it as an object of concern by the minor road driver. If there are a sufficient number of trucks to warrant their consideration, see [Section 36-6](#) of the *BDE Manual*.

The necessary clear sight triangle is based on the type of traffic control at the intersection and on the design speeds of the two roadways. Some of the cases are further divided by the movement at the intersection, however; the values in the figures in Section 28-3 will cover all movements. The types of traffic control and maneuvers are as follows:

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- Case A – Intersections with no control,
- Case B – Intersections with stop control on the minor road,
 - B-1 (Left turns) / B-2 (Right turns) / B-3 (Crossing)
- Case C – Intersections with yield control on the minor road;
 - C-1 (Crossing) / C-2 (Left or right turns)
- Case D – Intersections with traffic signal control,
- Case E – Intersections with all-way stop control, and
- Case F – Left turns from the major road.

Gap acceptance is used as the conceptual basis for ISD criteria. For additional guidance on the gap acceptance design, see *The Green Book*.

US Customary									
Approach Grade (%)	Design Speed (mph)								
	20	25	30	35	40	45	50	55	60
- 6	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2
- 5	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
- 4	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1
- 3 to + 3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
+ 4	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9
+ 5	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9
+ 6	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Metric									
Approach Grade (%)	Design Speed (km/h)								
	30	40	50	60	70	80	90	100	
- 6	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	
- 5	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
- 4	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	
- 3 to + 3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
+ 4	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	
+ 5	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	
+ 6	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	

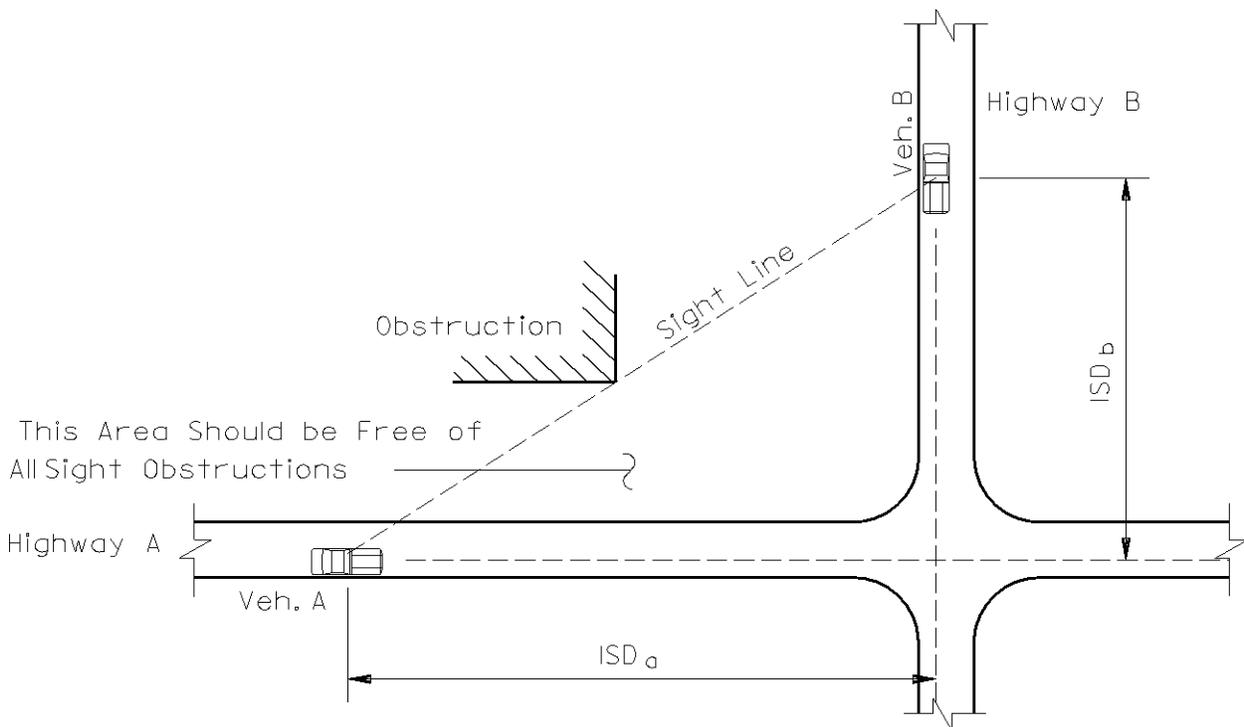
**ADJUSTMENT FACTORS
FOR SIGHT DISTANCE BASED ON APPROACH GRADE**

Figure 28-3A

28-3.02 Case A – Intersections With No Control

Intersections between low-volume and low-speed roads/streets may have no traffic control. At these intersections, sufficient corner sight distance should be available to allow approaching vehicles to adjust their speed to avoid a collision, typically a reduction to 50% of their mid-block running speed. Figure 28-3B illustrates the corner sight distance triangles for intersections with no traffic control. Figure 28-3C provides the ISD criteria for these intersections. Example 28-3(1) provides the steps in determining the length of each of the legs of an intersection’s sight triangle. Consider providing the suggested sight distance, especially for new construction. If this sight distance cannot be provided, consider placing stop or yield signs on one of the roads, or installing intersection warning signs.

Where the grade along an intersection approach exceeds 3 percent, the leg of the clear sight triangle along that approach should be adjusted by multiplying the approach sight distance by the appropriate adjustment factor from Figure 28-3A.



**MEASUREMENT OF INTERSECTION SIGHT DISTANCE
(Case A – No Traffic Control)**

Figure 28-3B

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US Customary		Metric	
Design Speed (mph)	Intersection Sight Distance (ft)	Design Speed (km/h)	Intersection Sight Distance (m)
20	90	30	25
25	115	40	35
30	140	50	45
35	165	60	55
40	195	70	65
45	220	80	75
50	245	90	90
55	285	100	105
60	325		

Note:

1. For approach grades that exceed 3%, multiply by the value in Figure 28-3A.

**INTERSECTION SIGHT DISTANCE
(Case A – No Traffic Control)**

Figure 28-3C

Example 28-3(1)

Given: No traffic control at intersection
 Approach grades are between -3% and +3%
 Design speed – 40 mph (Highway A – see Figure 28-3B)
 30 mph (Highway B – see Figure 28-3B)

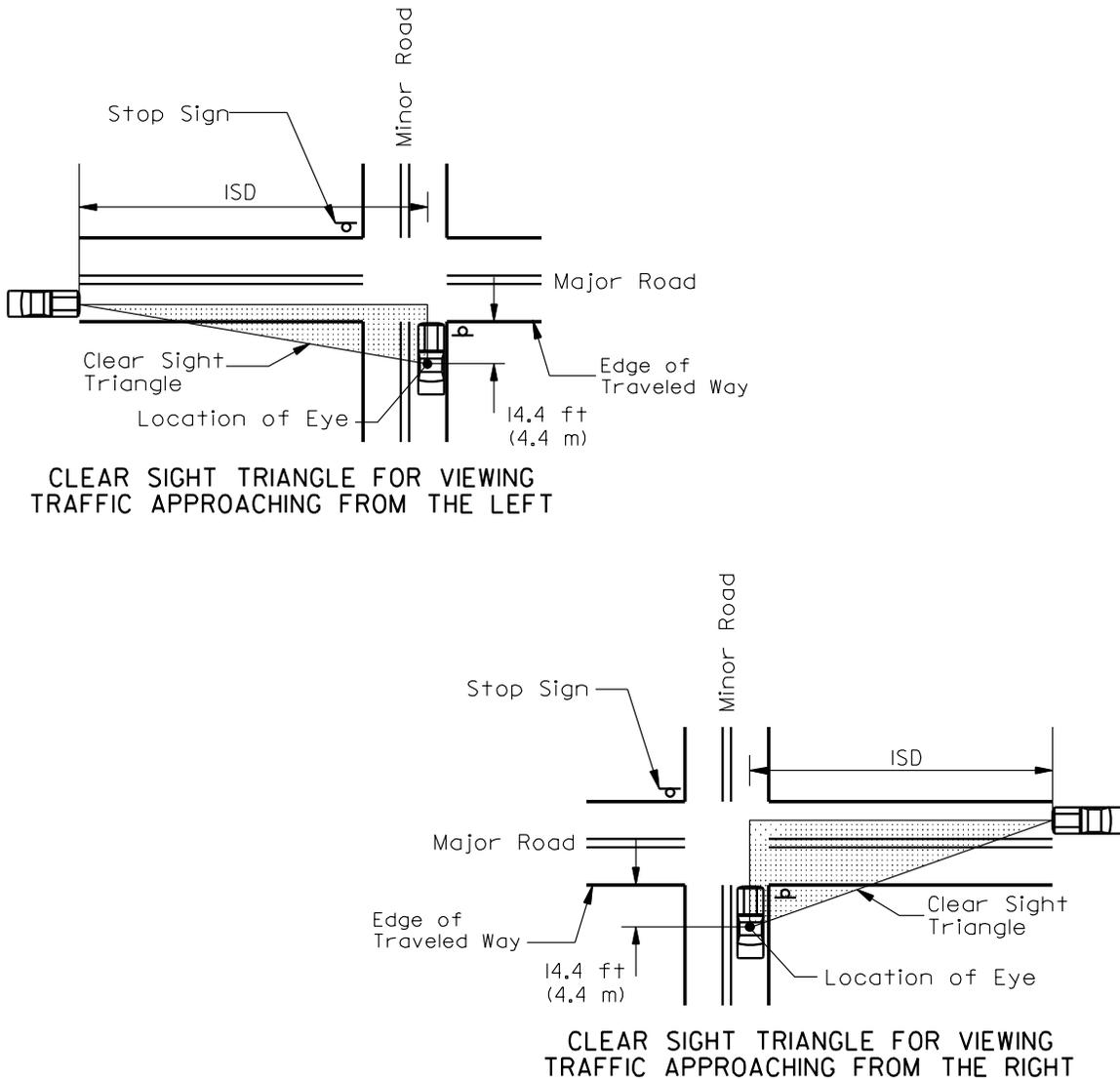
Problem: Determine legs of sight triangle.

Solution: From Figure 28-3A – Adjustment Factor = 1.0
 From Figure 28-3C – $ISD_a = 195$ ft
 $ISD_b = 140$ ft

28-3.03 Case B – Intersections with Stop Control on the Minor Road

Where traffic on the minor road of an intersection is controlled by stop signs, the driver of the vehicle on the minor road must have sufficient sight distance for a safe departure from the stopped position assuming that the approaching vehicle comes into view as the stopped vehicle begins its departure.

The ISD is obtained by providing clear sight triangles both to the right and left as shown in Figure 28-3D. The length of legs of these sight triangles is determined as follows:



**CLEAR SIGHT TRIANGLES
(Case B – Stop-Controlled on the Minor Road)**

Figure 28-3D

1. Minor Road. The length of leg along the minor road is based on two parts. The first is the location of the driver's eye on the minor road. This is typically assumed to be 15 ft (4.5 m) from the edge of traveled way for the major road and in the center of the lane on the minor road. The second part is based on the distance to the center of the vehicle on the major road. For right-turning vehicles, this is assumed to be the center of the closest travel lane from the left. For left-turning vehicles, this is assumed to be the center of the closest travel lane for vehicles approaching from the right. See Figure 28-3E.
2. Major Road. The length of the sight triangle leg or ISD along the major road is determined using the following equation:

$$\text{ISD} = 1.47 V_{\text{major}} t_g \quad (\text{US Customary}) \text{ Equation 28-3.1}$$

$$\text{ISD} = 0.278 V_{\text{major}} t_g \quad (\text{Metric}) \text{ Equation 28-3.1}$$

Where:

ISD = length of sight triangle leg along major road, ft (m)

V_{major} = design speed of major road, mph (km/h)

t_g = time gap for minor road to enter the major road, sec

The critical time gap (t_g) varies according to the design vehicle, the maneuver type, the grade on the minor road approach, the number of lanes on the major roadway, the type of operation, and the intersection skew.

3. Design Vehicles. For local roads and streets, assume a passenger car as the design vehicle (i.e., $t_g = 7.5$ seconds).
4. Grades. If the approach grade on the minor road is on an upgrade that exceeds 3%, add 0.2 sec for each percent grade to t_g .
5. ISD Values. Figure 28-3E provides the ISD criteria for a passenger car turning left or right or crossing a two-lane major road. For other types of facilities (e.g., four-lanes, medians) or where trucks may control the design, see [Section 36-6](#) of the *BDE Manual*.

At a minimum, provide Case B sight distance at all intersections for reconstruction and new construction projects. Also, provide Case B sight distance on projects where the vertical alignment is changed.

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US Customary		Metric	
Design Speed (V_{major}) (mph)	ISD (ft) ⁽¹⁾⁽²⁾	Design Speed (V_{major}) (km/h)	ISD (m) ⁽¹⁾⁽²⁾
20	225	30	65
25	280	40	85
30	335	50	105
35	390	60	130
40	445	70	150
45	500	80	170
50	555	90	190
55	610	100	210
60	665		

Notes:

1. *These ISD values assume crossing or left or right turns onto a two-lane facility without a median for a passenger car. For other types of facilities (e.g., four-lanes, medians) or where trucks may control the design, see [Section 36-6](#) of the BDE Manual.*
2. *Where the approach grade on the minor road is on an upgrade that exceeds 3%, add 0.2 sec for each percent grade to t_g .*

**INTERSECTION SIGHT DISTANCES
(Two-Lane Facilities)
(Case B – Stop Control on the Minor Road)**

Figure 28-3E

28-3.04 Case C – Intersections With Yield Control On the Minor Road

At intersections controlled by a yield sign, drivers on the minor road will typically:

- slow down as they approach the major road to approximately 60% of the approach speed;
- based on their view of the major road, make a stop/continue decision; and
- either brake to a stop or continue their crossing or turning maneuver onto the major road.

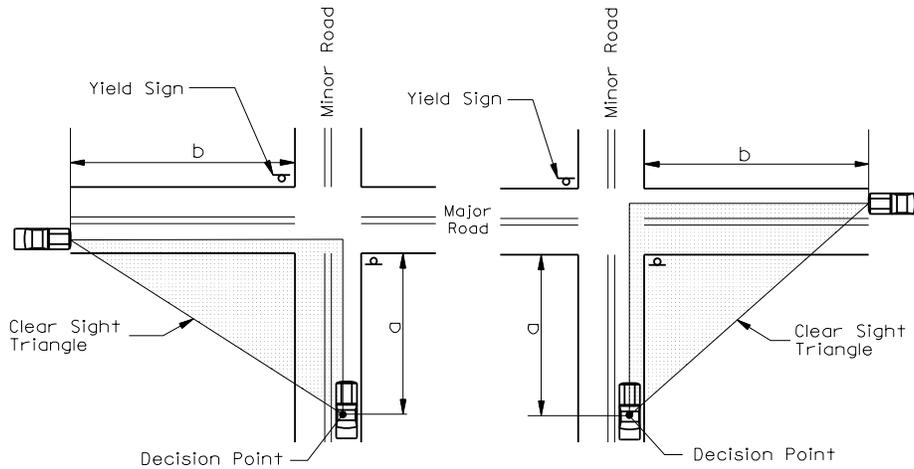
Yield control criteria is based on a combination of the no control ISD discussed in Section 28-3.02 and the stop-controlled ISD as discussed in Section 28-3.03. Where yield control is proposed, consider the Case C sight distance on new construction and reconstruction projects.

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If adequate sight distance cannot be provided, consider replacing the yield sign with a stop sign. To determine the applicable clear sight triangles for a yield-controlled intersection, see Figure 28-3E.



US Customary			Metric		
Design Speed (mph)	Minor Road Approach (a) (ft) ^{1,2}	Major Road Approach (b) (ft)	Design Speed (km/h)	Minor Road Approach (a) (m) ^{1,2}	Major Road Approach (b) (m)
20	100	195	30	30	55
25	130	240	40	40	75
30	160	290	50	55	95
35	195	335	60	65	110
40	235	385	70	80	130
45	275	430	80	100	145
50	320	480	90	115	165
55	370	530	100	135	185
60	420	575			

Notes:

1. For "T" intersections, use 85 ft (25 m).
2. Values shown are for passenger cars crossing a two-lane facility with no median and grades 3% or less. For approach grades that exceed 3%, multiply by the value in Figure 28-3A.

INTERSECTION SIGHT DISTANCE GUIDELINES
(Case C – Yield Control)

Figure 28-3F

28-3.05 Case D – Intersections with Traffic Signal Control

At signalized intersections, provide sufficient sight distance from the stop bar so that the first vehicle on each approach is visible to all other approaches. Traffic signals are often used at high-volume intersections to address crashes related to restricted sight distances. Therefore, the ISD criteria for left- or right-turning vehicles as discussed in Section 28-3.03 are typically not applicable at signalized intersections. However, where right-turn-on-red is allowed, check to ensure that the ISD for a stop-controlled right-turning vehicle is available to the left. If it is not, consider restricting the right-turn-on-red movement. In addition, if the traffic signal is placed on two-way flash operation (i.e., flashing amber on the major-road approaches and flashing red on the minor-road approaches) under off-peak or nighttime conditions, consider providing the ISD criteria as discussed in Section 28-3.03 for a stop-controlled intersection.

28-3.06 Case E – Intersections With All-Way Stop Control

At intersections with all-way stop control, provide sufficient sight distance from the stop bar so that the first stopped vehicle on each approach is visible to all other approaches. Often, intersections are converted to all-way stop control to address limited sight distance at the intersection. Therefore, providing additional sight distance at the intersection is unnecessary.

28-3.07 Case F – Left Turns from the Major Road

At all intersections, regardless of the type of traffic control, consider the sight distance needs for a stopped vehicle turning left from the major road. This situation is illustrated in Figure 28-3G. The driver will need to see straight ahead for a sufficient distance to turn left and clear the opposing travel lanes before an approaching vehicle reaches the intersection. Sight distance for opposing left turns may be increased by offsetting the left-turn lanes.

Figure 28-3G provides ISD values for passenger cars turning left from the major road.

28-3.08 Effect of Skew

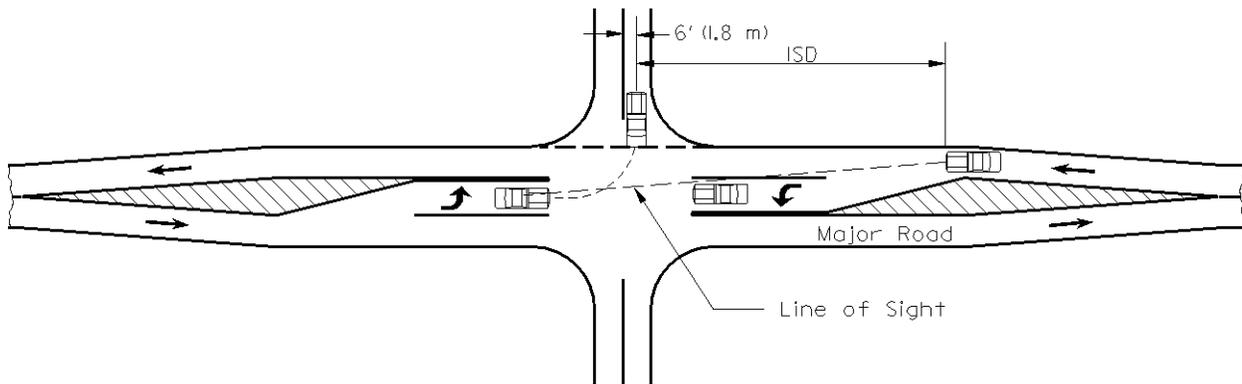
Where it is impractical to realign an intersection that is greater than 30° from the perpendicular, the designer may need to adjust the gap acceptance times to account for the additional travel time required for a vehicle to make a turn or cross a facility. At oblique-angled intersections, determine the actual path length for a turning or crossing vehicle by dividing the total distance of the lanes and/or median to be crossed by the sine of the intersection angle. If the actual path length exceeds the total width of the lanes to be crossed by 12 ft (3.6 m) or more, see [Section 36-6](#) of the *BDE Manual* for additional guidance.

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SIGHT DISTANCE

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US Customary			Metric		
Design Speed (mph)	ISD Crossing One-Lane ¹ (ft)	ISD Crossing Two-Lanes ^{1,2} (ft)	Design Speed (km/h)	ISD Crossing One-Lane ¹ (m)	ISD Crossing Two-Lanes ^{1,2} (m)
20	165	180	30	50	55
25	205	225	40	62	69
30	245	265	50	75	81
35	285	310	60	87	94
40	325	355	70	99	108
45	365	400	80	111	122
50	405	445	90	123	136
55	445	490	100	136	149
60	485	530			

Notes:

1. Assumes no median on major road.
2. For crossing two-lanes an additional 0.5 seconds is added to the time gap of one-lane.

**INTERSECTION SIGHT DISTANCE FOR A STOPPED VEHICLE TURNING LEFT
(Case F – Left Turn from the Major Road)**

Figure 28-3G

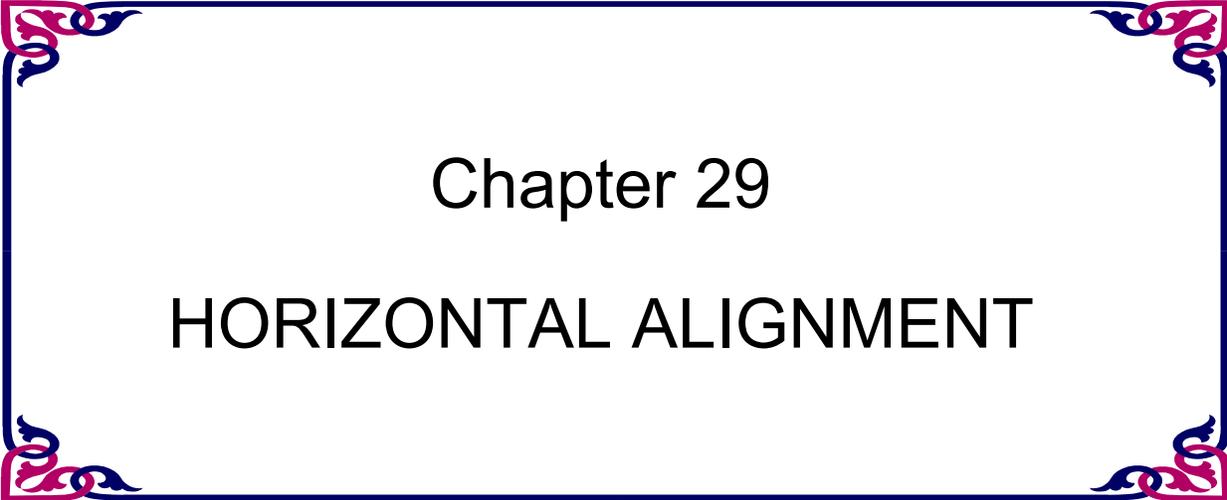
28-4 ACRONYMS

This is a summary of the acronyms used within this chapter.

AASHTO	American Association of State Highway and Transportation Officials
BDE	Bureau of Design and Environment
<i>HCM</i>	<i>Highway Capacity Manual</i>
<i>ILMUTCD</i>	<i>Illinois Supplement to the Manual of Uniform Traffic Control Devices</i>
ISD	Intersection Sight Distance
NCHRP	National Cooperative Highway Research Program
PSD	Passing Sight Distance
SSD	Stopping Sight Distance
<i>The Green Book</i>	
	<i>AASHTO A Policy on Geometric Design of Highways and Streets</i>

28-5 REFERENCES

1. *A Policy on Geometric Design of Highways and Streets (The Green Book)*, AASHTO, 6th Edition 2011.
2. NCHRP Report 400, *Determination of Stopping Sight Distances*, Transportation Research Board, 1997.
3. *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
4. [Illinois Supplement to the Manual of Uniform Traffic Control Devices \(ILMUTCD\)](#), IDOT.
5. NCHRP Report 383, *Intersection Sight Distance*, Transportation Research Board, 1996.
6. [Chapter 36](#) "Intersections" and [Chapter 47](#) "Rural Two-Lane/Multi-lane State Highways (New Construction/Reconstruction)," *BDE Manual*, IDOT.



Chapter 29

HORIZONTAL ALIGNMENT

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Chapter 29
HORIZONTAL ALIGNMENT

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Chapter 29

HORIZONTAL ALIGNMENT

Chapter 29 presents Bureau of Local Roads and Streets (BLRS) criteria for the design of horizontal alignment elements. This includes horizontal curvature and superelevation for both rural and urban local facilities.

29-1 DEFINITIONS

This Section presents definitions for the basic elements of horizontal alignment:

1. Axis of Rotation. The line about which the pavement is revolved to superelevate the roadway. This line will maintain the normal roadway profile throughout the curve.
2. Broken-Back Curves. Closely spaced horizontal curves with deflection angles in the same direction with an intervening, short tangent section (less than 1500 ft (500 m)).
3. Compound Curves. A series of two or more simple curves with deflections in the same direction immediately adjacent to each other.
4. Deflection Angle (Δ). The external angle between the two projected tangents (beyond the point of intersection) of a simple curve.
5. Low-Speed Urban Streets. All streets within urbanized or small urban areas with a design speed of 45 mph (70 km/h) or less.
6. Maximum Superelevation (e_{max}). The upper limit for the superelevation rate used in the design of horizontal curves. Its selection depends on several factors including climatic conditions, terrain conditions, type of area (e.g., rural or urban), pavement type, and functional classification.
7. Normal Crown (NC). The cross slope on a tangent section of roadway (i.e., no superelevation).
8. Open Roadway Conditions. Rural facilities for all design speeds and urban facilities with a design speed ≥ 50 mph (80 km/h).
9. Relative Longitudinal Gradient. For superelevation transition sections on two-lane facilities, the difference in grade between the centerline profile grade and the grade of the edge of traveled way.
10. Remove Adverse Cross Slope. The outside lane has been rotated from normal crown (NC) to a point prior to Remove Adverse Crown (RC). This is shown in Figure 29-3E transitioning from Section A to Section C.
11. Remove Adverse Crown (RC). A superelevated roadway section that is sloped across the entire traveled way in the same direction and at a rate equal to the cross slope on

- the tangent section (typically, 1.5% or 2.0%). This is shown in Figure 29-3E for Section C.
12. Reverse Curves. Two simple curves with deflections in opposite directions that are joined by a relatively short tangent distance or which have no intervening tangent (i.e., the Point of Tangent (PT) and Point of Curve (PC) are coincident).
 13. Simple Curves. Continuous arcs of constant radius that achieve the necessary roadway deflection without an entering or exiting transition.
 14. Superelevation (e). The amount of cross slope or “bank” provided on a horizontal curve to counterbalance, in combination with the side friction, the centrifugal force of a vehicle traversing the curve.
 15. Superelevation Rollover. The algebraic difference (A) between the superelevated travel lane slope and shoulder slope on the high side of a horizontal curve.
 16. Superelevation Transition Length. The distance transitioning the roadway from a normal crown section to the design superelevation rate. Superelevation transition length is the sum of the tangent runout (TR) and superelevation runoff (L) distances:
 - Tangent Runout (TR). Tangent runout is the distance needed to change from a normal crown section to a point where the adverse cross slope of the outside lane is removed (i.e., the outside lane is level).
 - Superelevation Runoff (L). Superelevation runoff is the distance needed to change the cross slope from the end of the tangent runout (adverse cross slope removed) to a section that is sloped at the design superelevation rate (e).
 17. Traveled Way. The portion of the roadway used for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

29-2 HORIZONTAL CURVES

Horizontal curves are circular arcs that provide transitions between two tangents. The radius (R) defines the circular arc that a curve will transcribe. These changes in deflection are necessary in virtually all roadway alignments to avoid impacts on a variety of field conditions (e.g., right-of-way, natural features, and man-made features).

29-2.01 Types of Horizontal Curves

Section 29-2.01 discusses the types of horizontal curves that may be used to achieve the necessary roadway deflection.

29-2.01(a) Simple Curves

Because of their simplicity and ease of design, survey, and construction, it is strongly recommended to use simple curves on local facilities.

29-2.01(b) Compound Curves

The use of compound curves on roadway mainline is recommended only in special circumstances to meet field conditions (e.g., to avoid obstructions that cannot be relocated) where a simple curve cannot meet this need. When a compound curve is used on mainline, the radius of the flatter circular arc (R_1) should not be more than 50% greater than the radius of the sharper circular arc (R_2), therefore; $R_1 \leq 1.5 R_2$.

[Chapter 34](#) discusses the use of compound curves for intersections at-grade (e.g., for curb radii).

29-2.01(c) Reverse Curves

Where reverse curves are used, a distance adequate to provide the superelevation transition should be provided between the PT and PC of the two curves. Superelevation development for reverse curves requires special attention. This is discussed in Section 29-3.

29-2.01(d) Broken-Back Curves

Broken-back curves should be avoided on the roadway mainline because of the potential for confusing a driver, problems with superelevation development, and the unpleasant view of the roadway that is created. Instead, it is recommended that a single, flat simple curve be used. In rural and suburban areas, a minimum tangent length of 500 ft (150 m) should be provided between two horizontal curves with deflections in the same direction.

29-2.02 Basic Curve Equation

The point-mass formula is used to define vehicular operation around a curve. Where the curve is expressed using its radius, the basic equation for a simple curve is:

$$R = \frac{V^2}{15(e + f)} \quad \text{(US Customary) Equation 29-2.1}$$

$$R = \frac{V^2}{127(e + f)} \quad \text{(Metric) Equation 29-2.1}$$

where:

- R = radius of curve, ft (m)
- V = design speed, mph (km/h)
- e = superelevation rate, decimal
- f = side friction factor (constant based on design speed)

29-2.03 Minimum Radii

Figures 29-2A ($e_{\max} = 8.0\%$), 29-2B ($e_{\max} = 6.0\%$), and 29-2C ($e_{\max} = 4.0\%$) present the minimum radii for open-roadway conditions. See Section 29-3.01 for the selection of e_{\max} . In most cases, the designer should avoid the use of minimum radii because this results in the use of maximum superelevation rates. These rates should be avoided because the facility must often accommodate vehicles traveling over a wide range of speeds. This is particularly true in Illinois where the entire State is subject to ice and snow. Where vehicular speeds are slow or stopped and the rate of superelevation is high, vehicles could slide down the cross slope when the pavement is icy.

29-2.04 Side Friction Factor

The side friction factor (f) represents the contribution of the roadway/tire interface to counterbalance the centrifugal force of a vehicle traversing the curve. This factor varies according to design speed and open-roadway or low-speed urban street conditions. It is important to recognize that the side friction factor represents a threshold of driver discomfort and not the point of impending skid. Figure 29-2D presents the side friction factors used in Equation 29-2.1 for open-roadway conditions.

29-2.05 Maximum Deflection Without Curve

It may be appropriate to omit a horizontal curve where very small deflection angles are present. As a guide, the designer may retain deflection angles of approximately 1° or less (urban) and $0^\circ 15'$ (rural) on local agency facilities without providing a horizontal curve. For these angles, the absence of a horizontal curve should not affect operations or aesthetics.

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US Customary		Metric	
Design Speed (mph)	Minimum Radii R_{min} (ft) *	Design Speed (km/h)	Minimum Radii R_{min} (m) *
20	76	30	20
25	134	40	41
30	214	50	73
35	314	60	113
40	444	70	168
45	587	80	229
50	758	90	304
55	960	100	394
60	1200		

MINIMUM RADII
($e_{max} = 8.0\%$, Open-Roadway Conditions)

Figure 29-2A

US Customary		Metric	
Design Speed (mph)	Minimum Radii R_{min} (ft) *	Design Speed (km/h)	Minimum Radii R_{min} (m) *
20	81	30	21
25	144	40	43
30	231	50	79
35	340	60	123
40	485	70	184
45	643	80	252
50	833	90	336
55	1060	100	437
60	1330		

MINIMUM RADII
($e_{max} = 6.0\%$, Open-Roadway Conditions)

Figure 29-2B

US Customary		Metric	
Design Speed (mph)	Minimum Radii R_{min} (ft) *	Design Speed (km/h)	Minimum Radii R_{min} (m) *
20	86	30	22
25	154	40	47
30	250	50	86
35	371	60	135
40	533	70	203
45	711	80	280
50	926	90	---
55	---	100	---
60	---		

MINIMUM RADII
($e_{max} = 4.0\%$, Open-Roadway Conditions)

Figure 29-2C

US Customary		Metric	
Design Speed (mph)	Side Friction Factor (f)	Design Speed (km/h)	Side Friction Factor (f)
20	0.27	30	0.28
25	0.23	40	0.23
30	0.20	50	0.19
35	0.18	60	0.17
40	0.16	70	0.15
45	0.15	80	0.14
50	0.14	90	0.13
55	0.13	100	0.12
60	0.12		

Note: The SFF values are based on a paved roadway surface.

SIDE FRICTION FACTORS
(Open-Roadway Conditions)

Figure 29-2D

29-2.06 Minimum Length of Curve

The radius is used to calculate the length of curve by using the following equation:

$$L = \frac{2\pi R\Delta}{360} \qquad \text{Equation 29-2.2}$$

where:

- L = length of curve, ft (m)
- Δ = deflection angle, degrees
- R = radius of curve, ft (m)

A longer than calculated length of curve may be necessary depending on the design speed. Figure 29-2E provides design values for the minimum length of curve based on design speed.

For small deflection angles, horizontal curves should be sufficiently long to avoid the appearance of a kink. With a deflection angle of 5°, the minimum length of curve should be 350 ft (120 m) for a design speed of 55 mph (100 km/h). Where the deflection angle is 5° or less, the minimum length of curve in Figure 29-2E should be adjusted by the factor in Figure 29-2F.

US Customary			Metric		
Design Speed V (mph)	Minimum Length of Curve, L (ft)	Curve Radius, R* (ft)	Design Speed, V (km/h)	Minimum Length of Curve, L (m)	Curve Radius, R* (m)
20	100	1145	30	30	344
25	100	1145	40	30	344
30	100	1145	50	30	344
35	150	1720	60	50	573
40	200	2290	70	70	802
45	250	2865	80	90	1031
50	300	3440	90	110	1260
55	350	4010	100	130	1490
60	400	4585			

* R = 360L / 2πΔ

MINIMUM LENGTHS OF CURVE
(Δ = 5°)

Figure 29-2E

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Central Deflection Angle * (Δ)	Adjustment Factor Applied to Figure 29-2E
5°	1.00
4°	0.80
3°	0.60
2°	0.40
1°	0.20

** For intermediate central deflection angles, use a straight-line interpolation.*

ADJUSTMENTS FOR MINIMUM LENGTHS OF CURVE ($\Delta < 5^\circ$)

Figure 29-2F

29-2.07 **Maximum Length of Curve**

To improve driver tolerance by reducing steering time in a circular path, the maximum curve length for high-speed, two-lane highways should not exceed 1 mile (1.6 km). On low-speed, two-lane highways, the maximum curve length should be limited to approximately ¼ mile (0.5 km). Lengths in excess of these values should be avoided.

29-3 SUPERELEVATION DEVELOPMENT (OPEN-ROADWAY CONDITIONS)

This Section presents criteria for superelevation development, which apply to all rural facilities and to urban facilities where $V \geq 50$ mph (80 km/h). See Section 29-4 for low-speed urban streets.

29-3.01 Superelevation Rates

29-3.01(a) Maximum Superelevation Rate

The selection of a maximum allowable rate of superelevation (e_{max}) depends upon several factors. These include urban/suburban/rural location (see [Section 27-4](#)), type of existing or expected roadside development, type of pavement surface, and prevalent climatic conditions within Illinois. For open-roadway conditions, the following typical e_{max} values apply:

1. Rural. Use $e_{max} = 8.0\%$ for all rural facilities, except for facilities with aggregate surfaces.
2. Urban/Suburban. Where $V \geq 50$ mph (80 km/h), use $e_{max} = 6.0\%$ for urban/suburban facilities.
3. Aggregate Surface. For rural facilities with an aggregate surface, use $e_{max} = 4.0\%$.
4. Seal Coat Surface. For all facilities with a seal coat surface, when newly placed by construction or maintenance may exhibit traits of an aggregate surface for a short time period. However, the e_{max} value should be based on the seal coat having characteristics similar to a hard surface roadway.

For Items 1 and 2, the designer may use a lower e_{max} .

29-3.01(b) Superelevation Tables

Based on the selection of e_{max} , Figures 29-3B, 29-3C, and 29-3D allow the designer to select the appropriate superelevation rate (e) for any combination of curve radius (R) and design speed (V). Note that the superelevation rates in the figures are expressed as a percent. The values in the figures should be calculated based on the curve radius and/or the superelevation rate to be used.

29-3.01(c) Use of Normal Crown and Remove Adverse Crown

A horizontal curve with a sufficiently large radius does not require superelevation, and the normal crown section (NC) used on tangent can be maintained throughout the curve. On sharper curves for the same design speed, a point is reached where a superelevation rate of 1.5% to 2.0% across the total traveled way is appropriate. This is called "remove adverse crown" (RC). Figures 29-3B, 29-3C, and 29-3D indicate the radii ranges where NC and RC apply.

29-3.02 **Transition Lengths**

As defined in Section 29-1, the superelevation transition length is the distance required to transition the roadway from a normal crown section to the full design superelevation rate. The superelevation transition length is the sum of the tangent runout distance (TR) and superelevation runoff length (L_1).

29-3.02(a) **Two-Lane Roadways**

1. Superelevation Runoff. The e_{max} tables (Figures 29-3B, 29-3C, and 29-3D) present the superelevation runoff lengths (L_1) for two-lane roadways for various combinations of curve radii and design speed. These lengths are calculated as follows:

$$L_1 = (e)(W)(RS) \qquad \text{Equation 29-3.1}$$

where:

- L_1 = superelevation runoff length for a two-lane roadway (assuming the axis of rotation is about the roadway centerline), ft (m)
- e = design superelevation rate (ft/ft (m/m)), decimal
- W = width of rotation for one lane (assumed to be 11 ft (3.3 m))
- RS = reciprocal of relative longitudinal gradient between the profile grade and outside edge of two-lane roadway; see Figure 29-3A

2. Tangent Runout. The tangent runout (TR) distance should be calculated using the tangent cross slope and the maximum relative longitudinal gradient based on the selected design speed; as shown in Figure 29-3A. TR is calculated as follows:

$$TR = (NC)(W)(RS) \qquad \text{Equation 29-3.2}$$

where:

- TR = tangent runout length for a two-lane roadway, (assuming the axis of rotation is about the roadway centerline), ft (m)
- NC = normal crown slope (assumed to be 0.015 ft/ft (m/m)), decimal
- W = width of rotation for one lane (assumed to be 11 ft (3.3 m))
- RS = reciprocal of relative longitudinal gradient between the profile grade and outside edge of two-lane roadway; see Figure 29-3A

3. Superelevation Transition Length. The total of the tangent runout (TR) distance and superelevation runoff length (L_1) equals the minimum superelevation transition length used for a two-lane roadway at an isolated horizontal curve.

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US Customary			Metric		
Design Speed (mph)	Maximum Relative (G) Gradient (%)	Reciprocal (RS)	Design Speed (km/h)	Maximum Relative (G) Gradient (%)	Reciprocal (RS)
20	0.74	135	30	0.75	133
25	0.70	143	40	0.70	143
30	0.66	152	50	0.65	150
35	0.62	161	60	0.60	167
40	0.58	172	70	0.55	182
45	0.54	185	80	0.50	200
50	0.50	200	90	0.47	213
55	0.47	213	100	0.44	227
60	0.45	222			

MAXIMUM RELATIVE LONGITUDINAL GRADIENTS

Figure 29-3A

29-3.02(b) Multilane Roadways

For superelevation transition lengths for multilane roadways, see [Section 32-3](#) of the *BDE Manual*.

29-3.02(c) Application of Transition Length

Once the superelevation runoff and tangent runout have been calculated, the designer must determine how to fit the length into the horizontal and vertical planes. The following will apply:

1. **Tangent/Curve.** To simplify procedures, the total superelevation transition length should be distributed to be 75% on tangent and 25% on the curve. However, exceptions to this practice may be necessary to meet field conditions. The generally accepted range is 50% to 80% on tangent and 20% to 50% on curve. In extreme cases (e.g., to avoid placing any superelevation transition on a bridge or approach slab), the superelevation runoff may be distributed up to 100% on the tangent. This will usually occur only in urban or suburban areas with highly restricted right-of-way conditions. The ratio should be rounded up or down as needed to simplify design and layout in construction.
2. **Typical Figure.** Figure 29-3E presents one method for superelevation development on a two-lane highway. Other methods may also be acceptable.

29-3.03 **Axis of Rotation**

29-3.03(a) **Two-Lane Roadways**

The axis of rotation will typically be about the centerline of the roadway on two-lane, two-way roadways. This method will yield the least amount of elevation differential between the pavement edges and their normal profiles. Occasionally, it may be necessary to rotate about the inside or outside edge of the traveled way. This may be necessary to meet field conditions (e.g., drainage, roadside development).

29-3.03(b) **Multilane Roadways**

For axis of rotation on a multilane roadway, see [Section 32-3](#) of the *BDE Manual*.

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e	V = 20 mph R (ft)	Trans. Length		V = 25 mph R (ft)	Trans. Length		V = 30 mph R (ft)	Trans. Length	
		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)
NC	≥ 1640	0	0	≥ 2370	0	0	≥ 3240	0	0
RC	1190	22	22	1720	24	24	2370	25	25
2.5%	915	37	22	1360	39	24	1845	42	25
3.0%	730	45	22	1070	47	24	1480	50	25
3.5%	596	52	22	878	55	24	1225	59	25
4.0%	490	59	22	729	63	24	1030	67	25
4.5%	401	67	22	608	71	24	864	75	25
5.0%	314	74	22	499	79	24	727	84	25
5.5%	247	82	22	404	87	24	605	92	25
6.0%	199	89	22	332	94	24	506	100	25
6.5%	163	97	22	277	102	24	428	109	25
7.0%	135	104	22	231	110	24	360	117	25
7.5%	110	111	22	190	118	24	300	125	25
8.0%	76	119	22	134	126	24	214	134	25
	R _{min} = 76 ft			R _{min} = 134 ft			R _{min} = 214 ft		

e	V = 35 mph R (ft)	Trans. Length		V = 40 mph R (ft)	Trans. Length		V = 45 mph R (ft)	Trans. Length	
		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)
NC	≥ 4260	0	0	≥ 5410	0	0	≥ 6710	0	0
RC	3120	27	27	3970	28	28	4930	31	31
2.5%	2430	44	27	3100	47	28	3860	51	31
3.0%	1960	53	27	2510	57	28	3130	61	31
3.5%	1630	62	27	2095	66	28	2610	71	31
4.0%	1370	71	27	1770	76	28	2220	81	31
4.5%	1165	80	27	1515	85	28	1905	92	31
5.0%	991	89	27	1310	95	28	1650	102	31
5.5%	842	97	27	1125	104	28	1435	112	31
6.0%	713	106	27	965	114	28	1250	122	31
6.5%	605	115	27	833	123	28	1080	132	31
7.0%	518	124	27	716	132	28	933	142	31
7.5%	434	133	27	604	142	28	794	153	31
8.0%	314	142	27	444	151	28	587	163	31
	R _{min} = 314 ft			R _{min} = 444 ft			R _{min} = 587 ft		

e	V = 50 mph R (ft)	Trans. Length		V = 55 mph R (ft)	Trans. Length		V = 60 mph R (ft)	Trans. Length	
		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)
NC	≥ 8150	0	0	≥ 9720	0	0	≥ 11,500	0	0
RC	5990	33	33	7150	35	35	8440	37	37
2.5%	4700	55	33	5620	59	35	6640	61	37
3.0%	3820	66	33	4580	70	35	5420	73	37
3.5%	3195	77	33	3840	82	35	4550	85	37
4.0%	2720	88	33	3270	94	35	3890	98	37
4.5%	2345	99	33	2830	105	35	3380	110	37
5.0%	2040	110	33	2470	117	35	2960	122	37
5.5%	1785	121	33	2175	129	35	2615	134	37
6.0%	1560	132	33	1920	141	35	2320	147	37
6.5%	1365	143	33	1690	152	35	2060	159	37
7.0%	1190	154	33	1480	164	35	1820	171	37
7.5%	1020	165	33	1275	176	35	1580	183	37
8.0%	758	176	33	960	187	35	1200	195	37
	R _{min} = 758 ft			R _{min} = 960 ft			R _{min} = 1200 ft		

SUPERELEVATION RATES/TRANSITION LENGTHS (US Customary) (e_{max} = 8.0%)

Figure 29-3B

(See Figures 29-3C or 29-3D for Key and Note)

BUREAU OF LOCAL ROADS & STREETS
HORIZONTAL ALIGNMENT

29-3-6

August 2016

e	V = 30 km/h R (m)	Trans. Length		V = 40 km/h R (m)	Trans. Length		V = 50 km/h R (m)	Trans. Length	
		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)
NC	≥ 443	0	0	≥ 784	0	0	≥ 1090	0	0
RC	322	7	7	571	7	7	791	7	7
2.5%	249	11	7	442	12	7	616	12	7
3.0%	199	13	7	354	14	7	496	15	7
3.5%	163	15	7	291	17	7	410	17	7
4.0%	134	18	7	241	19	7	344	20	7
4.5%	111	20	7	200	21	7	291	22	7
5.0%	87	22	7	163	24	7	246	25	7
5.5%	68	24	7	131	26	7	206	27	7
6.0%	55	26	7	106	28	7	172	30	7
6.5%	45	29	7	88	31	7	146	32	7
7.0%	37	31	7	73	33	7	123	35	7
7.5%	30	33	7	60	35	7	103	37	7
8.0%	20	35	7	41	38	7	73	40	7
	R _{min} = 20 m			R _{min} = 41 m			R _{min} = 73 m		

e	V = 60 km/h R (m)	Trans. Length		V = 70 km/h R (m)	Trans. Length		V = 80 km/h R (m)	Trans. Length	
		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)
NC	≥ 1490	0	0	≥ 1970	0	0	≥ 2440	0	0
RC	1090	8	8	1450	9	9	1790	10	10
2.5%	846	14	8	1135	15	9	1410	17	10
3.0%	684	17	8	916	18	9	1150	20	10
3.5%	568	19	8	766	21	9	956	23	10
4.0%	479	22	8	648	24	9	813	26	10
4.5%	408	25	8	557	27	9	702	30	10
5.0%	349	28	8	480	30	9	611	33	10
5.5%	298	30	8	417	33	9	535	36	10
6.0%	253	33	8	360	36	9	469	40	10
6.5%	217	36	8	313	39	9	411	43	10
7.0%	185	39	8	270	42	9	358	46	10
7.5%	156	41	8	229	45	9	307	50	10
8.0%	113	44	8	168	48	9	229	53	10
	R _{min} = 113 m			R _{min} = 168 m			R _{min} = 229 m		

e	V = 90 km/h R (m)	Trans. Length		V = 100 km/h R (m)	Trans. Length	
		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)
NC	≥ 2970	0	0	≥ 3630	0	0
RC	2190	11	11	2680	11	11
2.5%	1725	18	11	2110	19	11
3.0%	1410	21	11	1730	22	11
3.5%	1180	25	11	1455	26	11
4.0%	1010	28	11	1240	30	11
4.5%	871	32	11	1080	34	11
5.0%	762	35	11	947	37	11
5.5%	673	39	11	839	41	11
6.0%	595	42	11	746	45	11
6.5%	527	46	11	666	49	11
7.0%	464	49	11	591	52	11
7.5%	402	53	11	515	56	11
8.0%	304	56	11	394	60	11
	R _{min} = 304 m			R _{min} = 394 m		

SUPERELEVATION RATES/TRANSITION LENGTHS (Metric) (e_{max} = 8.0%)

Figure 29-3B

(See Figures 29-3C or 29-3D for Key and Note)

BUREAU OF LOCAL ROADS & STREETS

August 2016

HORIZONTAL ALIGNMENT

29-3-7

e	V = 20 mph			V = 25 mph			V = 30 mph		
	R (ft)	Trans. Length		R (ft)	Trans. Length		R (ft)	Trans. Length	
		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)
NC	≥ 1580	0	0	≥ 2290	0	0	≥ 3130	0	0
RC	1120	22	22	1630	24	24	2240	25	25
2.5%	838	37	22	1235	39	24	1700	42	25
3.0%	635	45	22	944	47	24	1320	50	25
3.5%	460	52	22	717	55	24	1026	59	25
4.0%	309	59	22	511	63	24	766	67	25
4.5%	225	67	22	381	71	24	585	75	25
5.0%	169	74	22	292	79	24	456	84	25
5.5%	129	82	22	225	87	24	354	92	25
6.0%	81	89	22	144	94	24	231	100	25
R _{min} = 81 ft			R _{min} = 144 ft			R _{min} = 231 ft			

e	V = 35 mph			V = 40 mph			V = 45 mph		
	R (ft)	Trans. Length		R (ft)	Trans. Length		R (ft)	Trans. Length	
		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)
NC	≥ 4100	0	0	≥ 5230	0	0	≥ 6480	0	0
RC	2950	27	27	3770	28	28	4680	31	31
2.5%	2245	44	27	2885	47	28	3595	51	31
3.0%	1760	53	27	2270	57	28	2840	61	31
3.5%	1390	62	27	1820	66	28	2290	71	31
4.0%	1070	71	27	1440	76	28	1840	81	31
4.5%	828	80	27	1140	85	28	1475	92	31
5.0%	654	89	27	911	95	28	1190	102	31
5.5%	514	97	27	723	104	28	949	112	31
6.0%	340	106	27	485	114	28	643	122	31
R _{min} = 340 ft			R _{min} = 485 ft			R _{min} = 643 ft			

e	V = 50 mph			V = 55 mph			V = 60 mph		
	R (ft)	Trans. Length		R (ft)	Trans. Length		R (ft)	Trans. Length	
		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)
NC	≥ 7870	0	0	≥ 9410	0	0	≥ 11,100	0	0
RC	5700	33	33	6820	35	35	8060	37	37
2.5%	4385	55	33	5270	59	35	6245	61	37
3.0%	3480	66	33	4200	70	35	4990	73	37
3.5%	2825	77	33	3425	82	35	4095	85	37
4.0%	2300	88	33	2810	94	35	3390	98	37
4.5%	1860	99	33	2305	105	35	2815	110	37
5.0%	1510	110	33	1890	117	35	2330	122	37
5.5%	1220	121	33	1540	129	35	1910	134	37
6.0%	833	132	33	1060	141	35	1330	147	37
R _{min} = 8335 ft			R _{min} = 1060 ft			R _{min} = 1330 ft			

- Key:**
- V = Design speed, mph
 - R = Radius of curve, ft
 - e = Superelevation rate, %
 - L₁ = Minimum length of superelevation runoff, ft
(from adverse slope removed to full super)
 - TR = Tangent runout from NC to adverse slope removed, ft
 - NC = Normal crown = 1.5% typical
 - RC = Remove adverse crown; superelevate at typical cross slope (1.5% typical)

Note: The values are based on an 11 ft lane width and a NC of 1.5%

SUPERELEVATION RATES/TRANSITION LENGTHS (US Customary) (e_{max} = 6.0%)

Figure 29-3C

BUREAU OF LOCAL ROADS & STREETS
HORIZONTAL ALIGNMENT

29-3-8

August 2016

e	V = 30 km/h			V = 40 km/h			V = 50 km/h		
	R (m)	Trans. Length		R (m)	Trans. Length		R (m)	Trans. Length	
		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)
NC	≥ 421	0	0	≥ 738	0	0	≥ 1050	0	0
RC	299	7	7	525	7	7	750	7	7
2.5%	224	11	7	394	12	7	570	12	7
3.0%	170	13	7	300	14	7	443	15	7
3.5%	123	15	7	223	17	7	347	17	7
4.0%	82	18	7	155	19	7	261	20	7
4.5%	60	20	7	115	21	7	200	22	7
5.0%	45	22	7	88	24	7	156	25	7
5.5%	34	24	7	67	26	7	122	27	7
6.0%	21	26	7	43	28	7	79	30	7
R _{min} = 21 m			R _{min} = 43 m			R _{min} = 79 m			

e	V = 60 km/h			V = 70 km/h			V = 80 km/h		
	R (m)	Trans. Length		R (m)	Trans. Length		R (m)	Trans. Length	
		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)
NC	≥ 1440	0	0	≥ 1910	0	0	≥ 2360	0	0
RC	1030	8	8	1380	9	9	1710	10	10
2.5%	786	14	8	1055	15	9	1320	17	10
3.0%	615	17	8	831	18	9	1050	20	10
3.5%	488	19	8	669	21	9	848	23	10
4.0%	380	22	8	535	24	9	690	26	10
4.5%	297	25	8	427	27	9	561	30	10
5.0%	235	28	8	343	30	9	457	33	10
5.5%	186	30	8	274	33	9	369	36	10
6.0%	123	33	8	184	36	9	252	40	10
R _{min} = 123 m			R _{min} = 184 m			R _{min} = 252 m			

e	V = 90 km/h			V = 100 km/h		
	R (m)	Trans. Length		R (m)	Trans. Length	
		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)
NC	≥ 2880	0	0	≥ 3510	0	0
RC	2090	11	11	2560	11	11
2.5%	1620	18	11	1985	19	11
3.0%	1290	21	11	1590	22	11
3.5%	1060	25	11	1310	26	11
4.0%	870	28	11	1090	30	11
4.5%	719	32	11	906	34	11
5.0%	594	35	11	755	37	11
5.5%	485	39	11	621	41	11
6.0%	336	42	11	437	45	11
R _{min} = 336 m			R _{min} = 437 m			

- Key:**
- V = Design speed, km/h
 - R = Radius of curve, m
 - e = Superelevation rate, %
 - L₁ = Minimum length of superelevation runoff, m
(from adverse slope removed to full super)
 - TR = Tangent runout from NC to adverse slope removed, m
 - NC = Normal crown = 1.5% typical
 - RC = Remove adverse crown; superelevate at typical cross slope (1.5% typical)

Note: The values are based on a 3.3 m lane width and a NC of 1.5%

SUPERELEVATION RATES/TRANSITION LENGTHS (Metric) (e_{max} = 6.0%)

Figure 29-3C

BUREAU OF LOCAL ROADS & STREETS

August 2016

HORIZONTAL ALIGNMENT

29-3-9

e	V = 20 mph			V = 25 mph			V = 30 mph		
	R (ft)	Trans. Length		R (ft)	Trans. Length		R (ft)	Trans. Length	
		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)
NC	≥ 1410	0	0	≥ 2050	0	0	≥ 2830	0	0
RC	902	22	22	1340	24	24	1880	25	25
2.5%	451	37	22	744	39	24	1135	42	25
3.0%	251	45	22	433	47	24	681	50	25
3.5%	161	52	22	283	55	24	458	59	25
4.0%	86	59	22	154	63	24	250	67	25
	R _{min} = 86 ft			R _{min} = 154 ft			R _{min} = 300 ft		

e	V = 35 mph			V = 40 mph			V = 45 mph		
	R (ft)	Trans. Length		R (ft)	Trans. Length		R (ft)	Trans. Length	
		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)
NC	≥ 3730	0	0	≥ 4770	0	0	≥ 5930	0	0
RC	2490	27	27	3220	28	28	4040	31	31
2.5%	1590	44	27	2135	47	28	2735	51	31
3.0%	982	53	27	1370	57	28	1800	61	31
3.5%	662	62	27	938	66	28	1245	71	31
4.0%	371	71	27	533	76	28	711	81	31
	R _{min} = 371 ft			R _{min} = 533 ft			R _{min} = 711 ft		

e	V = 50 mph			V = 55 mph			V = 60 mph		
	R (ft)	Trans. Length		R (ft)	Trans. Length		R (ft)	Trans. Length	
		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)
NC	≥ 7220	0	0	≥ 8650	0	0	≥ 10,300	0	0
RC	4940	33	33	5950	35	35	7080	37	37
2.5%	3410	55	33	4185	59	35	5055	61	37
3.0%	2290	66	33	2860	70	35	3530	73	37
3.5%	1600	77	33	1925	82	35	2525	85	37
4.0%	926	88	33	1190	94	35	1500	98	37
	R _{min} = 926 ft			R _{min} = 1190 ft			R _{min} = 1500 ft		

- Key:**
- V = Design speed, mph
 - R = Radius of curve, ft
 - e = Superelevation rate, %
 - L₁ = Minimum length of superelevation runoff, ft
(from adverse slope removed to full super)
 - TR = Tangent runout from NC to adverse slope removed, ft
 - NC = Normal crown = 1.5% typical
 - RC = Remove adverse crown; superelevate at typical cross slope (1.5% typical)

Note: The values are based on an 11 ft lane width and a NC of 1.5%

SUPERELEVATION RATES/TRANSITION LENGTHS (US Customary) (e_{max} = 4.0%)

Figure 29-3D

BUREAU OF LOCAL ROADS & STREETS
HORIZONTAL ALIGNMENT

29-3-10

August 2016

e	V = 30 km/h R (m)	Trans. Length		V = 40 km/h R (m)	Trans. Length		V = 50 km/h R (m)	Trans. Length	
		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)
NC	≥ 371	0	0	≥ 679	0	0	≥ 951	0	0
RC	237	11	7	441	7	7	632	7	7
2.5%	116	11	7	241	12	7	390	12	7
3.0%	64	13	7	137	14	7	236	15	7
3.5%	42	15	7	89	17	7	157	17	7
4.0%	22	18	7	47	19	7	86	20	7
R _{min} = 22 m			R _{min} = 47 m			R _{min} = 86 m			

e	V = 60 km/h R (m)	Trans. Length		V = 70 km/h R (m)	Trans. Length		V = 80 km/h R (m)	Trans. Length	
		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)
NC	≥ 1310	0	0	≥ 1740	0	0	≥ 2170	0	0
RC	877	8	8	1180	9	9	1490	10	10
2.5%	567	14	8	793	15	9	1027	17	10
3.0%	356	17	8	516	18	9	690	20	10
3.5%	241	19	8	356	21	9	483	23	10
4.0%	135	22	8	203	24	9	280	26	10
R _{min} = 135 m			R _{min} = 214 m			R _{min} = 280 m			

e	V = 90 km/h R (m)	Trans. Length		V = 100 km/h R (m)	Trans. Length	
		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)
NC	≥ 2640	0	0	≥ 3250	0	0
RC	1830	11	11	2260	11	11
2.5%	1295	18	11	1620	19	11
3.0%	893	21	11	1150	22	11
3.5%	636	25	11	823	26	11
4.0%	375	28	11	492	30	11
R _{min} = 375 m			R _{min} = 492 m			

- Key:**
- V = Design speed, km/h
 - R = Radius of curve, m
 - e = Superelevation rate, %
 - L₁ = Minimum length of superelevation runoff, m
(from adverse slope removed to full super)
 - TR = Tangent runout from NC to adverse slope removed, m
 - NC = Normal crown = 1.5% typical
 - RC = Remove adverse crown; superelevate at typical cross slope (1.5% typical)

Note: The values are based on a 3.3 m lane width and a NC of 1.5%

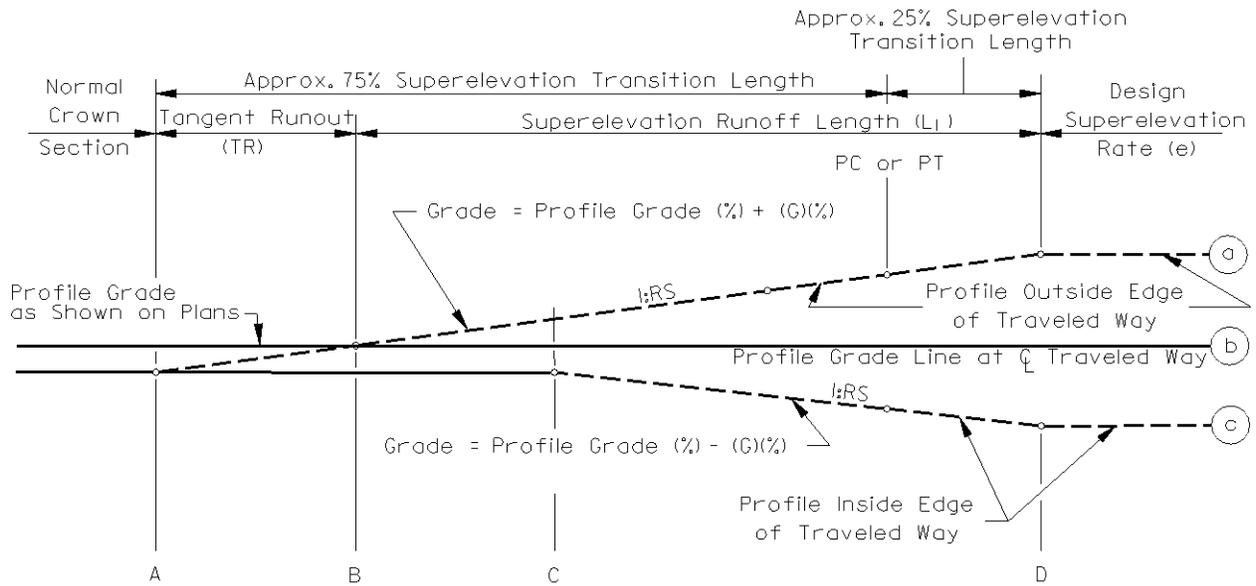
SUPERELEVATION RATES/TRANSITION LENGTHS (Metric) (e_{max} = 4.0%)

Figure 29-3D

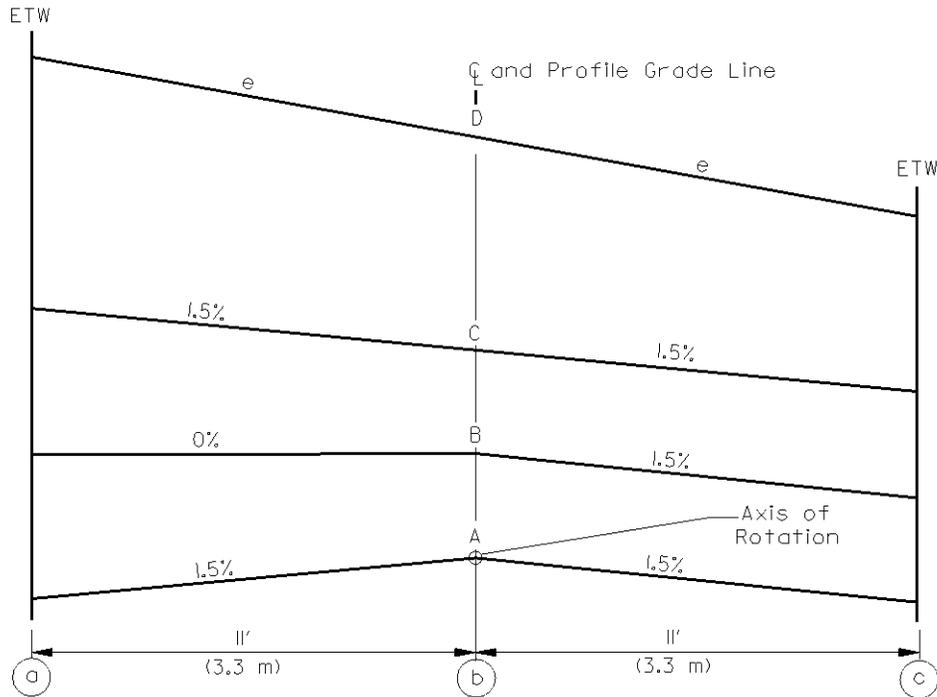
BUREAU OF LOCAL ROADS & STREETS
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29-3-11



Note: Round all edge breakpoints in field.



AXIS OF ROTATION ABOUT CENTERLINE
(Two-Lane Highway)

Figure 29-3E

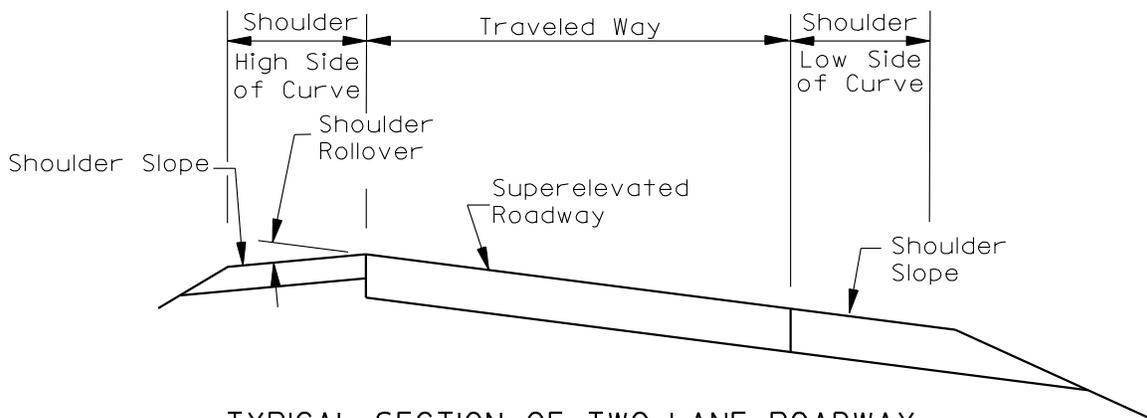
29-3.04 **Shoulder Superelevation**

Figure 29-3F illustrates the shoulder treatment on superelevated sections. The following discusses specific criteria.

29-3.04(a) **Shoulder (High Side of Curve)**

On the high side of superelevated sections, there will be a break in the cross slopes of the travel lane and shoulder. The following criteria will apply to the shoulder rollover:

1. **Rollover Factor**. The rollover factor is the algebraic difference between the traveled way and the shoulder cross slopes. The acceptable values depend on the design traffic volumes. See the Geometric Design Tables in [Section 32-2](#) for new/reconstruction projects and [Section 33-3](#) for 3R projects.
2. **Minimum Shoulder Slope**. On the high side of a curve, the shoulder slope may be designed for 0% so that maximum rollover is not exceeded. However, in this case, the longitudinal gradient at the edge of the traveled way should not be less than 0.5% for proper shoulder drainage.
3. **Direction of Slope**. The shoulder should slope away from the travel lane.



SHOULDER TREATMENT THROUGH SUPERELEVATED CURVE

Figure 29-3F

29-3.04(b) Shoulder (Low Side of Curve)

On the low side of a superelevated section, the typical practice is to retain the normal shoulder slope (4% typical) until the adjacent superelevated travel lane reaches that slope. The shoulder is then superelevated concurrently with the travel lane until the design superelevation rate is reached (i.e., the inside shoulder and travel lane will remain in the same plane section).

29-3.05 Reverse Curves

Because reverse curves are two closely spaced simple curves with deflections in opposite directions, it may not be practical to achieve a normal crown section between the curves. A plane section continuously rotating about its axis (e.g., the centerline) can be maintained between the two curves, if they are close enough together. The designer should adhere to the applicable superelevation development criteria for each curve. The following will apply to reverse curves:

1. Normal Crown Section. The designer should not attempt to achieve a normal crown between reverse curves unless the normal crown can be maintained for a minimum of two seconds of travel time, and the superelevation transition requirements can be met for both curves. These criteria yield the following minimum tangent distance (between PT of first curve and PC of second curve):

$$L_{\text{tan}} = 0.75(L_{1A} + TR_A) + 2(1.467V) + 0.75(L_{1B} + TR_B) \quad (\text{US Customary}) \quad \text{Equation 29-3.3}$$

$$L_{\text{tan}} = 0.75(L_{1A} + TR_A) + 2(0.278V) + 0.75(L_{1B} + TR_B) \quad (\text{Metric}) \quad \text{Equation 29-3.3}$$

where:

L_{tan} = tangent distance between PT and PC, ft (m)

L_{1A} = superelevation runoff length for first curve, ft (m)

TR_A = tangent runout length for first curve, ft (m)

V = design speed, mph (km/h)

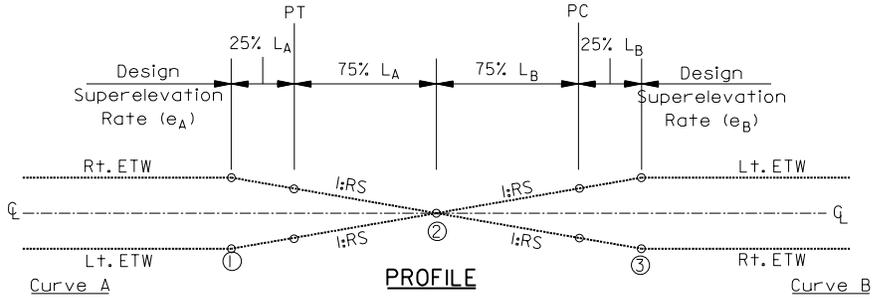
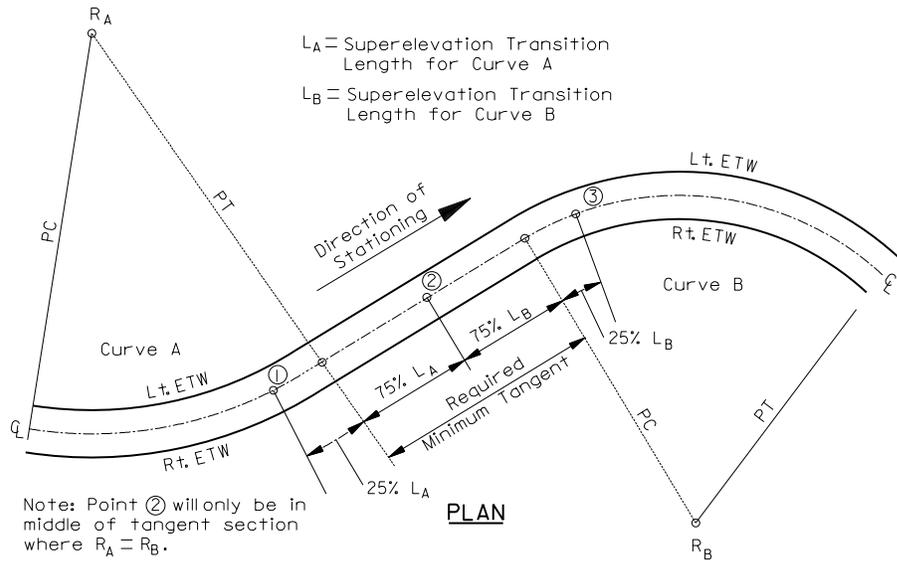
L_{1B} = superelevation runoff length for second curve, ft (m)

TR_B = tangent runout length for second curve, ft (m)

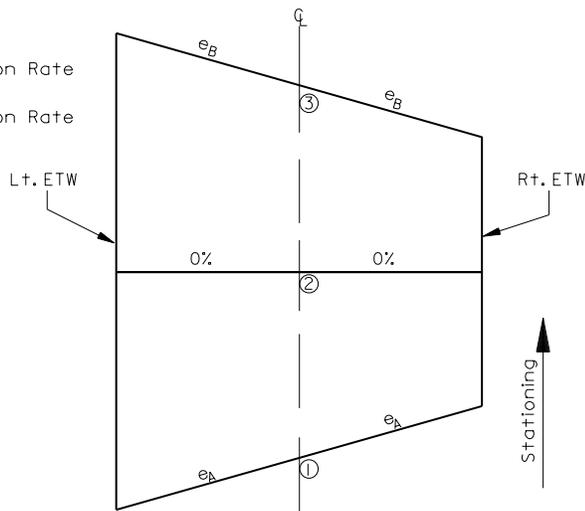
2. Continuously Rotating Plane. If a normal section is not provided, the pavement will be continuously rotated in a plane about its axis. In this case, the minimum distance between the PT and PC will be 75% of each superelevation transition requirement added together:

$$L_{\text{tan}} = 0.75(L_{1A}) + 0.75(L_{1B}) \quad \text{Equation 29-3.4}$$

Figure 29-3G illustrates superelevation development for reverse curves using a continuously rotating plane.



e_A = Design Superelevation Rate for Curve A
 e_B = Design Superelevation Rate for Curve B



CROSS SECTIONS

**SUPERELEVATION DEVELOPMENT FOR REVERSE CURVES
(Continuously Rotating Plane)**

Figure 29-3G

29-3.06 **Bridges**

Superelevation transitions should be avoided on bridges and their approaches. Where a curve is necessary on a bridge, the desirable treatment is to place the entire bridge and its approaches on a flat horizontal curve with minimum superelevation. In this case, a uniform superelevation rate is provided throughout (i.e., the superelevation transition is not on the bridge). In some cases, however, superelevation transitions are unavoidable due to right-of-way constraints, especially on urban bridges.

Where a bridge is located within a superelevated horizontal curve, the entire bridge roadway will be sloped in the same direction and at the same rate (i.e., the shoulder and travel lanes will be in a plane section). This also applies to the approach slab and approach slab shoulders before and after the back of the abutment. However, as discussed in Section 29-3.04, the high-side shoulder on a roadway section will slope away from the traveled way at a rate so that the maximum rollover is not exceeded. This will require the high-side shoulder on the roadway section to be transitioned to the high-side shoulder of either the approach slab or bridge.

Therefore, it is necessary to transition the longitudinal shoulder slope adjacent to the roadway travel lanes to meet the shoulder slope adjacent to the travel lanes on the bridge. This transition should be accomplished by using a maximum relative longitudinal gradient of 0.40% between the edge of traveled way and outside edge of shoulder.

29-3.07 **Compound Curves**

See [Section 32-3](#) of the *BDE Manual* for a discussion on superelevation development for compound curves on mainline.

29-4 HORIZONTAL ALIGNMENT (LOW-SPEED URBAN STREETS)

29-4.01 General Application

For low-speed urban and suburban streets, the application of horizontal alignment criteria will differ from that for open-roadway conditions. Section 29-4 discusses the application to these facilities where $V \leq 45$ mph (70 km/h).

29-4.02 General Superelevation Considerations

For low-speed urban streets, the operational conditions and physical constraints are significantly different than those on rural roadways and high-speed urban roadways. The following lists some of the characteristics of low-speed urban streets that often complicate superelevation development:

1. Roadside Development/Intersections/Driveways. Built-up roadside development is common adjacent to low-speed urban streets. Matching superelevated curves with many driveways, intersections, sidewalks, etc., creates considerable complications. For example, this may require reconstructing the profile on side streets, and re-grading parking lots, lawns, etc., to compensate for the higher elevation on the high side of the superelevated curve.
2. Non-Uniform Travel Speeds. On low-speed urban streets, travel speeds are often non-uniform because of frequent signalization, stop signs, vehicular conflicts, etc. It is undesirable for traffic to stop on a superelevated curve, especially when snow or ice is present.
3. Limited Right-of-Way. Superelevated curves often result in more right-of-way impacts than would otherwise be necessary. Right-of-way is often restricted along low-speed urban streets.
4. Wide Pavement Areas. Many low-speed urban streets have wide pavement areas because of the number of traffic lanes, the use of a flush-type median, or the presence of parking lanes. In general, the wider the pavement area, the more complicated is the development of superelevation.
5. Surface Drainage. Proper cross slope drainage on low-speed urban streets can be difficult even on sections with a normal crown. Curves with superelevation introduce another complicating factor in controlling drainage.

29-4.03 **Horizontal Curves**

29-4.03(a) **Design Procedures**

Because of the different operational conditions for low-speed urban streets, it is appropriate to use a modified theoretical basis for horizontal alignment criteria when compared to open-roadway conditions. The net effect is:

- smaller minimum radii,
- fewer superelevated curves, and
- shorter superelevation runoff distances.

The practical benefit is that most horizontal curves can be designed with little or no superelevation on low-speed urban streets when compared to the criteria for open-roadway conditions in Section 29-3.

29-4.03(b) **Maximum Superelevation Rate**

For new construction projects, e_{\max} is 4.0% for low-speed urban streets. For urban reconstruction projects, existing horizontal curves can remain in place with a superelevation rate up to 6.0%.

29-4.03(c) **Minimum Radii**

Figure 29-4A presents for various design speeds for low-speed urban streets the:

- minimum radii for a normal crown section,
- minimum radii for $e_{\max} = 4.0\%$, and
- minimum radii for $e_{\max} = 6.0\%$.

Note that an $e_{\max} = 6.0\%$ may only be used to retain an existing superelevated curve on a reconstruction project.

29-4.03(d) **Superelevation Rate**

For any given design speed, Figure 29-4B allows the designer to use either a normal crown through the curve, to remove crown through the curve (i.e., superelevate at the typical cross slope), or to provide a curve with superelevation steeper than the typical cross slope.

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US Customary					
Design Speed (mph)	Side Friction Factor (f)	R _{min} (ft) for Normal Crown (e = -1.5%)	R _{min} (ft) for Remove Crown (e = +1.5%)	R _{min} (ft) for e _{max} = 4.0%	R _{min} (ft) for e _{max} = 6.0%
20	0.27	105	94	86	81
25	0.23	194	170	154	144
30	0.20	324	279	250	231
35	0.18	495	419	371	340
40	0.16	736	610	533	485
45	0.15	1000	818	711	643
Metric					
Design Speed (km/h)	Side Friction Factor (f)	R _{min} (m) for Normal Crown (e = -1.5%)	R _{min} (m) for Remove Crown (e = +1.5%)	R _{min} (m) for e _{max} = 4.0%	R _{min} (m) for e _{max} = 6.0%
30	0.28	27	24	22	21
40	0.23	59	51	47	43
50	0.19	113	96	86	79
60	0.17	183	153	135	123
70	0.15	286	234	203	184

**MINIMUM RADII FOR LIMITING VALUES OF e
(Low-Speed Urban Streets)**

Figure 29-4A

Example 29-4.1

Given: Design speed = 25 mph
 Radius = 200 ft
 Cross slope (on tangent) = 1.5%

Problem: Determine if superelevation is needed.

Solution: From Figure 29-4B, the normal crown section can be maintained throughout the horizontal curve.

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HORIZONTAL ALIGNMENT

29-4-4

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e	V = 20 mph R (ft)	Trans. Length		V = 25 mph R (ft)	Trans. Length		V = 30 mph R (ft)	Trans. Length	
		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)
NC	≥ 105	0	0	≥ 194	0	0	≥ 324	0	0
RC	94	20	20	170	22	22	279	24	24
2.0%	92	27	20	167	29	22	273	32	24
2.5%	91	33	20	164	36	22	267	41	24
3.0%	89	41	20	160	44	22	261	49	24
3.5%	88	47	20	158	51	22	255	57	24
4.0%	86	54	20	154	59	22	250	65	24
4.5%	85	61	20	151	66	22	245	73	24
5.0%	83	67	20	149	73	22	240	81	24
5.5%	82	74	20	147	81	22	235	89	24
6.0%	81	80	20	144	88	22	231	97	24

e	V = 35 mph R (ft)	Trans. Length		V = 40 mph R (ft)	Trans. Length		V = 45 mph R (ft)	Trans. Length	
		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)		L ₁ (ft)	TR (ft)
NC	≥ 495	0	0	≥ 736	0	0	≥ 1000	0	0
RC	419	26	26	610	27	27	818	29	29
2.0%	408	34	26	593	36	27	794	39	29
2.5%	398	43	26	577	45	27	772	49	29
3.0%	389	51	26	561	54	27	750	59	29
3.5%	380	60	26	547	63	27	730	68	29
4.0%	371	69	26	533	72	27	711	78	29
4.5%	363	77	26	521	81	27	693	88	29
5.0%	355	86	26	508	90	27	675	98	29
5.5%	348	94	26	496	99	27	659	107	29
6.0%	340	103	26	485	108	27	643	117	29

Key: R = Radius of curve, ft
V = Design speed, mph
e = Superelevation rate, %
L₁ = Minimum length of superelevation runoff (from adverse slope removed to full super), ft
TR = Tangent runoff from NC to adverse slope removed, ft
NC = Normal crown = 1.5% typical
RC = Remove adverse crown; superelevate at typical cross slope (1.5% typical)

Notes:

1. For new construction projects, $e_{max} = 4.0\%$.
2. For reconstruction projects, $e_{max} = 6.0\%$
3. The values are based on a 13 ft lane width.

SUPERELEVATION RATES
(Low-Speed Urban Streets) (US Customary)

Figure 29-4B

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HORIZONTAL ALIGNMENT

29-4-5

e	V = 30 km/h R (m)	Trans. Length		V = 40 km/h R (m)	Trans. Length		V = 50 km/h R (m)	Trans. Length	
		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)
NC	≥ 27	0	0	≥ 59	0	0	≥ 113	0	0
RC	24	6	6	51	7	7	96	8	8
2.0%	24	8	6	50	9	7	94	10	8
2.5%	23	10	6	50	11	7	92	13	8
3.0%	23	12	6	48	13	7	89	15	8
3.5%	23	14	6	48	16	7	88	18	8
4.0%	22	16	6	47	18	7	86	20	8
4.5%	22	18	6	46	20	7	84	23	8
5.0%	21	20	6	45	22	7	82	25	8
5.5%	21	22	6	44	25	7	81	28	8
6.0%	21	24	6	43	27	7	79	30	8

e	V = 60 km/h R (m)	Trans. Length		V = 70 km/h R (m)	Trans. Length	
		L ₁ (m)	TR (m)		L ₁ (m)	TR (m)
NC	≥ 183	0	0	≥ 286	0	0
RC	153	8	8	234	9	9
2.0%	149	11	8	227	12	9
2.5%	146	14	8	221	15	9
3.0%	142	16	8	214	18	9
3.5%	139	19	8	209	21	9
4.0%	135	22	8	203	24	9
4.5%	132	24	8	198	27	9
5.0%	129	27	8	193	30	9
5.5%	126	30	8	188	33	9
6.0%	123	33	8	184	36	9

- Key:**
- R = Radius of curve, m
 - V = Design speed, km/h
 - e = Superelevation rate, %
 - L₁ = Minimum length of superelevation runoff (from adverse slope removed to full super), m
 - TR = Tangent runout from NC to adverse slope removed, m
 - NC = Normal crown = 1.5% typical
 - RC = Remove adverse crown; superelevate at typical cross slope (1.5% typical)

- Notes:**
1. For new construction projects, $e_{max} = 4.0\%$.
 2. For reconstruction projects, $e_{max} = 6.0\%$.
 3. The values are based on a 4.0 m lane width.

**SUPERELEVATION RATES
(Low-Speed Urban Streets) (Metric)**

Figure 29-4B

Example 29-4.2

Given: Design speed = 35 mph
Radius = 450 ft
Cross slope (on tangent) = 1.5%

Problem: Determine if superelevation is needed.

Solution: From Figure 29-4B, the curve radius falls in the RC range. Therefore, the roadway must be uniformly superelevated at the cross slope of the roadway on tangent (i.e., e = +1.5%).

Example 29-4.3

Given: Design speed = 40 mph
Radius = 500 ft
Cross slope (on tangent) = 1.5%

Problem: Determine if superelevation is needed.

Solution: From Figure 29-4B, the required superelevation rate is between +5.0% to +5.5%. Therefore, the entire traveled way should be transitioned and superelevated at this rate.

Using Equation 29-2.1 and given f = 0.16 from Figure 29-4A, the superelevation rate is calculated as +5.33%.

$$R = \frac{V^2}{15(e + f)} \quad \Rightarrow \quad 500 = \frac{40^2}{15(e + 0.16)} \quad \Rightarrow \quad e = 0.0533$$

29-4.04 Superelevation Development

29-4.04(a) Transition Length

The superelevation transition length is the distance required to transition the traveled way from a normal crown section to the full design superelevated section. The superelevation transition length is the sum of the tangent runout distance (TR) and superelevation runoff length (L₁). See Section 29-3.

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HORIZONTAL ALIGNMENT

29-4-7

Section 29-3 presents the methodology for calculating the superelevation runoff and tangent runout for open-roadway conditions. This methodology also applies to superelevation transition lengths on low-speed urban streets, except that Figure 29-4C presents revised relative longitudinal gradients.

Based on values from Figure 29-4C, Figure 29-4B presents superelevation runoff lengths (L_1) for a two-lane urban street, assuming the axis of rotation is about the roadway centerline; i.e., the width of rotation is one travel lane of 13 ft (4.0 m). The 13 ft travel lane is based on a typical two-lane two-way urban roadway width of 30 ft from face of curb to face of curb with 2 ft gutters. See Section 29-3 for determining the tangent runout distance. See [Section 32-3](#) of the *BDE Manual* for determining superelevation transition lengths on multilane facilities.

US Customary			Metric		
Design Speed (mph)	Maximum Relative Gradient (%)	Reciprocal (RS)	Design Speed (km/h)	Maximum Relative Gradient (%)	Reciprocal (RS)
20	0.97	103	30	0.98	102
25	0.90	112	40	0.90	112
30	0.81	124	50	0.80	125
35	0.76	132	60	0.74	136
40	0.72	139	70	0.68	148
45	0.67	150			

**RELATIVE LONGITUDINAL GRADIENTS
(Low-Speed Urban Streets)**

Figure 29-4C

Typically, 75% of the superelevation transition length will be placed on tangent and 25% on curve. Exceptions to this practice may be necessary to meet field conditions. Generally, the accepted range is 50% to 80% on tangent and 20% to 50% on curve.

29-4.04(b) Axis of Rotation

On low-speed urban streets, the axis of rotation for horizontal curves is as follows:

1. Two-Lane Facilities. The axis of rotation is typically about the centerline of the roadway.
2. Multilane Facilities (Median Width ≤ 15 ft (5.0 m)). The axis of rotation is typically about the centerline of roadway or median.
3. Multilane Facilities (Median Width > 15 ft (5.0 m)). The axis of rotation is typically about the two median edges.

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HORIZONTAL ALIGNMENT

29-4-8

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Low-speed urban streets may also present special problems because of the presence of two-way, left-turn lanes; turning lanes at intersections; intersections with major crossroads; drainage; etc. For these reasons, the axis of rotation may be determined on a case-by-case basis.

29-5 HORIZONTAL SIGHT DISTANCE

Horizontal curves must be designed with sufficient clearance on the inside of the curve to allow a driver to see a distance equal to the stopping sight distance (SSD) for the design speed; see [Chapter 28](#).

29-5.01 Sight Obstruction (Definition)

Sight obstructions on the inside of a horizontal curve are defined as obstacles of considerable length that interfere with the line of sight on a continuous basis. These include walls, cut slopes, wooded areas, and buildings. In general, point obstacles (e.g., traffic signs, utility poles) are not considered sight obstructions on the inside of horizontal curves. While high farm crops are not present on a continuous basis, the designer may also want to take this into consideration when designing for sight distance. The designer must examine each curve individually to determine whether it is necessary to remove an obstruction or adjust the horizontal alignment to obtain the required sight distance.

29-5.02 Application

For sight distance applications at horizontal curves, the height of eye is 3.5 ft (1080 mm) and the height of object is 2 ft (600 mm). Both the eye and object are assumed to be in the center of the inside travel lane. The line-of-sight intercept with the obstruction is at the midpoint of the sightline and 2.75 ft (840 mm) above the center of the inside lane.

29-5.03 Curve Length > Sight Distance

Where the length of curve (L) is greater than the sight distance (S) used for design, the needed clearance on the inside of the horizontal curve is calculated using the following equation:

$$M = R \left(1 - \cos \left(\frac{28.65S}{R} \right) \right) \quad \text{Equation 29-5.1}$$

where:

M = middle ordinate, or distance from the center of the inside travel lane to the obstruction, ft (m)

R = radius of curve, ft (m)

S = sight distance, ft (m)

At a minimum, SSD will be available throughout the horizontal curve. Figure 29-5A provides the horizontal clearance criteria (i.e., middle ordinate) for various combinations of sight distance (see [Figure 28-1A](#)) and curve radii. For those selections of S, that fall outside of the figures (i.e., $M > 40$ ft (12 m) and/or $R < 100$ ft (50 m)), the designer should use Equation 29-5.1 to calculate the needed clearance.

The M values from Figure 29-5A apply between the PC and PT. In addition, some transition is needed on the entering and exiting portions of the curve. The designer should typically use the following steps:

- Step 1: Locate the point that is on the outside edge of shoulder and a distance of S/2 before the PC.
- Step 2: Locate the point that is a distance M measured laterally from the center of the inside travel lane at the PC.
- Step 3: Connect the two points located in Steps 1 and 2. The area between this line and the roadway should be clear of all continuous obstructions.
- Step 4: A symmetrical application of Steps 1 through 3 should be used beyond the PT.

The example in Figure 29-5B illustrates the determination of clearance requirements for the entering and exiting portions of a curve.

29-5.04 Curve Length < Sight Distance

When the length of curve is less than the sight distance used in design, the M value from the basic equation will never be reached. As an approximation, the horizontal clearance for these curves should be determined as follows:

- Step 1: For the given R and S, calculate M assuming $L > S$.
- Step 2: The maximum M' value will be needed at a point of L/2 beyond the PC. M' is calculated from the following proportion:

$$\frac{M'}{M} = \frac{1.2L}{S} \quad \text{Equation 29-5.2}$$

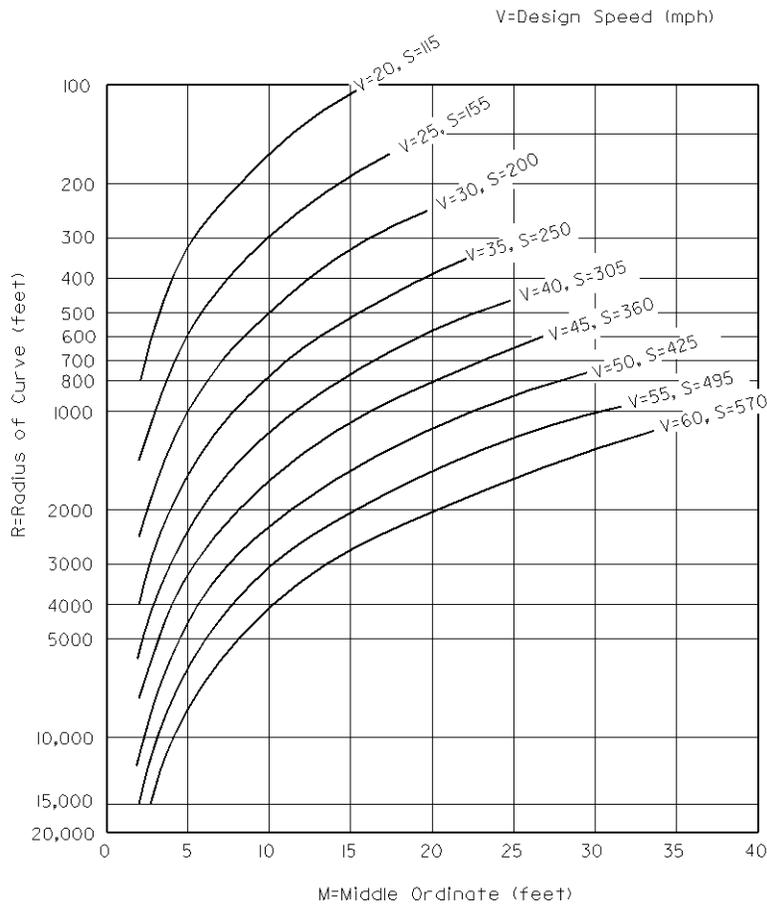
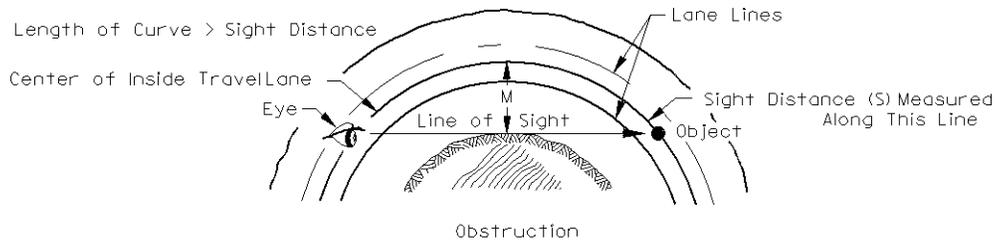
$$M' = \frac{1.2(L)(M)}{S}$$

where:

- M' = middle ordinate for a curve where $L < S$, ft (m)
- M = middle ordinate for the curve based on Equation 29-5.1, ft (m)
- L = length of the curve, ft (m)
- S = sight distance, ft (m)

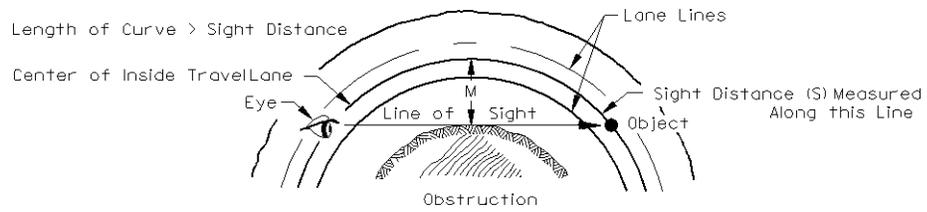
- Step 3: Locate the point that is on the outside edge of shoulder and a distance of S/2 before the PC.

- Step 4: Connect the two points located in Steps 2 and 3. The area between this line and the roadway should be clear of all continuous obstructions.
- Step 5: A symmetrical application of Steps 2 through 4 should be used on the exiting portion of curve.

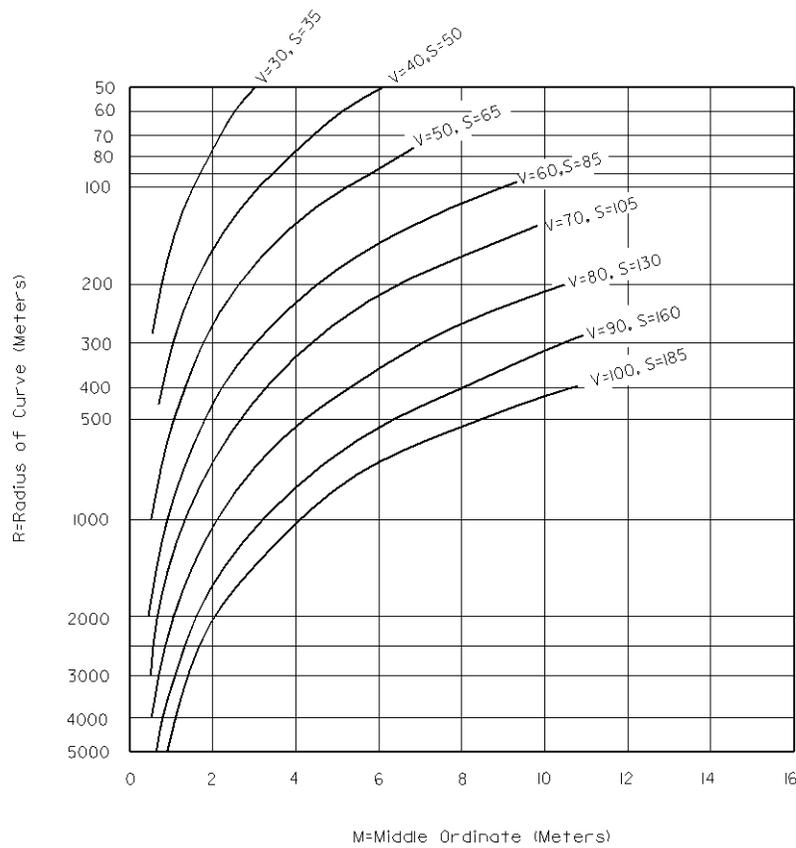


**SIGHT DISTANCE AT HORIZONTAL CURVES
(SSD) (US Customary)**

Figure 29-5A

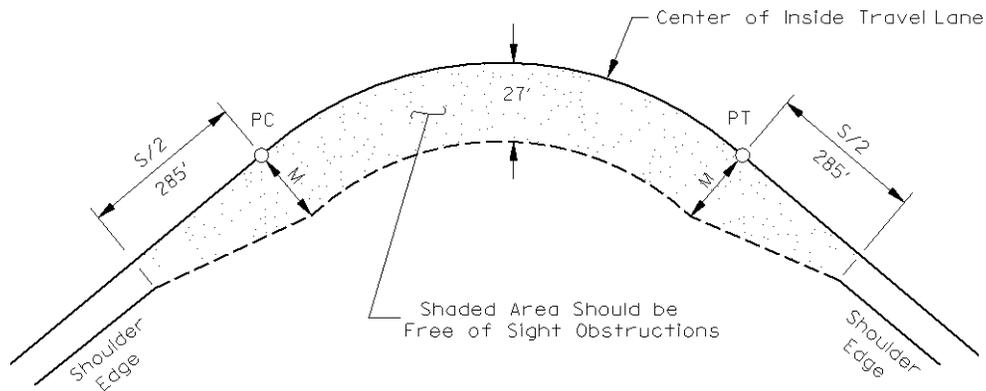


V=Design Speed (km/h)



**SIGHT DISTANCE AT HORIZONTAL CURVES
(SSD) (Metric)**

Figure 29-5A



**SIGHT CLEARANCE REQUIREMENTS FOR HORIZONTAL CURVES
(L > S)**

Figure 29-5B

Example 29-5.1

Given: Design Speed = 60 mph
R = 1500 ft

Problem: Determine the horizontal clearance requirements for a horizontal curve on a 2-lane highway that meets the SSD requirements.

Solution: [Figure 28-1A](#) yields a SSD = 570 ft Using Equation 29-5.1 for horizontal clearance (L > S):

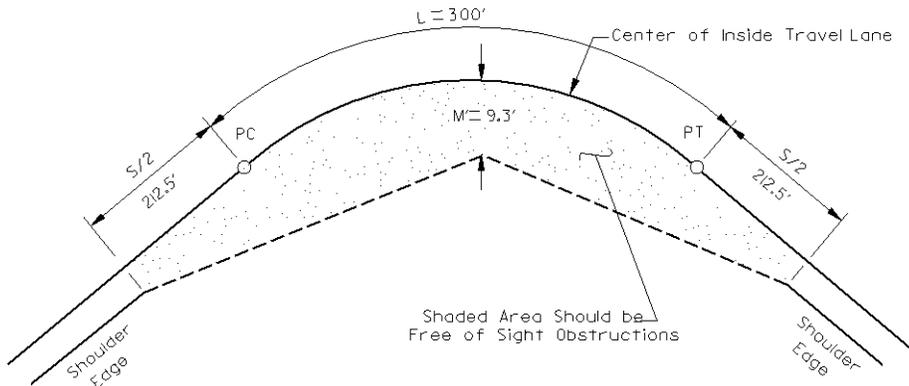
$$M = R \left(1 - \cos \left[\frac{28.65 S}{R} \right] \right)$$

$$M = 1500 \left(1 - \cos \left[\frac{(28.65)(570)}{1500} \right] \right) = 27 \text{ ft}$$

This answer is verified by Figure 29-5A.

Figure 29-5B above, also illustrates the horizontal clearance requirements for the entering and exiting portion of the horizontal curve.

The example on Figure 29-5C below, illustrates the determination of clearance requirements for the entering and exiting portions of a curve where L < S.



**SIGHT CLEARANCE REQUIREMENTS FOR HORIZONTAL CURVES
(L < S)**

Figure 29-5C

Example 29-5.2

Given: Design Speed = 50 mph
R = 2050 ft
L = 300 ft

Problem: Determine the clearance requirements for the horizontal curve on a 2-lane highway that meets the SSD requirements.

Solution: [Figure 28-1A](#) yields a SSD of 425 ft for 50 mph. Therefore, L < S (300 ft < 425 ft), and the horizontal clearance is calculated from Equation 29-5.2 as follows:

$$M(L > S) = 2050 \left[1 - \cos \frac{(28.65)(425)}{2050} \right] = 11.01 \text{ ft}$$

$$M'(L < S) = \frac{1.2(300)(11.01)}{425}$$

$$M' = 9.3 \text{ ft}$$

Therefore, a minimum clearance of 9.3 ft should be provided at a distance of L/2 = 150 ft beyond the PC. The obstruction-free triangle around the horizontal curve would be defined by M' (9.3 ft) at L/2 and by points at the shoulder edge at S/2 = 212.5 ft before the PC and beyond the PT.

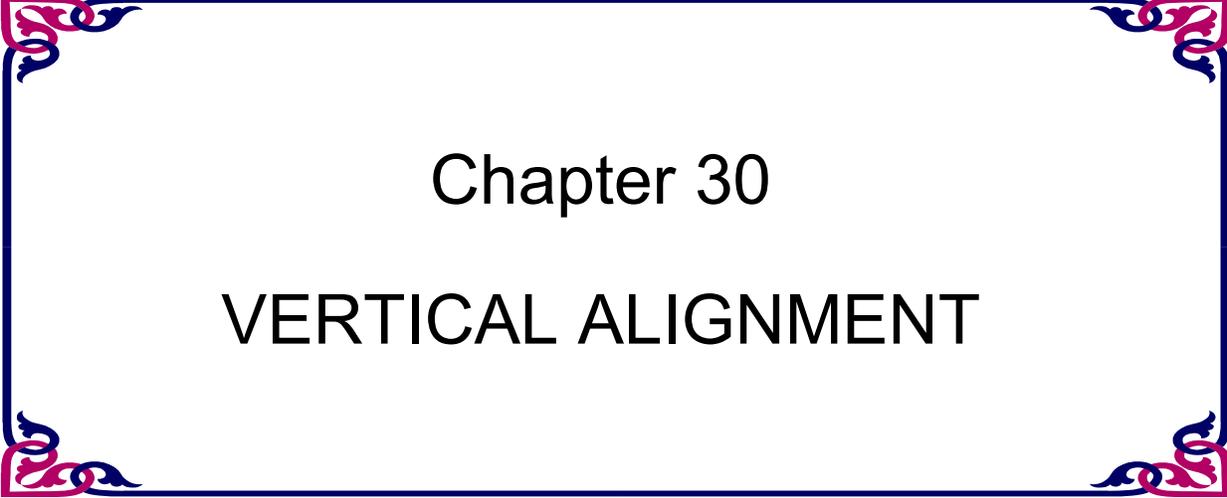
29-6 ACRONYMS

This is a summary of the acronyms used within this chapter.

3R	Rehabilitation, Restoration, and/or Resurfacing
AASHTO	American Association of State Highway and Transportation Officials
BDE	Bureau of Design and Environment
CBLRS	Central Bureau of Local Roads and Streets
IDOT	Illinois Department of Transportation
NC	Normal Crown
PC	Point of Curve
PT	Point of Tangent
RC	Remove Adverse Crown
SSD	Stopping Sight Distance
TR	Tangent Runout

29-7 REFERENCES

1. *A Policy on Geometric Design of Highways and Streets*, AASHTO, 2011.
2. [Chapter 32](#) "Horizontal Alignment", [Chapter 43](#) "Highway Systems", and [Chapter 48](#) "Urban Highways and Streets (New Construction/Reconstruction)," *Bureau of Design and Environment Manual*, IDOT.



Chapter 30
VERTICAL ALIGNMENT

BUREAU OF LOCAL ROADS AND STREETS MANUAL

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Chapter 30

VERTICAL ALIGNMENT

Chapter 30 presents Bureau of Local Roads and Streets (BLRS) criteria for the design of vertical alignment elements. This includes vertical curvature and grades for both crest and sag vertical curves.

30-1 GRADES

30-1.01 Terrain

The topography throughout most of Illinois is considered either level or rolling. However, the northwest corner of the State, southern Illinois, and bluff areas near major rivers may be considered rugged. In general, if the terrain designation is not clear (e.g., level versus rolling), select the flatter of the two terrains.

30-1.02 Maximum Grades

[Figures 32-3A](#), [32-3B](#), and [32-3C](#) in [Chapter 32](#) present the maximum grade criteria based on functional classification, urban/rural location, type of terrain, and design speed. In addition, the designer should consider the following guidelines:

1. Grades should be as flat as is consistent with the surrounding terrain.
2. Only use maximum grades where absolutely necessary. Where practical, use grades flatter than the maximum.
3. Where grades of 4.0% or steeper are required, take special care to prevent erosion on slopes and open drainage facilities.

30-1.03 Minimum Grades

The following provides the criteria for minimum grades:

1. Uncurbed Roadways. It is desirable to provide a longitudinal grade of approximately 0.5%. This allows for the possibility of alterations to the original pavement cross slope due to swell, consolidation, maintenance operations, or resurfacing. Longitudinal grades of 0.0% may be acceptable on some pavements that have adequate cross slopes. These locations typically occur where a highway traverses a wide flood plain. In these cases, check the flow lines of the outside ditches for adequate drainage.
2. Curbed Streets. The centerline profile of streets with curb and gutter should have a minimum longitudinal grade of 0.3%; however, 0.5% is desirable. On curbed facilities,

the longitudinal grade at the gutter line will have a significant impact on the pavement drainage characteristics (e.g., water encroaching on travel lanes, flow capture rates by grates). See [Chapter 38](#) of the *BLRS Manual* and the [IDOT Drainage Manual](#) for more information on pavement drainage.

3. New Bridges. For bridges on new construction and reconstruction projects, desirably provide a minimum longitudinal grade of 0.5% across the bridge for structures with curbed cross sections, in order to prevent ponding on the bridge.

30-2 VERTICAL CURVE**30-2.01 Crest Vertical Curves****30-2.01(a) Basic Equations**

Crest vertical curves are in the shape of a parabola. The basic equations for determining the minimum length of a crest vertical curve are:

$$L = \frac{AS^2}{200(\sqrt{h_1} + \sqrt{h_2})^2} \quad (\text{Equation 30-2.1})$$

$$L = KA \quad (\text{Equation 30-2.2})$$

Where:

- L = length of vertical curve, ft (m)
- A = algebraic difference between the two tangent grades, %
- S = sight distance, ft (m)
- h_1 = height of eye above road surface, ft (m)
- h_2 = height of object above road surface, ft (m)
- K = horizontal distance needed to produce a 1.0% change in gradient, ft/% (m/%)

The length of a crest vertical curve will depend upon "A" for the specific curve and upon the selected sight distance, height of eye, and height of object. The calculated value should be rounded to the next highest 10 ft (10 m) increment.

30-2.01(b) Curve Lengths

The following discusses the application of K-values:

1. Vertical Point of Intersection (PVI). For crest vertical curves, it is acceptable to use an angle point (i.e., no vertical curve) for an algebraic difference of grade (Δ) of 0.6% or less.
2. Stopping Sight Distance (SSD). The principal control in the design of crest vertical curves is to ensure that SSD is available throughout the vertical curve. Figures 30-2A and 30-2B present the minimum K-values for passenger cars on a level grade by assuming $h_1 = 3.5$ ft (1.080 m), $h_2 = 2$ ft (600 mm), and $S = \text{SSD}$ in the basic equation for crest vertical curves (Equation 30-2.1). These values represent the lowest acceptable sight distance on a facility. Where cost effective, use higher than minimum stopping sight distances.

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30-2-2

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US Customary				Metric			
Design Speed (mph)	SSD ⁽¹⁾ (ft)	Rate of Vertical Curvature, K ⁽²⁾⁽³⁾ (ft/%)	Minimum Curve Length (ft)	Design Speed (km/h)	SSD ⁽¹⁾ (m)	Rate of Vertical Curvature, K ⁽²⁾⁽⁴⁾ (m/%)	Minimum Curve Length (m)
20	115	7	60	30	35	2	18
25	155	12	75	40	50	4	24
30	200	19	90	50	65	7	30
35	250	29	105	60	85	11	36
40	305	44	120	70	105	17	42
45	360	61	135	80	130	26	48
50	425	84	150	90	160	39	54
55	495	114	165	100	185	52	60
60	570	151	180				

Notes:

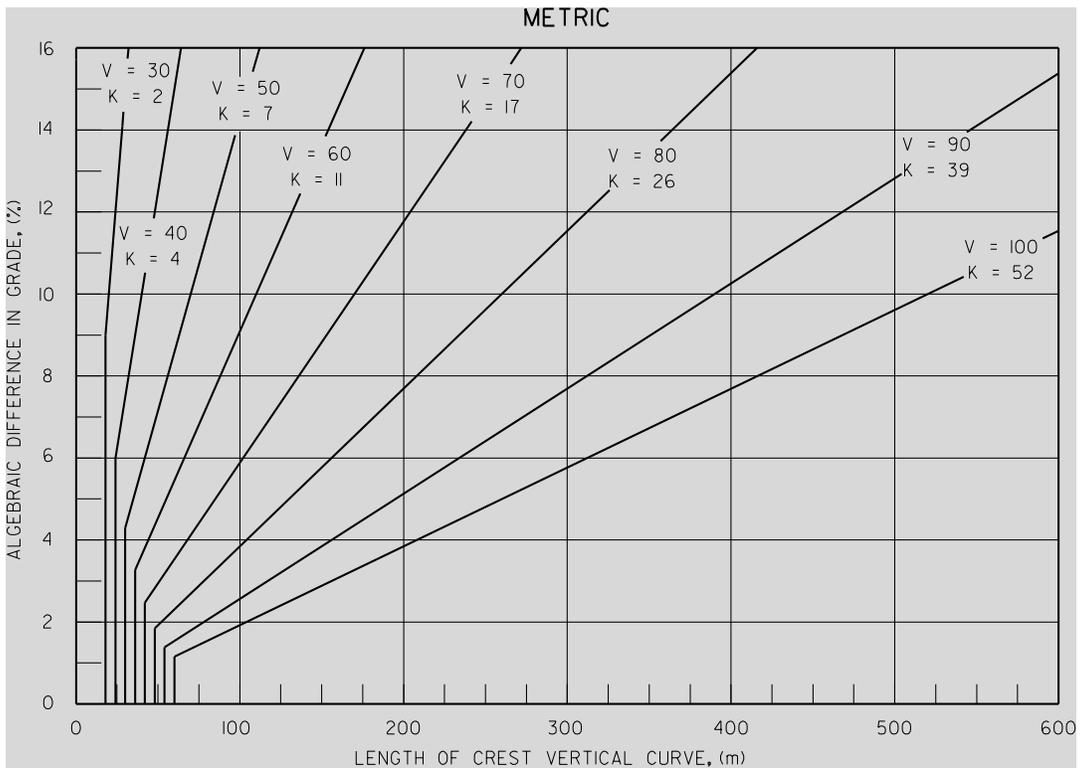
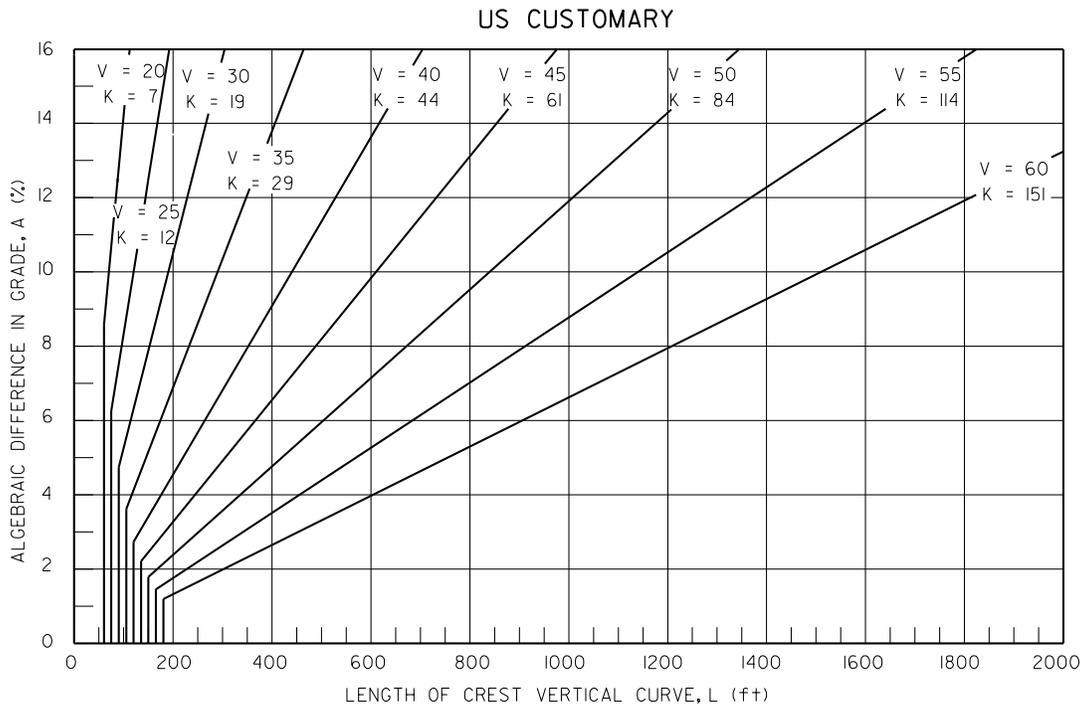
1. SSD values are from [Figure 28-1A](#).
2. Maximum K-value for drainage on curbed roadways and bridges is 167 (51).

3.
$$K = \frac{SSD^2}{2158}, \text{ where } : h_1 = 3.5 \text{ ft}, h_2 = 2 \text{ ft}$$

4.
$$K = \frac{SSD^2}{658}, \text{ where } : h_1 = 1.080 \text{ m}, h_2 = 600 \text{ mm}$$

K-VALUES FOR CREST VERTICAL CURVES — STOPPING SIGHT DISTANCES
(Passenger Cars)

Figure 30-2A



DESIGN CONTROLS FOR CREST VERTICAL CURVES

Figure 30-2B

3. Minimum Length. Vertical curve lengths should also meet the criteria in the following equations:

$$L_{\min} = 3 V \quad (\text{US Customary}) \text{ Equation 30-2.3}$$

$$L_{\min} = 0.6 V \quad (\text{Metric}) \text{ Equation 30-2.3}$$

Where:

L_{\min} = minimum length of vertical curve, ft (m)

V = design speed, mph (km/h)

Designs with vertical curve lengths of less than 90 ft (27 m) should be avoided, since these are difficult to construct.

4. Passing Sight Distance (PSD). At some locations, it may be desirable to provide PSD in the design of crest vertical curves. [Section 28-2](#) discusses the application and design values for PSD on two-lane, two-way highways. These “PSD” values are used in the basic equation for crest vertical curves (Equation 30-2.1). The height of eye (h_1) is 3.5 ft (1.080 m) and the height of object (h_2) is 3.5 ft (1.080 m). Figure 30-2C presents the K-values for passenger cars using the PSD presented in [Section 28-2](#).
5. Drainage. Proper drainage should be considered in the design of crest vertical curves where curbed sections are used. Typically, drainage problems should not be experienced if the vertical curvature is sharp enough so that a minimum longitudinal grade of at least 0.3% is reached at a point about 50 ft (15 m) from either side of the apex. To ensure that this objective is achieved, determine the length of the crest vertical curve assuming a K-value of 167 (51) or less. For crest vertical curves on a curbed section where this K-value is exceeded, carefully evaluate the drainage design near the apex.
6. Alignment Coordination. On rural facilities where crest vertical curves and horizontal curves occur at the same location, use the K-values in Figure 30-2A to ensure that the horizontal curve is visible as drivers approach the vertical curve.

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VERTICAL ALIGNMENT

30-2-5

4.

US Customary			Metric		
Design Speed (mph)	PSD ⁽¹⁾ (ft)	Rate of Vertical Curvature, K ⁽²⁾ Design (ft/%)	Design Speed (km/h)	PSD ⁽¹⁾ (m)	Rate of Vertical Curvature, K ⁽³⁾ Design (m/%)
20	710	180	30	200	46
25	900	289	40	270	84
30	1090	424	50	345	138
35	1280	585	60	410	195
40	1470	772	70	485	272
45	1625	943	80	540	338
50	1835	1203	90	615	438
55	1985	1407	100	670	520
60	2135	1628			

Notes:

1. PSD values are from [Section 28-2](#).

2.
$$K = \frac{PSD^2}{2800}, \text{ where } : h_1 = 3.5 \text{ ft}, h_2 = 3.5 \text{ ft}$$

3.
$$K = \frac{PSD^2}{864}, \text{ where } : h_1 = 1.080 \text{ m}, h_2 = 1.080 \text{ m}$$

**K-VALUES FOR CREST VERTICAL CURVES — PASSING SIGHT DISTANCES
(Passenger Cars)**

Figure 30-2C

30-2.02 Sag Vertical Curves

30-2.02(a) Basic Equations

Sag vertical curves are in the shape of a parabola. Typically, they are designed to allow the vehicular headlights to illuminate the roadway surface (i.e., the height of object = 0.0 ft (m)) for a given distance “S.” The light beam from the headlights is assumed to have a 1° upward divergence from the longitudinal axis of the vehicle. These assumptions yield the following basic equations for determining the minimum length of sag vertical curves:

$$L = \frac{AS^2}{200[h_3 + S(\tan 1^\circ)]} = \frac{AS^2}{200h_3 + 3.5S} \quad \text{(Equation 30-2.4)}$$

$$L = KA \quad \text{(Equation 30-2.2)}$$

Where:

- L = length of vertical curve, ft (m)
- A = algebraic difference between the two tangent grades, %
- S = sight distance, ft (m)
- h₃ = height of headlights above pavement surface, ft (m)
- K = horizontal distance needed to produce a 1.0% change in gradient

The length of a sag vertical curve will depend upon “A” for the specific curve and upon the selected sight distance and headlight height. For design purposes, round the calculated length to the next highest 10 ft (10 m) increment.

30-2.02(b) Curve Lengths

The following discusses the application of K-values:

1. Vertical Point of Intersection (VPI). For sag vertical curves, it is acceptable to use an angle point (i.e., no vertical curve) up to an algebraic difference of grade (Δ) of 0.6% or less.
2. Stopping Sight Distance (SSD). The principal control in the design of sag vertical curves is to ensure that SSD is available for headlight illumination throughout the sag vertical curve. Figures 30-2D and 30-2E present K-values for passenger cars assuming h₃ = 2.0 ft (600 mm) and S = SSD in the basic equation for sag vertical curves (Equation 30-2.4). These values represent the lowest acceptable sight distance on a facility. However, the designer should strive to use longer than the minimum lengths of curves to provide a more aesthetically pleasing design.

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VERTICAL ALIGNMENT

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US Customary				Metric			
Design Speed (mph)	SSD ⁽¹⁾ (ft)	Rate of Vertical Curvature, K ⁽²⁾⁽³⁾ (ft/%)	Minimum Curve Length (ft)	Design Speed (km/h)	SSD ⁽¹⁾ (m)	Rate of Vertical Curvature, K ⁽²⁾⁽⁴⁾ (m/%)	Minimum Curve Length (m)
20	115	17	60	30	35	6	18
25	155	26	75	40	50	9	24
30	200	37	90	50	65	13	30
35	250	49	105	60	85	18	36
40	305	64	120	70	105	23	42
45	360	79	135	80	130	30	48
50	425	96	150	90	160	38	54
55	495	115	165	100	185	45	60
60	570	136	180				

Notes:

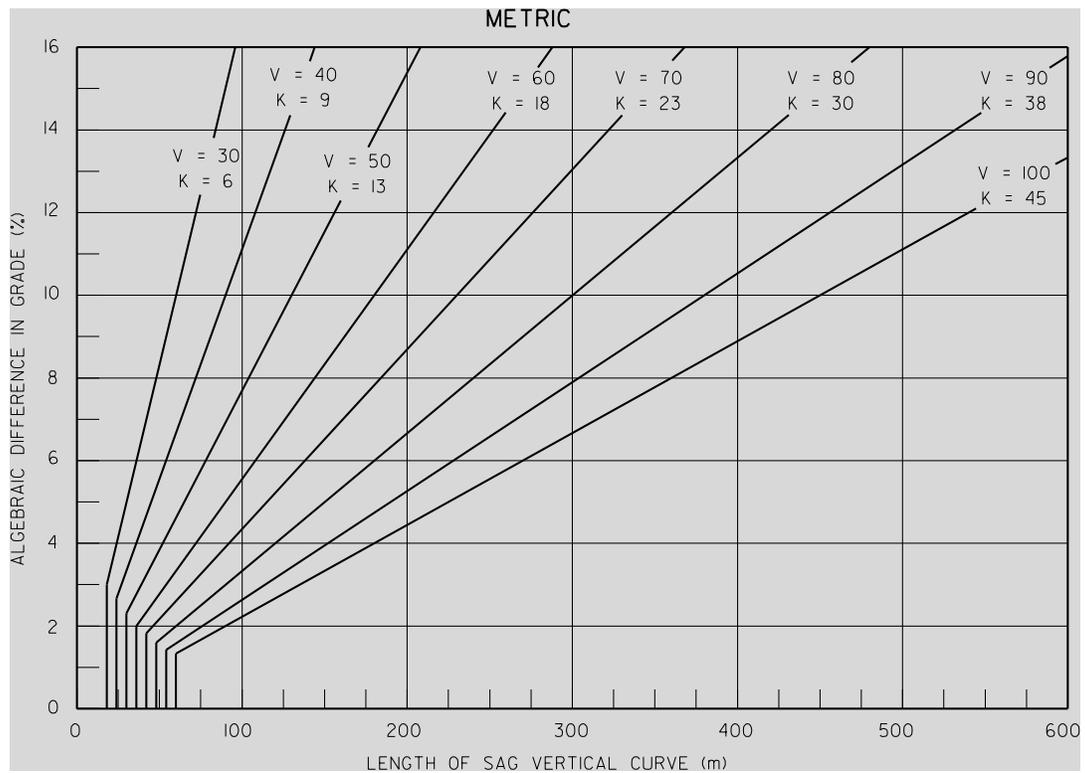
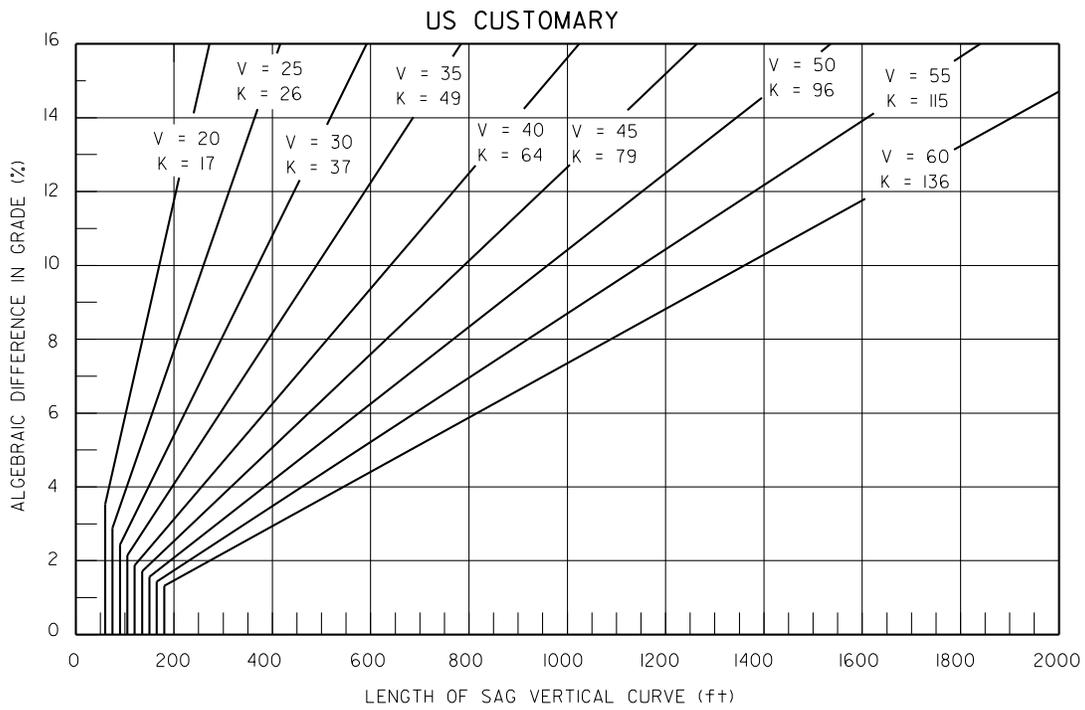
1. SSD values are from [Figure 28-1A](#).
2. Maximum K-value for drainage on curbed roadways and bridges is 167 (51).

3.
$$K = \frac{SSD^2}{400 + 3.5 SSD}, \text{ where } : h_3 = 2 \text{ ft}$$

4.
$$K = \frac{SSD^2}{120 + 3.5 SSD}, \text{ where } : h_3 = 600 \text{ mm}$$

**K-VALUES FOR SAG VERTICAL CURVES — STOPPING SIGHT DISTANCES
(Passenger Cars)**

Figure 30-2D



DESIGN CONTROLS FOR SAG VERTICAL CURVES

Figure 30-2E

3. Minimum Length. For most sag vertical curves, the minimum length of curve should also be based on the following equations:

$$L_{\min} = 3 V \quad (\text{US Customary}) \text{ Equation 30-2.3}$$

$$L_{\min} = 0.6 V \quad (\text{Metric}) \text{ Equation 30-2.3}$$

Where:

L_{\min} = minimum length of vertical curve, ft (m)

V = design speed, mph (km/h)

Designs with vertical curve lengths of less than 90 ft (27 m) should be avoided, since these are difficult to construct.

4. Comfort Criteria. On fully lighted, continuous sections of highway and where it is impractical to provide SSD for headlights, a sag vertical curve may be designed to meet the comfort criteria. The length of curve equation for the comfort criteria is:

$$L = \frac{AV^2}{46.5} \quad (\text{US Customary}) \text{ Equation 30-2.5}$$

$$L = \frac{AV^2}{395} \quad (\text{Metric}) \text{ Equation 30-2.5}$$

Where:

L = length of vertical curve, ft (m)

A = algebraic difference between the two tangent grades, %

V = design speed, mph (km/h)

5. Drainage. Proper drainage must be considered in the design of sag vertical curves on curbed sections and bridges. Drainage problems are minimized if the sag vertical curve is sharp enough so that a minimum longitudinal grade of at least 0.3% is reached at a point about 50 ft (15 m) from either side of the low point. To ensure that this objective is achieved, base the length of the vertical curve upon a K-value of 167 (51) or less. This K-value is adequate for design speeds of 60 mph (100 km/h) or less.

For uncurbed sections of highway, drainage should not be a problem at sag vertical curves.

30-3 VERTICAL CLEARANCES

The tables in [Section 33-3](#) provide the roadway vertical clearances for 3R projects on non-freeways. The tables in [Sections 36-4](#) and [36-5](#) present the minimum roadway vertical clearances for new construction and reconstruction projects. In addition to the criteria presented in [Chapter 36](#), consider the following:

1. Existing Structures. The minimum clearance for structures allowed to remain-in-place is 14 ft-0 in (4.3 m) for all functional classifications.
2. Pedestrian Bridges/Sign Trusses. On all new or reconstruction projects, provide a minimum vertical clearance of 17 ft-3 in (5.25 m) under pedestrian bridges and sign trusses. For 3R projects existing pedestrian bridges and sign structures allowed to remain-in-place shall have a minimum clearance of 16 ft-9 in (5.1 m).
3. Traffic Signals. On all new or reconstruction projects, provide a minimum vertical clearance of 16 ft-0 in (4.9 m) with a maximum clearance of 18 ft-0 in (5.5 m). For 3R projects, a minimum vertical clearance of 14 ft-9 in (4.5 m) may be allowed to remain in place. This clearance is measured from the roadway surface to the bottom of the signal housing or to the bottom of the back plate.
4. Railroads. For all projects, the minimum vertical clearance for new and reconstructed structures over railroads is 23 ft-0 in (7.0 m) measured from the top of the highest rail. This clearance may be reduced with approval of the railroad and the Illinois Commerce Commission (ICC) ([Title 92 Illinois Administrative Code, Part 1500, Chapter 3, Subpart C](#)).

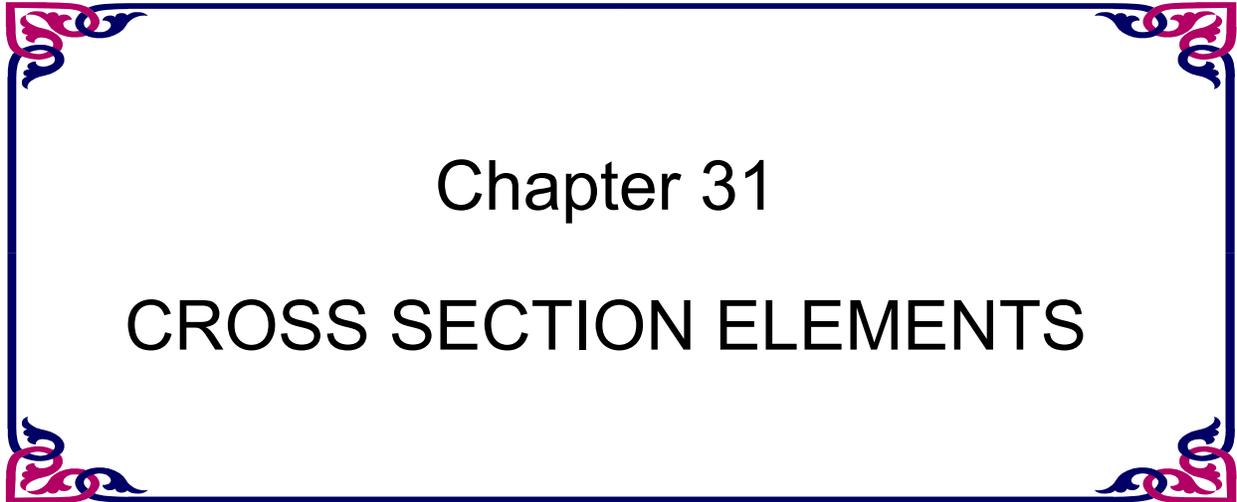
30-4 ACRONYMS

This is a summary of the acronyms used within this chapter.

3R	Rehabilitation, Restoration, and/or Resurfacing
AASHTO	American Association of State Highway and Transportation Officials
BDE	Bureau of Design and Environment
CBLRS	Central Bureau of Local Roads and Streets
ICC	Illinois Commerce Commission
IDOT	Illinois Department of Transportation
PSD	Passing Sight Distance
PVI	Point of Vertical Intersection
SSD	Stopping Sight Distance

30-5 REFERENCES

1. *A Policy on Geometric Design of Highways and Streets*, AASHTO, 2011. |
2. NCHRP Report 400, *Determination of Stopping Sight Distances*, Transportation Research Board, 1997.
3. [IDOT Drainage Manual](#), Illinois Department of Transportation. |
4. [Chapter 33](#) "Vertical Alignment," *Bureau of Design and Environment Manual*, IDOT. |



Chapter 31

CROSS SECTION ELEMENTS

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Chapter 31
CROSS SECTION ELEMENTS

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Chapter 31

CROSS SECTION ELEMENTS

31-1 ROADWAY SECTIONS

For rural cross sections, the roadway width is the combined width of the traveled way, any median, both shoulders, and any auxiliary lanes on the mainline facility. The traveled way is the combined width of all travel lanes. Figure 31-1A provides a typical cross section for rural two-lane highways.

For urban cross sections, the roadway consists of the travel lanes, auxiliary lanes including parking lanes, any bike lanes or median, and curb and gutter. Figures 31-B through 31-1E provide typical cross sections for urban streets. The roadway width is measured from face-to-face of curbs. The tables in [Chapters 32](#) and [33](#) provide the face-to-face widths based on the functional classification, traffic volume, and project scope of work.

31-1.01 Travel Lane Widths

31-1.01(a) Rural

The lane width of a roadway greatly influences the safety and comfort of driving. On the local highway system, travel lane widths generally vary between 8 ft (2.7 m) and 12 ft (3.6 m) depending on functional classification, traffic volumes, and project scope of work. While lane widths of 12 ft (3.6 m) are desirable, lanes that are 10 ft (3.0 m) wide are acceptable on low speed facilities and lanes that are 9 ft (2.7 m) are appropriate for low-volume roads. The tables in [Chapters 32](#) and [33](#) provide specific travel lane widths for these parameters.

31-1.01(b) Urban

Consider the following for urban streets:

1. Local Streets. Travel lanes shall be at least 10 ft (3.0 m) wide and preferably 11 ft (3.3 m). In industrial areas, travel lanes should be 12 ft (3.6 m). The width of new construction of local residential streets should either meet the criteria in [Chapter 32](#) or the Institute of Transportation Engineers' publication *Guidelines for Residential Subdivision Street Design, A Recommended Practice*. Where right-of-way (ROW) is restricted (e.g., additional ROW cannot be acquired due to economic, social, or environmental factors), travel lanes in industrial areas may be reduced to 11 ft (3.3 m). Off-tracking by trucks should be reviewed within horizontal curves where the travel lanes are reduced.
2. Collector Streets. Travel lanes shall be at least 10 ft (3.0 m) to 12 ft (3.6 m). In industrial areas, travel lanes should be 12 ft (3.6 m), except where ROW is restricted. In this case, the travel lane may be reduced to 11 ft (3.3 m). Sections of roadway within a horizontal curve off-tracking by trucks should be reviewed.

3. Arterial Streets. Travel lanes shall be at least 11 ft (3.0 m) to 12 ft (3.6 m). A 12 ft (3.6 m) travel lane should be provided, where practical, on free-flowing facilities with a 45 mph (70 km) design speed or where truck traffic is significant.
4. Bicycles. Lane widths may need to be increased to accommodate bicycles; see [Chapter 32](#) for design criteria and [Chapter 42](#) for guidance.

31-1.01(c) Bridges

In general, the approach roadway width should be provided across the bridge. For guidance on roadway widths across bridges, see [Section 36-4](#).

31-1.02 Number of Lanes

31-1.02(a) Rural/Suburban Facilities

For most rural and suburban local roads and collectors, capacity conditions normally do not govern and two travel lanes are generally appropriate. However, on suburban arterials, capacity needs may require more than two lanes. Where the design volume exceeds the capacity of an existing or proposed two-lane arterial, consider the following alternatives to increase the facility's capacity. The tables in [Chapters 32](#) and [33](#) present specific required criteria for the number of lanes and lanes widths.:

- Improve the alignment and profile to decrease the gradient and increase the percentage of the total length of roadway with sufficient sight distance to afford opportunities for passing.
- Improve capacity by adding climbing or passing lanes.
- Improve capacity through intersections by adding auxiliary lanes (e.g., left-turn lanes).
- Alleviate delays caused by mid-block left turns by providing two-way left-turn lanes (TWLTL) in suburban areas to remove turning traffic from the through lanes. For additional guidance, see Section 31-1.05(b) of this *Manual* and [Section 48-4](#) of the *Bureau of Design and Environment (BDE) Manual*.
- Modify the design to provide a four-lane highway initially or as planned stage construction.

31-1.02(b) Urban Facilities

The following guidelines apply to urban facilities:

1. Local Residential Streets. In some instances, local residential streets may be designed with one travel lane plus two parking lanes. This would consist of a single 12 ft (3.6 m) travel lane with two 8 ft (2.4 m) parking lanes. A minimum width of 30 ft (9.0 m) face-of-curb to face-of-curb needs to be provided. Opposing conflicting traffic will yield and pause in the parking lane until there is sufficient width to pass. However, on residential streets experiencing crash problems or where the extent of parking does not allow traffic to safely weave and yield, the designer should either provide a wider street to allow two-way traffic or restrict parking on one or both sides of the street.

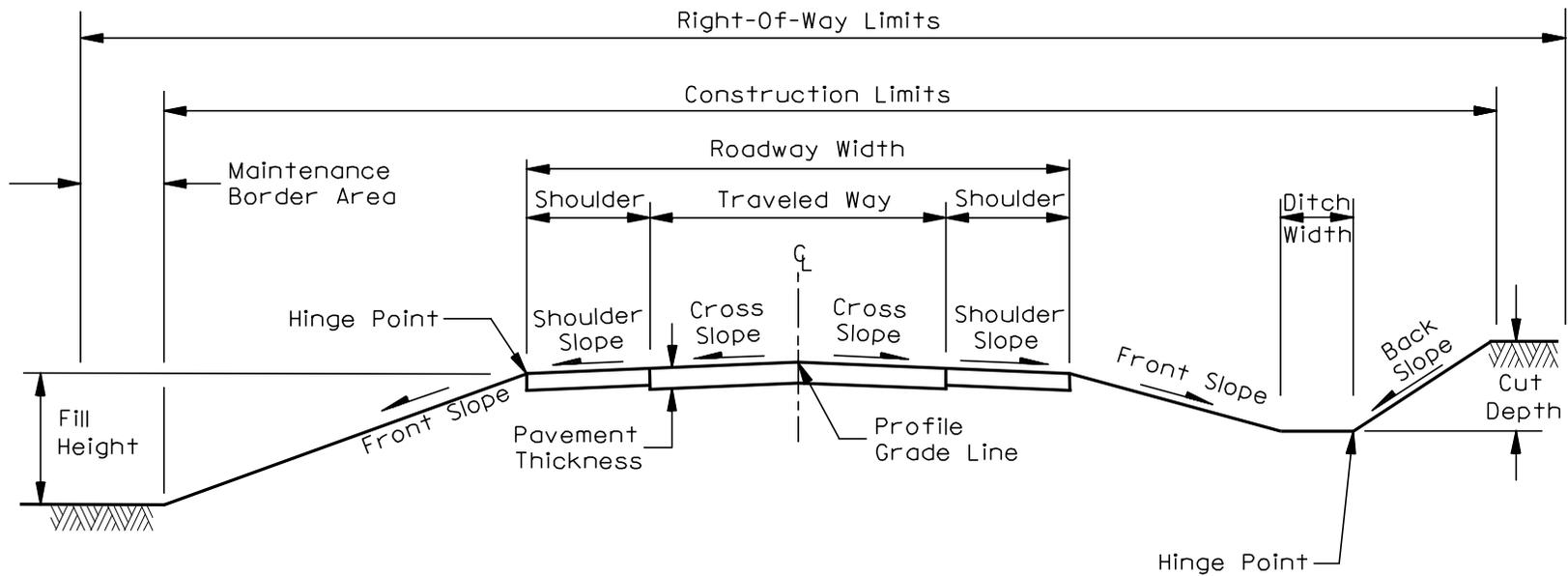
2. Local and Collector Streets. For most local and collector streets, a minimum of two travel lanes is generally adequate. A minimum width of 30 ft (9.0 m) face-of-curb to face-of-curb needs to be provided. Where the current Average Daily Traffic (ADT) is 10,000 or more, the number of through lanes should be determined by a highway capacity analysis of the intersections through lanes. Desirably, conduct this analysis using the future design traffic volume. Consider providing stage development where the analysis indicates four or more lanes are required. Where the improvement is developed by stages, initially a rural cross section with shoulders may be provided. At later stages, the shoulder can be converted to a parking lane or another travel lane usually with outside curb and gutter. When the shoulder is being considered for conversion, current usage and user should be evaluated.
3. Arterial Streets. The number of travel lanes will vary on arterial streets, depending on traffic demand and available ROW. However, arterials will typically have four to eight lanes. Conduct a capacity analysis, including intersection and mid-block analyses, to determine the proper number of travel lanes.
4. Auxiliary Lanes. At some intersections, it may be appropriate to add auxiliary through lanes at an intersection to increase the capacity at the intersection. In some areas with numerous midblock left turns, consider providing a TWLTL.

31-1.03 Auxiliary Lanes

Auxiliary lanes are lanes adjacent to the through traveled way. They are intended for use by vehicular traffic for specific functions. Auxiliary lanes include:

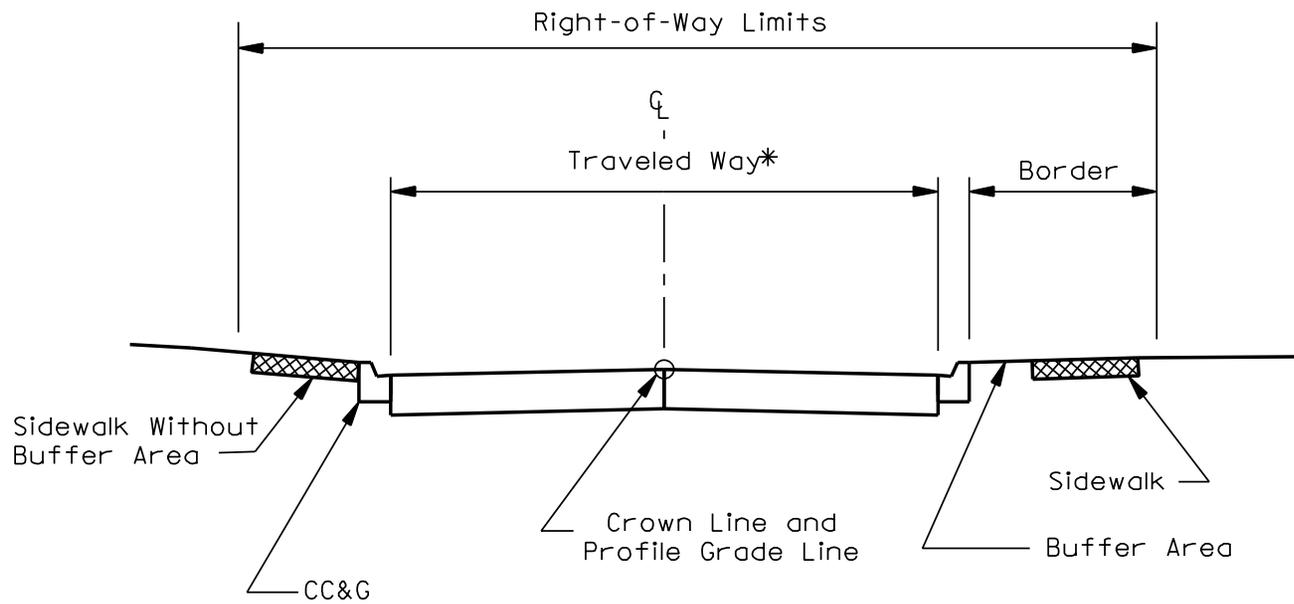
- single left- and right-turn lanes at intersections;
- double left-turn lanes at intersections;
- acceleration/deceleration lanes at intersections;
- two-way left-turn lanes (TWLTL);
- parking lanes; and
- passing or climbing lanes.

Desirably, auxiliary lanes should be the same width as the adjacent through lanes, although in many cases a greater or lesser width may be appropriate. For local streets, the turn lanes should be 10 ft (3.0 m) wide or greater. For collectors and arterials, the turn lanes with few trucks may be 10 ft (3.0 m) wide and should be 12 ft (3.6 m) with higher truck volumes. The tables in [Chapters 32](#) and [33](#) present specific required criteria for widths of auxiliary lanes and curb type or shoulder widths adjacent to auxiliary lanes.



TYPICAL CROSS SECTION FOR RURAL TWO-LANE HIGHWAYS

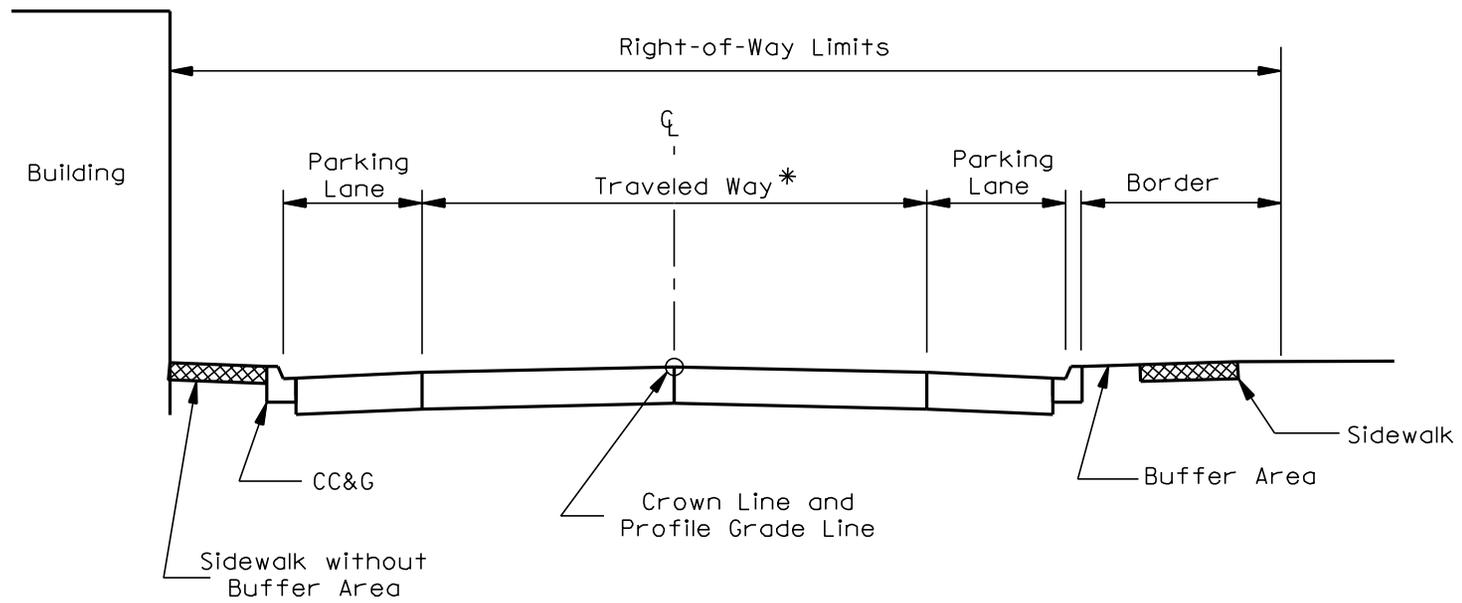
Figure 31-1A



* The traveled way may have two-way or one-way traffic.

**TYPICAL CROSS SECTION FOR URBAN STREETS
(Two-Lanes without Parking)**

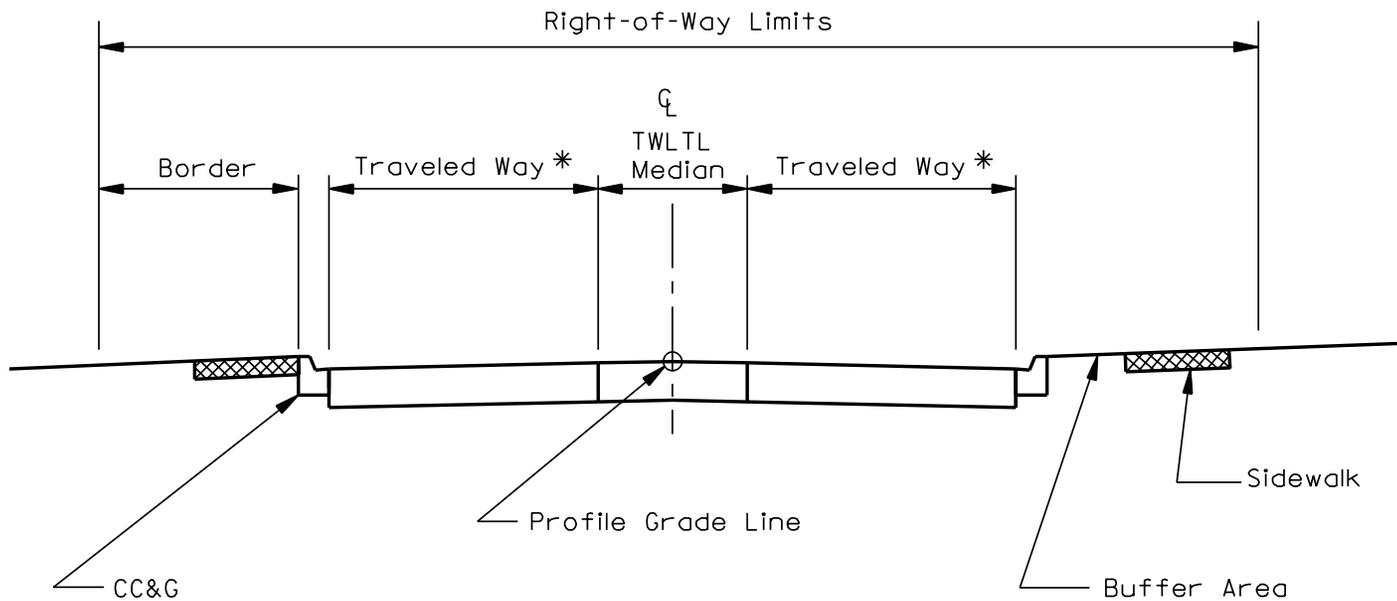
Figure 31-1B



* The traveled way may have two-way or one-way traffic.

**TYPICAL CROSS SECTION FOR URBAN STREETS
(Two-Lanes with Parking Both Sides)**

Figure 31-1C

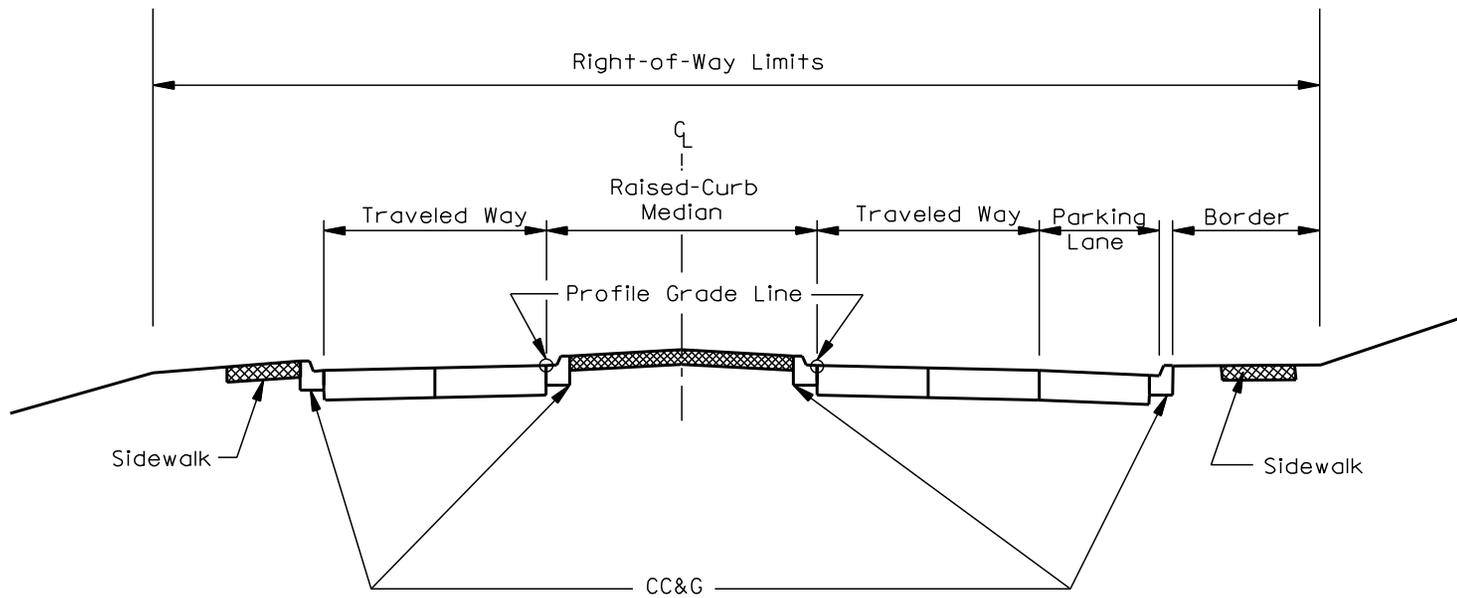


* Traveled ways may be either one or two lanes.

With the profile grade line typically located within the TWLTL, consideration should be given to snow and ice control operations, existing CC&G restraints, drainage issues if a 0% cross-slope is proposed, etc.

**TYPICAL CROSS SECTION FOR URBAN STREETS
(Two-Way Left-Turn Lane (TWLTL))**

Figure 31-1D



**TYPICAL CROSS SECTION FOR URBAN STREETS
(Raised-Curb Median)**

Figure 31-1E

31-1.04 **Parking**

For most urban projects, the designer should evaluate the demand for parking. Desirably, parking needs will be accommodated by providing residential parking or by providing off-street parking facilities. [Section 41-2](#) provides guidelines for off-street parking. When providing on-street parking along urban streets, consider the following discussion.

31-1.04(a) **Design Considerations**

Section 31-1.04(b) provides guidance on parking lane widths. In addition, the designer should evaluate the following:

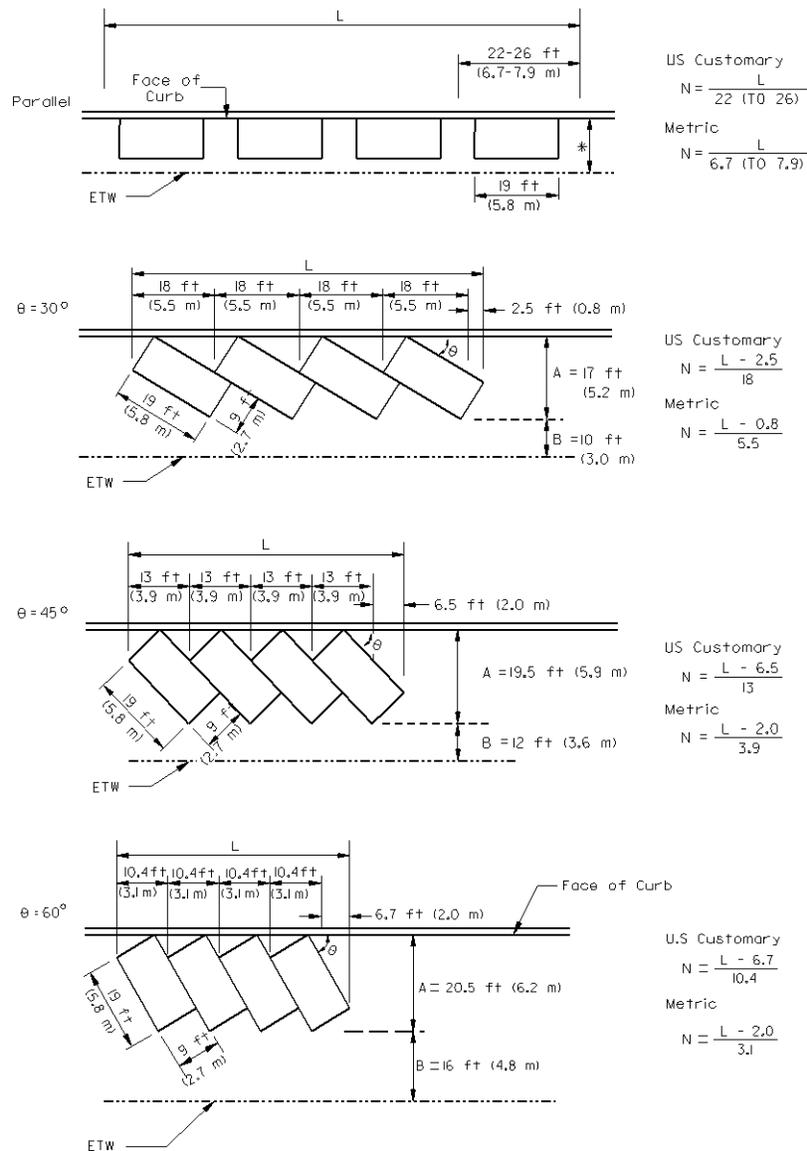
1. **Configurations**. There are two basic types of on-street parking — parallel and angle parking. These are illustrated in Figure 31-1F. Consider the following:
 - a. **Capacity**. Parallel parking is preferred when the street width is limited and traffic capacity is a major factor. Where angle parking is provided, the overall level of service for the facility preferably should be Level C or higher.
 - b. **Number of Spaces**. Angle parking provides more spaces per linear foot (meter) than parallel parking, but requires a greater street width.
2. **Stall Dimensions**. Figure 31-1F provides the width and a length criterion for parking stalls of various configurations. The Figure also indicates the number of stalls that can be provided for each parking configuration for a given curb length. The surface widths for urban streets shown in the tables in [Chapter 32](#) assume parallel parking on one or both sides of the street.
3. **Americans with Disabilities Act (ADA) / Public Rights of Ways Access Guidelines (PROWAG) Requirements**. [Section 41-6](#) presents the accessibility requirements for on-street parking for persons with disabilities.
4. **Parking Restrictions**. According to the *Illinois Vehicle Code* ([625 ILCS 5/11-1303](#)), parking is prohibited in the following locations:
 - in front of a public or private driveway;
 - within an intersection;
 - on the curb immediately opposite the ends of a safety zone, unless a different length is indicated by signs or markings;
 - within 15 ft (4.6 m) of a fire hydrant;
 - within 20 ft (6.1 m) of any crosswalk;
 - within 30 ft (9.1 m) on the approach leg to any intersection with a flashing signal, stop sign, yield sign, or traffic control signal located at the side of the roadway;
 - within 20 ft (6.1 m) of the driveway entrance to any fire station and on the side of a street opposite the entrance to any fire station within 75 ft (22.9 m) of this type of entrance (when properly signed);
 - within 50 ft (15.2 m) of the nearest rail of a highway/railroad crossing;
 - on bridges or within a highway tunnel; and

- in areas designated by local traffic and enforcement regulations (e.g., near school zones, loading zones, bus stops). See local ordinances for additional information on parking restrictions.
- between a safety zone and adjacent curb or within 30 ft (9.1 m) of points

31-1.04(b) Parallel Parking

In determining parking lane widths, consider the following:

1. Lane Conversion. Parking lane width determinations should include consideration for converting the parking lane into a travel lane during peak hour traffic or in the future (e.g., in areas where peak hour traffic may require additional through traffic lanes).
2. Measurement. Parking lane widths are generally measured from the face of the curb and typically include the gutter flag width. However, if the lane may be converted to a travel lane, the width should be in addition to that of the gutter flag.
3. Local Streets. Where used in residential areas, a parallel parking lane of at least 8 ft (2.4 m) should be provided on one or both sides, as appropriate to the conditions of lot size and intensity of development. In commercial areas, parking lanes should be 10 ft (3.0 m) wide and are usually provided on both sides.
4. Collector Streets. In residential areas, a minimum 8 ft (2.4 m) parallel parking lane should be provided on one or both sides of the street, as appropriate for the lot size and density of development. In commercial and industrial areas, parking lanes widths should range from 10 ft (3.0 m) to 12 ft (3.6 m) and are usually provided on both sides of the street
5. Arterial Streets. In general, parking along urban arterials should only be considered where it currently exists. However, parallel parking may be considered where adequate capacity is available in the through lanes and adequate parking is not available or practical on adjacent streets or off-street parking facilities. The parking lane width should be 10 ft (3.0 m) to 12 ft (3.6 m) if there is a future possibility of being converted to a travel lane, with the 12 ft (3.6 m) being desirable. This width is also adequate for an occasional parked commercial vehicle. A parking lane 10 ft (3.0 m) in width is acceptable for use as a future storage lane for turning vehicles at signalized intersections by prohibiting parking for some distance upstream from the intersection. Where it is unlikely there will be a future need to use the parking lane as a through or turn lane, the parking lane width may be as narrow as 8 ft (2.4 m).



* A + B = Parking Width. See Section 31-1.04(b) for parallel parking lane widths.

- Key:
- L = given curb length with parking spaces, ft (m)
 - N = number of parking spaces over distance L
 - A = required distance between face of curb and back of stall, assuming that bumper of parked car does not extend beyond curb face, ft (m)
 - B = clear distance needed for a parked vehicle to back out of stall while just clearing adjacent parked vehicles, ft (m)
 - ETW = Edge of Traveled Way

Note: For 3R projects, lesser widths may be allowed; see [Chapter 33](#).

CURB PARKING CONFIGURATIONS

Figure 31-1F

31-1.04(c) Angle Parking

Angle parking should be avoided where practical. However, when considering angle parking, the following applies:

1. Illinois Department of Transportation (IDOT) Authority. When an improvement requiring IDOT approval is planned, any new or existing angle parking to remain must be approved by Central Bureau of Local Roads and Streets (CBLRS). In addition, [625 ILCS 5/11-1304\(c\)](#) states:
Local authorities may permit angle parking on any roadway, except that angle parking shall not be permitted on any Federal-aid or State highway unless the Department has determined the roadway is of sufficient width to permit angle parking without interfering with the free movement of traffic.
2. Street Width. The width of the street must be able to accommodate the existing traffic flow and should provide a clear distance for a parked vehicle to back out.
3. Backing Maneuver. Angle parking requires the driver to back into the traveled way where sight distance may be restricted by adjacent parked vehicles. This maneuver may surprise an approaching motorist. As indicated in Figure 31-1F, the parked car will require a distance “B” to back out of its stall. Whether or not this is a reasonably safe maneuver will depend upon the number of lanes in each direction, lane widths, operating speeds, traffic volumes during peak hours, parking demand, and turnover rate of parked vehicles.
4. Angle. Angle parking should be 45° or less. In some conditions, a 60° angle for parking may be considered.
5. Adjacent Land Use. The adjacent land use must warrant the retention of the angle parking.
6. Crashes. After analyzing backing maneuver space, angle parking may be considered to remain after further review of crash history related to the existing angle parking along with the proposed design criteria (ADT, posted speeds, etc).

31-1.05 Medians**31-1.05(a) General**

Median design should be based upon economic, operational, and environmental considerations. The design will depend on the functional class of the highway, design speed, type of access management proposed, availability of ROW, construction costs, maintenance considerations, the anticipated ultimate development of the facility, operations at crossroad intersections, and field conditions. The median width is measured from the inside edge of the two traveled ways and includes inside shoulders and/or median curb and gutters. A median must be at least 2 ft (600 mm) wide to meet the minimum functional requirements. Section 31-1.05(b) and the tables in [Chapter 32](#) provide guidance on recommended median designs for urban facilities.

31-1.05(b) Median Types and Widths

For rural type medians (e.g., depressed), see [Section 34-3](#) of the *BDE Manual*. In addition, [Section 34-3](#) of the *BDE Manual* discusses the advantages and disadvantages for these various median types. Figure 31-1G provides typical sections for the following median types — flush, traversable, and raised curb. The following provides brief descriptions on these types of medians. The following applies:

1. **Flush Medians**. A flush median is defined where the surface is constructed as a smooth plane in conjunction with the adjacent roadway pavement and is usually distinguished with painted pavement markings. Flush medians are most often used on low-speed urban highways and streets. This flush type median should be slightly crowned to avoid ponding water in the median area. The following discusses typical flush medians:
 - a. **Flush**. Typical widths for a flush median on an urban street can range from 2 ft to 14 ft (600 mm to 4.2 m). For urban arterials, the minimum width should not be less than 4 ft (1.2 m). To accommodate a separate left-turn lane, a flush median should be 13 ft to 14 ft (3.9 m to 4.2 m) wide. This will allow for either an 11 ft (3.3 m) or 12 ft (3.6 m) turn lane and a minimum separation of 1 ft to 2 ft (300 mm to 600 mm) between left-turning vehicles and the opposing traffic.
 - b. **Two-Way Left-Turn Lanes (TWLTL)**. TWLTL are also considered flush medians. Operating speeds, truck and bus volumes, number and spacing of entrances and intersections, availability of ROW, character of abutting property, parking facilities, etc., should be considered when determining appropriate TWLTL lane widths. Typical TWLTL design widths range from 10 ft to 14 ft (3.0 m to 4.2 m). A width of 12 ft (3.6 m) is desirable. For additional guidance on the selection and design of TWLTL, see NCHRP 395 *Capacity and Operational Effects of Midblock Left-Turn Lanes* and [Section 34-3](#) of the *BDE Manual*.
2. **Traversable Medians**. On certain streets in large metropolitan areas where traffic volumes and mid-block left turns are unusually high, the traversable median with an M-2.12 (M-5.30) Concrete Curb and Gutter (CC&G), although having a slightly higher initial cost than a flush median, may be the appropriate design option. This median type eliminates the frequent and somewhat hazardous striping operations and yet provides for TWLTL movements. Because the traversable median was developed as a direct substitute for the flush TWLTL, the M-2.12 (M-5.30) CC&G is not designed to be a physical barrier nor is it intended to impede left-turn movements across the median. The recommended traversable median width for new construction is 16 ft (4.8 m).
3. **Raised-Curb Medians**. A raised-curb median is defined when it contains a curb height greater than 2 in (50 mm) within its limits. Usually, a raised-curb median is proposed where there is a need to manage access to the street and to control left-turn movements.

For urban collectors and local streets, the raised-curb median width can be as narrow as 4 ft (1.2 m) to 6 ft (1.8 m) wide. For arterials and other high volume roadways, the recommended raised curb median width is 18 ft (5.5 m). This width should only be used where the majority of intersections along the street will be signalized and have protected left turns. If many intersections do not require signalization, the recommended width is 22 ft (7.0 m), assuming no ROW restrictions. The 22 ft (7.0 m) median width allows passenger vehicles to comfortably store within median crossovers at unsignalized intersections when making a maneuver in two moves. Where dual left-turn lanes are required, the minimum raised-curb median width is 32 ft (9.5 m) and desirably 35 ft (10.5 m).

Wider raised-curb medians (e.g., 4 ft (1.2 m) or wider) may be landscaped with turf or other low-growing plants. Ensure these plants are salt resistant and do not block the sight distances at intersections. See [Section 41-10](#) for additional information.

31-1.05(c) Median Openings

On local streets, median openings should be provided as necessary to serve the abutting property and the traffic demand, but the number should be minimized. On collector and arterial streets, median openings should be provided only at street intersections and at reasonably spaced driveways serving major traffic generators (e.g., industrial plants, shopping centers). In addition, consider the following:

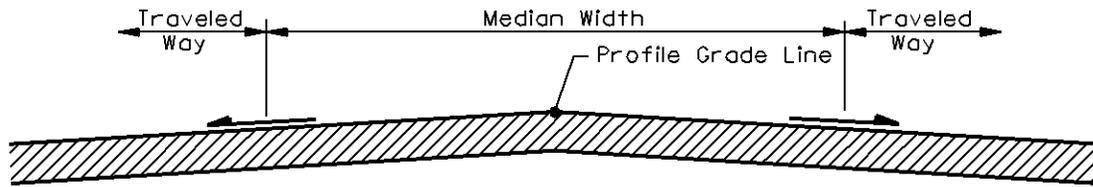
- Where practical, the median openings should include left-turn lanes; see [Section 34-3](#) for the design of left-turn lanes.
- Ensure that there is adequate sight distance at the median opening; see [Section 28-3](#).
- The shape and length of the median openings will depend upon the width of the median and the vehicle type that must be accommodated. See [Section 36-4](#) of the *BDE Manual* for guidance on the design of median openings.

The minimum length of median openings should be that of the projected roadway width of the intersecting cross street or driveway. Desirably, the length of the median opening should be large enough to provide for a 50 ft (15 m) turning control radius for left-turning vehicles between the inner edge of the lane adjacent to the median and the centerline of the intersecting roadway.

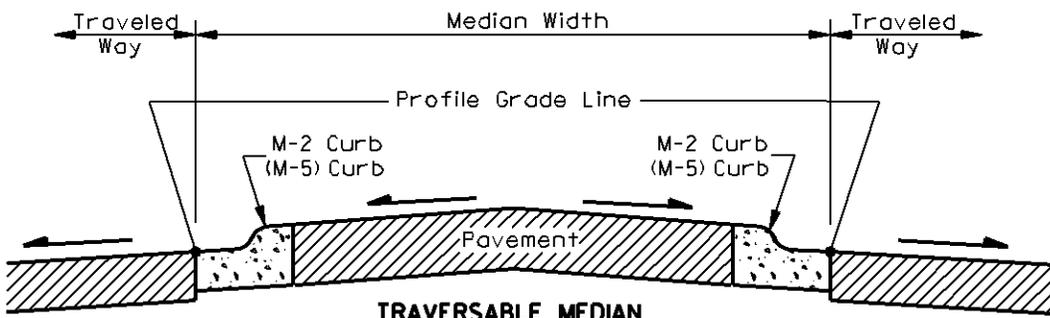
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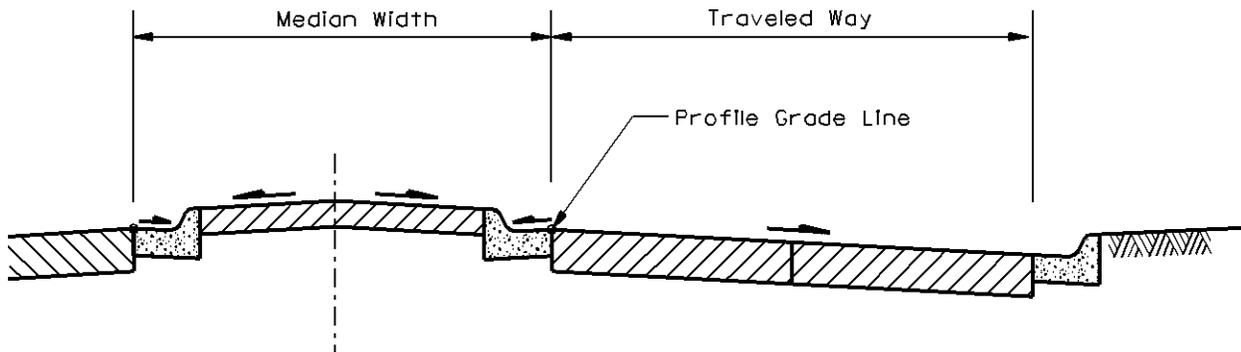
31-1-15



FLUSH MEDIAN
PAINTED LEFT-TURN LANES
OR TWLTL



TRAVERSABLE MEDIAN



RAISED-CURB MEDIAN

MEDIAN TYPES
(Flush / Traversable / Raised-Curb)

Figure 31-1G

31-1.06 Shoulders

In urban and many suburban areas, the availability of ROW generally precludes the use of shoulders. However, many low-volume urban streets may have shoulders rather than a gutter, curb, or curb and gutter. Where shoulders are included, use the width provided from the rural tables in [Chapters 32](#) and [33](#) for the applicable functional classification. Also, consider providing a curb and gutter or gutter at the outer shoulder edge. This may reduce construction costs and will confine drainage runoff to the shoulder area.

31-1.06(a) **Functions**

The following are some of the important functions of shoulders:

- provides structural support for the traveled way;
- provides support for guardrail and prevents erosion around guardrail posts;
- prevents or minimizes pavement edge drop-offs;
- provides space for emergency and discretionary stops;
- improves roadside safety by providing more recovery area for run-off-the-road vehicles;
- facilitates maintenance operations (e.g., snow removal and storage);
- facilitates pavement drainage;
- provides space for pedestrian and bicycle use; and
- provides space for mailbox turnouts.

31-1.06(b) **Shoulder Types**

There are several types of shoulders that may be used on local public agency (LPA) roads. A general discussion of the various shoulder types follows. The tables in [Chapters 32](#) and [33](#) present the minimum requirements for shoulder types based on functional classification and design traffic.

1. Paved. Paved shoulders are constructed with Hot Mix Asphalt (HMA) or concrete. They provide an all-weather surface with the ability to support occasional vehicle loads in all kinds of weather without rutting. Paved shoulders are usually used on arterials but may be provided on collectors, especially those with high-traffic volumes or substantial current or projected bicycle use. In some instances, a shoulder curb may be included to control drainage. The thickness of a paved shoulder will vary based on a number of factors (i.e. use as a parking lane, as part of stage construction, off tracking during turning maneuvers, etc.).
2. Aggregate. Aggregate shoulders are considered stabilized shoulders. They usually have a minimum thickness of 6 in (150 mm). These shoulders help to eliminate the rutting and drop-off adjacent to the edge of the traveled way and provide an adequate cross slope for drainage of the roadway. Aggregate shoulders are provided on most collectors and on higher volume local roads.

3. Turf. Turf shoulders are appropriate for most local roads and some low-volume collectors. These shoulders are unstabilized and generally undergo consolidation with time. Turf shoulders are subject to a rutting and/or buildup that may inhibit proper drainage of the traveled way. They require regular maintenance to correct drop-off at the edge of traveled way and to provide an adequate cross slope for drainage.
4. Aggregate Wedge. An aggregate wedge is normally used on 3R-type projects. The aggregate wedge is placed at the edge of a resurfaced traveled way to account for the drop-off caused by the resurfacing thickness. This minimizes disturbance to the existing turf or aggregate shoulder.

31-1.06(c) Shoulder Widths

Shoulder widths will vary according to functional classification, traffic volume, and the project scope. The shoulder widths for local roads and collectors normally vary from 2 ft to 8 ft (600 mm to 2.4 m). Where pedestrian and bicyclists are to be accommodated on the shoulders, a minimum usable shoulder width of 4 ft (1.2 m) should be provided. The tables in [Chapters 32](#) and [33](#) present the minimum shoulder width criteria. The minimum shoulder width to a roadside barrier should be 4 ft (1.2 m). It may be appropriate to provide additional width behind the barrier to provide lateral support for the guardrail posts.

31-1.07 Curb and Gutter

Curbs are used on urban and suburban facilities due to restricted ROW conditions and to control drainage, delineate pavement edges, channelize vehicular movements, manage access, provide separation between vehicles and pedestrians, and present an attractive appearance. In urban areas, curbs have a major benefit in containing the drainage within the pavement area and in channelizing or controlling traffic into and out of adjacent properties. In rural areas, curbing may be applicable where restricted ROW prohibits the use of a ditch section or to channelize traffic at isolated intersections.

31-1.07(a) Usage Guidelines

Selecting a curbed section or section with shoulders and outside ditches depends upon many variables, including vehicular speeds, urban/rural location, drainage, and construction costs. The following discusses some of the factors the designer should consider when determining whether or not to incorporate a curbed section into the design:

1. Urban Location. Because of restricted ROW, the need to control drainage, and other constraints, curb and gutter sections on the outside edges of the traveled way are almost always used in urban areas.
2. Suburban Location. The use of curbs and/or gutters will be determined on a case-by-case basis. Consider providing curbing where there are pedestrians, channelization needs, closed drainage requirements, and a desire to manage access to the street.
3. Rural Location. In general, the use of sloping type curbs and/or gutters along rural high-speed highways is limited to the edge of shoulder and to the following special conditions:
 - for roadway delineation in conjunction with channelization at intersections;
 - where there is sufficient development along the highway and there is a need to channelize traffic into and out of properties;

- where drainage control is required;
- where ROW is restricted for roadside ditches; and/or
- at other sites deemed necessary (e.g., interchange crossroads, major intersections with restricted sight distance, where the route turns, offset left-turn lanes).

31-1.07(b) Curb and Gutter Types

There are two basic types of curbs — barrier (vertical) and mountable (sloping). The [IDOT Highway Standards](#) provides information on design details and placement for various curb types. For most situations, an integral CC&G is used. The following notations are used by IDOT to define the various curb and gutter types:

1. Initial Letter. The initial letter “B” or “M” is used to denote whether the curb is barrier (vertical) type or mountable (sloping) type.
2. Numbers Prior to the Decimal Point. The first set of numbers indicates the height of the curb in inches (centimeters).
3. Numbers After the Decimal Point. The second set of numbers, if used, indicates the width of the gutter flag in inches (centimeters).

A Type B curb without a gutter flag can also be used in some instances.

The [IDOT Highway Standards](#) also includes information on gutter-only sections. These are used to control pavement drainage, especially for rural cross sections. They should be placed at the edge of the shoulder rather than along the edge of the traveled way because of their steep cross slope.

LPA's may use a gutter section with a shallow flow line along the edge of the traveled way on residential streets. This avoids the need to depress the curb at the numerous entrances, especially on subdivision streets. This gutter section should only be used on streets functionally classified as local.

31-1.07(c) Curb and Gutter Type Selection

The designer should consider the following guidelines when selecting a curb type:

1. Low-Speed Urban Facilities (Outside Edge of Traveled Way). Depending on the specific conditions, streets may be designed with either a mountable or barrier curb. Curb and gutter may be placed at the edge of the traveled way. Where the design speed is 45 mph (70 km/h) or less, B-6.24 (B-15.60), B-6.18 (B15.45), or B-6.12 (B-15.30) CC&G may be used along the right edge of the traveled way or parking lane. A lesser gutter width may be used adjacent to a right-turn or parking lane or where highly restricted ROW conditions exist. Barrier curbs should be offset at least 1 ft (300 mm) and desirably 2 ft (600 mm) from edge of the travel lanes. Also consider any drainage requirements in the selection of gutter type. Some LPA's have standard curb types that can be used.

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2. High-Speed Facilities (Outside Edge of Shoulder). In general, do not provide barrier curbs or continuous mountable curbs on high-speed facilities where posted speed limits are expected to be greater than 45 mph (70km/h). Where a high-speed facility is proposed with shoulders and side slopes, there may be occasional locations where the ROW is restricted or there is a need to control drainage. In these cases, use an M-4 (M-10) or M-6 (M-15) type curb and gutter or a Type B gutter, depending on drainage needs, along the outside edge of the shoulder. Do not place curb and gutter or Type B gutter immediately adjacent to the edge of the traveled way.
3. Pedestrians. In urban areas, consider the use of B-9 (B-22) curb along the right edge of the traveled way where some additional protection is desired for pedestrians (e.g., adjacent to schoolyards, playgrounds). On roadways with low speeds, use the B-9 (B-22) curb adjacent to sidewalks across bridges. B-9 (B-22) curbs should not be provided along parking lanes.
4. Medians. On divided streets, the type of median curbs should be determined in conjunction with the median width and the type of turning movement control. Consider the following:
 - a. Traversable Medians. Where there is a need to provide a continuous TWLTL along the street and where raised delineation of the center turn lane is desirable, use M-2.12 (M-5.30) CC&G to delineate the outside edge of the TWLTL.
 - b. Raised Curb Medians. Where cross median movements are undesirable or hazardous, a raised curb may be provided. Use the following curbing types for raised curb medians:
 - M-6.24 (M-15.60) or M-6.18 (M-15.45) CC&G on channelizing islands and medians where the design speed is less than 40 mph (60 km/h).
 - B-6.24 (B-15.60), B-6.18 (B-15.45), or B-6.12 (B-15.30) CC&G on channelizing islands and medians where the design speed is 45 mph (70 km/h).
 - For the design speed of 40 mph (60 km/h) or less, the designer has the option to use either an M-6 (M-15) or B-6 (B-15) type curb and gutter.
 - Use M-4 (M-10) curb on channelizing islands or medians where the design speed is 50 mph (80 km/h) or greater. Typically, curbing is only used at locations that would be channelized (e.g., offset left-turn lanes), near at-grade intersections, or on the crossroad through an interchange.
 - Except for channelized intersections, raised-curb medians are generally not considered an appropriate type of median cross section where posted speeds will exceed 45 mph (70 km/h).
5. Corner Islands. On streets or highways with a design speed of 45 mph (70 km/h) or less, use the M-6 (M-15) curb on all corner islands. On facilities with design speeds of 50 mph (80 km/h) or greater, use the following curb types:
 - Where traffic signals are not proposed, use an M-4 (M-10) curb with a specified gutter width on all corner islands adjacent to the high-speed facility.
 - Where traffic signals are present or proposed, use an M-6 (M-15) curb with a specified gutter width on corner islands adjacent to high-speed facilities.

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31-1.08 Cross Slopes

31-1.08(a) Travel Lanes

Surface cross slopes are required for proper drainage of the travel lanes on tangent sections. A sufficient cross slope reduces the hazards of wet pavements by quickly removing water from the surface. The following cross slopes will apply to travel lanes on tangent roadway sections:

1. High-Type Pavements. High-type pavements (i.e., HMA, concrete) are those that retain smooth riding qualities and good nonskid properties in all-weather under heavy traffic volumes and loadings, with little maintenance required. For these pavements, use a cross slope of 1.5% to 2.0% and crown the traveled way pavement at the centerline. Use a minimum cross slope of 1.5% for the first lane away from the centerline. The second lane from the crown should have a cross slope of 2.0%.
2. Low-Type Surfaces. Low-type surfaces are treated earth surfaces, loose aggregate surfaces, and bituminous surface treatments. For low-type surfaces, the pavement cross slope should be 2.0% to 4.0%.

31-1.08(b) Auxiliary Lanes

The rate of cross slope for an auxiliary lane will be at least 2.0% except for curbed left-turn lanes and TWLTLs. The designer should increase the cross slope by 0.5% for each additional set of lanes adjacent to the crown. Single left-turn lanes with curb and gutter are usually sloped at 1.5% to 2.0% away from the median to accommodate snow plowing. TWLTL and flush left-turn lanes are usually crowned at the centerline and sloped at a minimum of 1.5% in each direction.

31-1.08(c) Shoulders

The cross slope of a shoulder depends on the type of shoulder and the construction project type. The following summarizes typical guidelines for shoulder cross slopes:

1. Paved Shoulders. On new construction and reconstruction projects, full-width paved shoulders on tangent sections should be sloped at 4.0%. On 3R projects, the shoulder slopes range from 2.0% to 6.0%.
2. Combination Shoulders. Combination paved/aggregate shoulders should be sloped at 4.0%.
3. Aggregate Shoulders. Aggregate shoulders should be sloped from 4.0% to 6.0%.
4. Turf Shoulders. Turf shoulders should be sloped from 5.0% to 8.0%.
5. Superelevated Sections. [Section 29-3](#) and the [IDOT Highway Standards](#) discuss the application of shoulder cross slopes on superelevated sections for new construction and reconstruction projects.

31-1.08(d) Rollover Factor

The rollover factor is the algebraic difference in cross slope between the shoulder and travel lanes. The maximum algebraic difference between the traveled way and the shoulder is 8.0% on roads with higher traffic volumes and 10.0% for those roads with lower traffic volumes. See [Chapter 32](#). This applies to both tangent and superelevated sections. For allowable shoulder rollover values on 3R projects, see [Chapter 33](#).

31-1.09 Rumble Strips

Rumble strips are grooved patterns constructed on, or in travel lane and shoulder pavements. Rumble strips may also be placed as part of the edgeline or centerline (also called rumble stripes). Rumble strips and rumble stripes create vibration and noise when driven over to indicate that the driver needs to take corrective action. Rumble strips and rumble stripes are an effective way to reduce certain types of crashes and provide a cost effective means of alerting drowsy or inattentive drivers. Rumble stripes have also shown to improve wet weather visibility.

Shoulder rumble strips should be considered for rural highways that have high run-off-the-road crashes and have an adequate paved shoulder width. On facilities in which bicyclists are prohibited or the paved shoulders are wider than 6 ft (1.8 m), the 16 in (400 mm) rumble strip design should be used. On facilities in which bicyclists are permitted and the paved shoulder width is 6 ft (1.8 m) or less, the 8 in (200 mm) rumble strip design should be used to maximize the clear shoulder width available for cyclists, see [Section 42-3.03](#).

Edgeline rumble stripes may be considered in place of shoulder rumble strips or at other locations, where run-off-the-road crashes are a concern, without adequate paved shoulders.

Centerline rumble stripes should be considered on undivided rural highways that have high head-on and opposite-direction sideswipe crashes. A secondary target is drift-off, run-off-the-road-to-the-left crashes. Centerline rumble stripes may also discourage risky passing.

Milling is the preferred method for installing rumble strips; however a formed-in option is allowed for installing the 16 in (400 mm) rumble strips in Portland Cement Concrete shoulders. When the shoulder will be used for traffic during construction, the formed-in option should be reviewed and not allowed if conflicts will occur. It may also be necessary to specify when the milled shoulder rumble strips may be installed if they conflict with the staging of traffic.

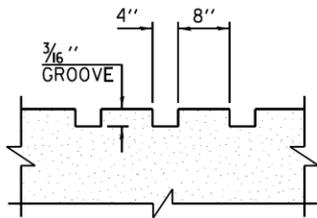
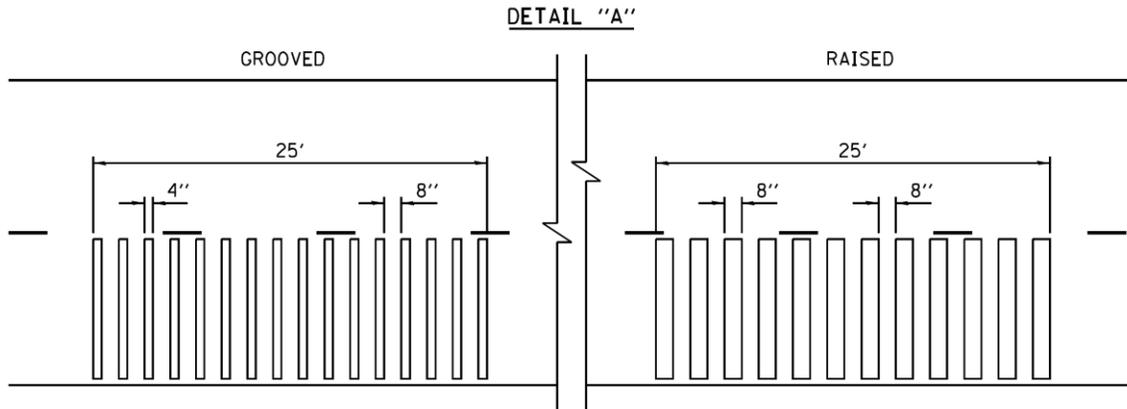
Transverse rumble strips may be considered on approaches to intersections and horizontal curves to indicate a need for the driver to slow down or stop. The use of transverse rumble strips supplements the visual warnings (signs and signals) with audible and sensory indications has some obvious and attractive advantages. Such warnings may reach a fatigued or dozing driver who might miss the visual ones. With the sound created from transverse rumble strips, placement near residences or quiet zones (schools, hospitals, etc.) should be reviewed prior to placement.

Transverse rumble strips should be located in advance of some sign (Stop Ahead, Stop, etc.) that either warns of or describes the action required on the part of the motorist. This will assist the driver to better understand the purpose of the transverse rumble strips. The recommended placement and configuration of the transverse rumble strips should be three groupings of strips 8 in (200mm) wide separated by 4 in (100mm) spaces if it is grooved into the pavement and 8 in (200mm) wide separated by 8 in (200mm) spaces if it is applied to the surface of the pavement, see Figure 31-1H.

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CROSS SECTION ELEMENTS

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NOTE: THE 25-FOOT RUMBLE AREA HAS 6-INCH LENGTHS OF TREATED SURFACE STRETCHED ACROSS THE WIDTH OF APPROACH LANE. EACH SEPARATED BY 8-INCHES OF EXISTING PAVEMENT.

TYPICAL TRANSVERSE RUMBLE STRIP APPLICATION
IN ADVANCE OF AN INTERSECTION

FIGURE 31-1H

31-2 ROADSIDE ELEMENTS

31-2.01 Borders

On urban facilities, the border area between the roadway and the ROW line should be wide enough to serve several purposes. This includes providing space for sidewalks, snow storage, a buffer space between pedestrians and vehicular traffic, and an area for aesthetic features (e.g., grass, other landscaping), signs, and utilities. If a sidewalk will be constructed or is anticipated in the future, the border should be a minimum of 2 ft (1.2 m) and desirably 8 ft (2.4 m) or wider, plus the sidewalk width. The border begins at the back of curb in a typical urban section and at the edge of shoulder in a typical rural section. Where the available ROW is limited and in areas of high ROW costs, as in some industrial and commercial areas, a width of 2 ft (600 mm) plus the sidewalk width may be tolerated.

Where practical, a width of 12 ft to 15 ft (3.6 m to 4.5 m) should be provided between curb / shoulder and sidewalk, which should remain free of obstacles. In addition to the safety and environmental advantages, this space allows for the future addition of a lane, if needed. (In residential areas, wider building set back controls can also be used to attain these features.)

Typically, a 1 ft (300 mm) width is provided between the sidewalk and ROW line. Utility poles usually can be located behind the sidewalk in this area providing a minimum clear sidewalk width of 4 ft (1.2 m).

The slope of the border area is influenced by the surroundings and whether or not a sidewalk (or shared use path) will be provided. If a sidewalk (or shared use path) will be provided, it is aesthetically pleasing to provide a 2% slope for the entire border area. This will match the maximum cross slope of the sidewalk. The direction of the slope, to the curb or away from the curb, is dependent on the surrounding land use and ground elevation beyond the border area. Good economic engineering should be used in determining the best direction to take the water away from the border area. Draining the border area away from the curb in undeveloped area may have advantages. Draining the border area over the curb in developed areas may help the perception of preventing flooding of private property; however, this may increase the required size of the storm sewer system.

If no sidewalk (or shared use path) will be provided or is not anticipated, it is desirable to at least provide a 3 ft to 5 ft wide area with a 2% slope behind the curb. In a cut section, this flat area intercepts and slows the runoff from the higher elevation and provides a storage area from pavement snow removal. In a fill section, this flat area provides additional support for roadway and allows an area for the placement of signs. In both cases this flat area provides a reasonable slope for ease of maintenance and travel way for the occasional pedestrian.

31-2.02 Sidewalks

Sidewalks are considered integral parts of the urban environment. In these areas, travelers frequently choose to make their trip by foot, and pedestrians desire to use a paved surface for the trip. When constructing sidewalks, consider the following:

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CROSS SECTION ELEMENTS

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1. Guidelines. Consider providing sidewalks on both sides of the street for pedestrians near schools, parks, shopping areas, transit stops, and along all streets located in commercial areas. In residential areas, a sidewalk should be placed on at least one side of all streets. Extend all sidewalks to logical termini. If sidewalks are not provided in the initial design, grading should be completed so that sidewalks can be added in the future.
2. Widths. A typical sidewalk is 5 ft (1.5 m) with a 2 ft to 3 ft (600 mm to 1.0 m) wide buffer area between the curb and sidewalk. If no buffer area is provided, the sidewalk should be 6 ft (1.8 m) wide to accommodate any appurtenances that may be included in the sidewalk. High pedestrian volumes may warrant greater widths in business areas and school zones. The minimum sidewalk width is 4 ft (1.2 m). However, this width must be evaluated against the requirements of ADA / PROWAG presented in [Section 41-6](#).
3. Buffer Areas. If the available ROW is sufficient, provide a buffer area between the back of curb and sidewalk. These areas provide space for snow storage and utilities and allow a greater separation between vehicles and pedestrians. The buffer area should be 2 ft to 3 ft (600 mm to 1.0 m) wide to be effective and wider, if practical. Buffer areas may also be used for the placement of roadside appurtenances.
4. Appurtenances. Where a buffer area cannot be provided, consider the impact of roadside appurtenances within the sidewalk (e.g., signs, mailboxes, fire hydrants, parking meters, utility poles). These elements may reduce the effective usable width because they interfere with the pedestrian access route and not meeting ADA / PROWAG requirements.
5. Central Business District (CBD) Areas. In CBDs, typically the entire area between the back of curb and the front of buildings is fully paved as a sidewalk.
6. Accessibility. Sidewalk widths, cross slopes, longitudinal grades, curb ramps, etc., along public rights-of-way must meet the ADA / PROWAG requirements presented in [Section 41-6](#).

31-2.03 Side Slopes

Earth slopes are required to provide a stable transition from the highway profile to adjacent terrain features. With maintenance operations, economy may be attained through the use of mechanized equipment that operates best on relatively flat earth slopes. Flat slopes also facilitate turf establishment and are often required for soil stability. In addition to aesthetic enhancement, flat and well-rounded side slopes, combined with proper roadway elevations above natural ground lines, minimize snow-drifting problems. With proper elevations, crosswinds sweep the snow from the roadway surface, thus facilitating snow removal operations.

Using broad, flat slopes on roadside ditches that are totally visible to the driver lessen the feeling of restriction and add considerably to a driver's willingness to use the shoulder and earth slope area in emergencies. The use of flat side slopes for roadside ditches reduces both the depth and velocity of water, and thereby minimizes damage from erosion.

Drivers who inadvertently leave the traveled way can often recover control of their vehicles if slopes are gentle and transitions are well rounded. This recovery area should be provided where terrain and ROW permit. For additional guidance on roadside safety issues, see [Chapter 35](#).

The tables in [Chapter 32](#) provide the maximum slopes for rural facilities. For urban facilities, side slopes generally will be determined on a case-by-case basis considering the roadside development and ROW restrictions. For some urban projects, relatively steep side slopes and/or retaining walls may be required. The stability of the soil may also affect the front and back slopes that can be used in a project.

31-2.04 Ditches

A roadside ditch is defined as an open channel paralleling the highway embankment within the limits of the highway ROW. Its primary function is to collect runoff from the highway and areas adjacent to the highway that drain naturally to the highway and to transport this accumulated water to an acceptable outlet point. A secondary function of a roadside ditch is to drain the base of the roadway to prevent saturation and loss of support for the pavement. When designing ditches, consider the following:

1. Types. There are basically two types of ditches — V-ditch or flat-bottom ditch. Flat-bottom ditches are typically a minimum of 2 ft (600 mm) wide.
2. Side Slopes. The rural tables in [Chapter 32](#) provide the maximum side slope designs for ditches.
3. Roadside Safety. [Chapter 35](#) presents safety criteria for roadside drainage features.
4. Ditch Grades. Ensure that permanent erosion control is considered in the design of ditches in cut slopes. As a general guide, longitudinal ditch slopes less than 1.0% can be seeded, slopes of 1.0% to 3.0% usually will require sodding or seeding with an erosion control blanket, and slopes greater than 3.0% will require riprap or other protective lining. Very flat longitudinal ditch slopes (i.e., < 0.4%) may require a paved ditch to maintain the flowline over time.

For more information on the design of ditches, see [Section 38-1](#) and the [IDOT Drainage Manual](#).

31-3 RIGHT-OF-WAY (ROW)

31-3.01 General

The purpose of acquiring highway ROW is to provide sufficient room to construct the facility, to enable the safe operation of vehicles on the facility, and to permit the safe and efficient maintenance of the facility. Give consideration to future widening, sidewalks, and shared-use paths.

31-3.02 ROW Width

For new facilities, the minimum ROW width will be the sum of the traveled way, outside shoulders and/or curb and gutter width, median width (if applicable), necessary width for fill and cut slopes, sidewalks (if applicable), public utility facility strip, plus a maintenance border area beyond the construction limits. Except for townships, the total width will vary according to the functional classification and urban/rural environment. Townships are required to have a minimum width of 40 ft (12 m) ([605 ILCS 5/6-301](#)). In addition to the border area beyond the construction limits, allowance may be necessary for the provision of frontage roads, special drainage facilities, roadside clear zones, and future expansion of the highway. These border areas are required for maintenance operations, the retention of natural growth for scenic and ecological purposes, erosion control and, in some cases, for accommodating publicly owned utilities. Border areas also serve as a buffer between the limits of construction and abutting private development.

In rural areas, wide ROW allow the construction of flat slopes, resulting in enhanced safety for the motorist and providing for easier and more economical maintenance. The procurement of sufficient ROW at the time of the initial improvement permits the widening of the roadway and the widening and strengthening of the pavement at reasonable costs as traffic increases.

In urban/suburban areas, it may be more desirable to limit the ROW width to the practical minimum. However, the ROW should not be less than that required for all elements of the design section and appropriate border areas. The acquisition of additional ROW for municipal improvements with rural-type cross sections in built-up areas may not be practical where property damage would be large if standard slopes are constructed. However, where rural conditions exist in municipalities, use the widths for the traveled way and shoulders and slope rates from the applicable rural table in [Chapter 32](#) to determine the minimum ROW width.

In general, minimal additional ROW will be required for 3R projects. However, ditch cleaning and slope flattening may be desirable on these projects. Consequently, strips of a minimum width of ROW or easements may be required.

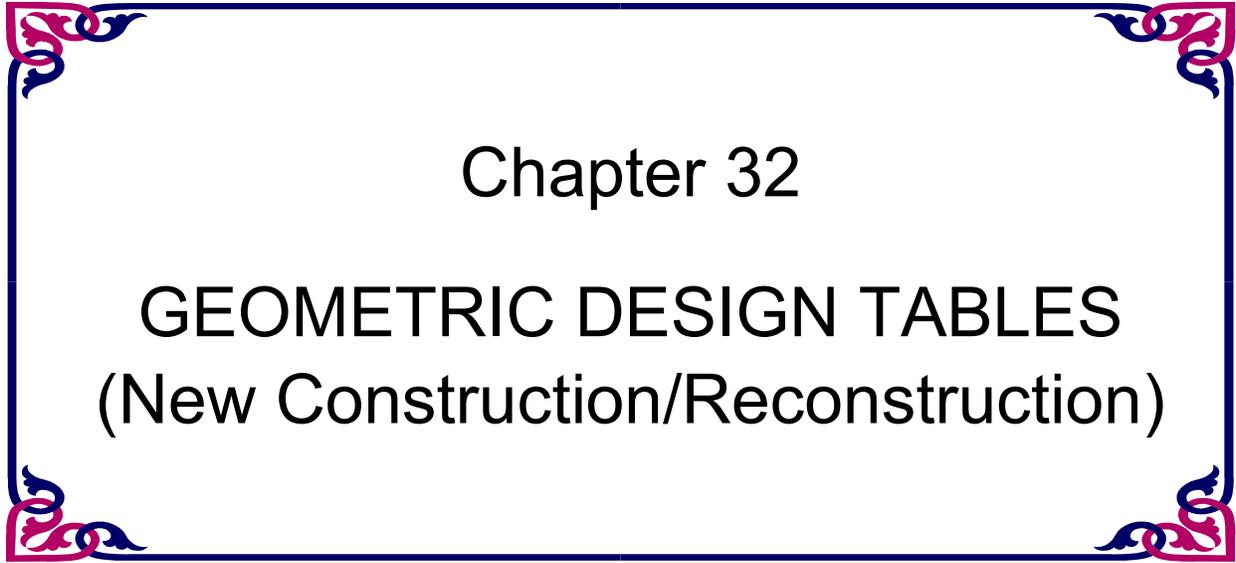
31-4 ACRONYMS

This is a summary of the acronyms used within this chapter.

3R	Rehabilitation, Restoration, and/or Resurfacing
AASHTO	American Association of State Highway and Transportation Officials
ADA	<i>Americans with Disabilities Act</i>
ADT	Average Daily Traffic
BDE	Bureau of Design and Environment
CBD	Central Business Districts
CBLRS	Central Bureau of Local Roads and Streets
CC&G	Concrete Curb and Gutter
HMA	Hot-Mixed Asphalt
IDOT	Illinois Department of Transportation
LPA	Local Public Agency
PROWAG	<i>Public Rights of Way Access Guidelines</i>
ROW	Right-of-Way
TWLTL	Two-Way Left-Turn Lane

31-5 REFERENCES

1. *A Policy on Geometric Design of Highways and Streets*, AASHTO, 2011.
2. [Chapter 34](#), "Cross Section Elements," *BDE Manual*, IDOT.
3. [IDOT Drainage Manual](#), Bureau of Bridges and Structures, IDOT.
4. *Roadside Design Guide*, AASHTO, 2011.
5. *Guidelines for Residential Subdivision Street Design, A Recommended Practice*, Institute of Transportation Engineers.
6. *Capacity and Operational Effects of Midblock Left-Turn Lanes*, NCHRP 395.
7. *Highway Safety Manual*, AASHTO, 2010



Chapter 32

GEOMETRIC DESIGN TABLES
(New Construction/Reconstruction)

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Chapter 32
GEOMETRIC DESIGN TABLES
(New Construction/Reconstruction)

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Chapter 32

GEOMETRIC DESIGN TABLES

(New Construction/Reconstruction)

32-1 GENERAL

This Chapter presents summary tables of the design criteria for the geometric design of local projects. They apply to new construction and reconstruction projects. The designer should consider the following in the use of these tables:

1. Functional Classification. The selection of design values depends on the functional classification of the highway facility. Functional classification is discussed in [Section 27-3](#). The first step in the design process is to determine the functional classification of the proposed improvement. If the classification is unknown, contact the local Illinois Department of Transportation (IDOT) district office.
2. Manual Section References. These tables are intended to provide a concise listing of design values for easy use. However, the designer should review the *Manual* section reference for more information on the design elements.
3. Footnotes. The tables include many footnotes, which are identified by a number in parentheses (e.g., (3)). The information in the footnote is critical to the proper use of these design tables.
4. Cross Section Elements. The designer should realize that some of the cross section elements included in a table (e.g., median width) are not automatically warranted in the project design. The values in the tables will only apply after the decision has been made to include the element in the highway cross section.
5. Bridge Elements. Design criteria for bridge elements are provided in [Chapter 36](#).
6. Controlling Design Criteria. Controlling design criteria are the elements judged to be the most critical indicators of highway safety and overall serviceability. The tables provide an asterisk to indicate controlling design criteria. [Section 27-7](#) discusses this in more detail and presents the process for approving design variances to controlling criteria.
7. Local Public Agency (LPA) Criteria. Illinois counties and cities may have developed their own geometric design criteria for local facilities. It may be acceptable to use the local agency criteria where there are conflicts with the criteria listed in this *Manual*. This decision will be made on a case-by-case basis or can be approved as an agency variance acceptable for all projects.

32-2 GEOMETRIC DESIGN CRITERIA

This Section presents the new construction/reconstruction geometric design criteria for various local facilities. Design criteria are provided for the following facilities:

- Figure 32-2A “Geometric Design Criteria for Rural Two-Lane Minor Arterials,”
- Figure 32-2B “Geometric Design Criteria for Rural Two-Lane Collectors,”
- Figure 32-2C “Geometric Design Criteria for Rural Two-Lane Local Roads,”
- Figure 32-2D “Geometric Design Criteria for Suburban Arterials,”
- Figure 32-2E “Geometric Design Criteria for Urban Two-Way Arterials,”
- Figure 32-2F “Geometric Design Criteria for Urban One-Way Arterials,”
- Figure 32-2G “Geometric Design Criteria for Urban Two-Way Collectors,”
- Figure 32-2H “Geometric Design Criteria for Urban One-Way Collectors,” and
- Figure 32-2I “Geometric Design Criteria for Urban Local Streets.”

For criteria on local rural two-lane principal arterials, the designer should review the criteria in [Chapter 47](#) of the *Bureau of Design and Environment (BDE) Manual*. Local rural two-lane principal arterial projects should be brought to early coordination for discussion.

Design Element			Manual Section	Design Volume (Two-Way DHV)		
				New Construction / Reconstruction DHV < 1050 (2)		
Design Controls	Design Forecast Year		27-6.02	20 Years		
	Minimum Design Speed * (1a)	Level	27-5.02	60 mph (3a)	100 km/h (3a)	
		Rolling		55 mph (3a)	90 km/h (3a)	
	Access Control		35-1 BDE	Controlled by Regulations (4)		
Level of Service (LOS) *		27-6.04	C			
Cross Section Elements	Traveled Way Width *		31-1.01	24'	7.2 m	
	Surface Type		Chapter 44	High Type Pavement		
	Shoulder Width *			10'	3.0 m	
	Shoulder Type		31-1.06	4' Paved w/ Remainder Aggregate	1.2 m Paved w/ Remainder Aggregate	
	Auxiliary Lanes *	Lane Width		12'	3.6 m	
		Shoulder Width	31-1.03	4' (Paved)	1.2 m (Paved)	
	Flush / TWLTL Widths		31-1.05	14'	4.2 m	
	Cross Slope	Travel Lane *			1.5% (5a)	
		Shoulder		31-1.08	Paved 4% / Aggregate 6% (5b)	
Rollover Factor			8%			
Roadway Slopes	Side Slope (Maximum)	Cut Section	Front Slope	1V:6H		
			Ditch Width	4' (6)	1.2 m (6)	
		Back Slope	31-2.03 31-2.04	≤10' 1V:3H >10' 1V:2H (7)	≤3.0 m 1V:3H >3.0 m 1V:2H (7)	
	Rock Cut			1V:0.25H		
	Fill Section			1V:6H to Clear Zone (8) 1V:3H (max) to Toe of Slope (8)		

* Controlling design criteria (see [Section 27-7](#)).

DHV = Design Hourly Volume

**GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE MINOR ARTERIALS
(New Construction/Reconstruction)**

Figure 32-2A (US Customary / Metric)

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GEOMETRIC DESIGN TABLES

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Footnotes:

- (1) Design Criteria. The criteria for the minimum cross-section elements allowed to remain in place (see [Chapter 33](#)) provided it is cost effective and the safety record is satisfactory.
- (2) Traffic Volumes. The design hourly volumes (DHV) assumes base conditions (except for 8% heavy vehicles) and a PHF = 1 for LOS shown. Adjust these values according to the actual factors. [Section 27-6](#) further discusses capacity methodology and traffic volumes.
- (3) Design Speed.
 - a. In rolling terrain, a minimum design speed of 55 mph (90 km/h) may be considered with study and justification.
 - b. To determine the minimum design speed allowed to remain in place, consider the following:
 - i. Existing horizontal curves may remain in place provided they have a comfortable operating speed of 60 mph (100 km/h) (level) or 50 mph (80 km/h) (rolling) and there is no history of crashes.
 - ii. Existing sag vertical curves may remain in place if they have a design speed of 50 mph (80 km/h) or greater and do not have a history of crashes. If not, reconstruct the sag vertical curve to a design speed of 60 mph (100 km/h).
 - iii. Existing crest vertical curves may remain in place if they have a design speed of 50 mph (80 km/h) or greater and do not have a history of crashes. If not, reconstruct the crest vertical curve to a design speed of 60 mph (100 km/h).
 - iv. Consider the relationship between horizontal and vertical alignments simultaneously to obtain a desirable condition. [Chapter 33](#) of the *BDE Manual* discusses these relationships and their effect on aesthetics and safety.
- (4) Access Control. For bypass routes on new alignment, design the roadway with partial access control. See [Section 35-1](#) of the *BDE Manual*.
- (5) Cross Slopes.
 - a. Cross slopes for outside auxiliary lanes will be at least 2.0% and should be 0.5% greater than the adjacent travel lane.
 - b. Where an aggregate shoulder is part of the shoulder width, slope the aggregate portion of the shoulder at 6%.
- (6) Ditch Bottom Width. Provide a wider outside ditch bottom where detention storage of storm water is a consideration.
- (7) Back Slope. Where the height of cut exceeds 10 ft (3.0 m), consider using a 1V:2H back slope beyond the clear zone. Also, for heights of cut greater than 30 ft (9.0 m), consider the use of benching.
- (8) Fill Slope. For fill heights greater than 30 ft (9.0 m), use a 1V:2H uniform slope with a roadside barrier. Also, for heights greater than 30 ft (9.0 m), consider the use of benching.

GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE MINOR ARTERIALS
(New Construction/Reconstruction)

Footnotes to Figure 32-2A

Design Element		Manual Section	Design Volume (ADT)				
			ADT < 400	400 to 750	750 to 2000	ADT > 2000	
Design Controls	Design Forecast Year		27-6.02	Current	20 Years		
	Minimum Design Speed * (1a)	Level	27-5.02	40 mph (1b)	50 mph (1b)	50 mph	60 mph
		Rolling		30 mph (1b)	40 mph (1b)		50 mph
Level of Service (LOS) *		27-6.04	C				
Cross Section Elements	Traveled Way Width *		31-1.01	20'	22'	24' (2)	
	Surface Type		Chapter 44	Aggregate Surface or Bituminous Treated (3)	High Type Pavement		
	Shoulder Width *		31-1.06	2' (4a)	4' (4b)	6' (4b)	8' (4b)
	Shoulder Type			Turf or Aggregate (5a)		Aggregate or Paved (5b)	
	Auxiliary Lanes *	Lane Width	31-1.03	10'	Desired 11' Minimum 10'		Desired 12' Minimum 11'
		Shoulder Width		2'	4'	Desired 6' Minimum 4'	Desired 8' Minimum 4'
	Cross Slope	Travel Lane * (6a)		31-1.08	2.0% - 4% (6b)		1.5% - 2.0%
		Shoulder			Turf 5% - 8% / Aggregate 4% - 6%		Aggregate 4% - 6% / Paved 4%
Rollover Factor		10%			8%		
Roadway Slopes	Side Slope (Maximum)	Cut Section	31-2.03 31-2.04	1V:3H		1V:4H	
				Ditch Width	Minimum 2'		
				Back Slope	≤10' 1V:3H (7) >10' 1V:2H (7)	≤10' 1V:3H >10' 1V:2H	<15' 1V:4H 15' - 25' 1V:3H >25' 1V:2H
		Rock Cut		1V:0.25H			
		Fill Section		≤6' 1V:3H >6' 1V:2H	≤10' 1V:3H >10' 1V:2H	≤25' 1V:4H >25' 1V:2H	

* Controlling design criteria (see Section 27-7).

ADT = Average Daily Traffic

**GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE COLLECTORS
(New Construction/Reconstruction)**

Figure 32-2B (US Customary)

Design Element		Manual Section	Design Volume (ADT)				
			ADT < 400	400 to 750	750 to 2000	ADT > 2000	
Design Controls	Design Forecast Year		27-6.02	Current	20 Years		
	Minimum Design Speed * (1a)	Level	27-5.02	60 km/h (1b)	80 km/h (1b)	80 km/h	100 km/h
		Rolling		50 km/h (1b)	60 km/h (1b)		80 km/h
Level of Service (LOS) *		27-6.04	C				
Cross Section Elements	Traveled Way Width *		31-1.01	6.0 m	6.6 m	7.2 m (2)	
	Surface Type		Chapter 44	Aggregate Surface or Bituminous Treated (3)	High Type Pavement		
	Shoulder Width *		31-1.06	600 mm (4a)	1.2 m (4b)	1.8 m (4b)	2.4 m (4b)
	Shoulder Type			Turf or Aggregate (5a)		Aggregate or Paved (5b)	
	Auxiliary Lanes *	Lane Width	31-1.03	3.0 m	Desired 3.3 m Minimum 3.0 m		Desired 3.6 m Minimum 3.3 m
		Shoulder Width		600 mm	1.2 m	Desired 1.8 m Minimum 1.2 m	Desired 2.4 m Minimum 1.2 m
	Cross Slope	Travel Lane * (6a)		31-1.08	2.0% - 4% (6b)	1.5% - 2.0%	
		Shoulder			Turf 5% - 8% / Aggregate 4% - 6%		Aggregate 4% - 6% / Paved 4%
Rollover Factor		10%			8%		
Roadway Slopes	Side Slope (Maximum)	Cut Section	Front Slope	1V:3H		1V:4H	
			Ditch Width	Minimum 600 mm			
			Back Slope	31-2.03 31-2.04	≤3.0 m 1V:3H (7) >3.0 m 1V:2H (7)	≤3.0 m 1V:3H >3.0 m 1V:2H	<4.5 m 1V:4H 4.5 - 7.5 m 1V:3H >7.5 m 1V:2H
		Rock Cut		1V:0.25H			
		Fill Section			≤1.8 m 1V:3H >1.8 m 1V:2H	≤3.0 m 1V:3H >3.0 m 1V:2H	≤7.5 m 1V:4H >7.5 m 1V:2H

* Controlling design criteria (see Section 27-7).

ADT = Average Daily Traffic

**GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE COLLECTORS
(New Construction/Reconstruction)**

Figure 32-2B (Metric)

Footnotes:

- (1) Design Speed.
 - a. A rural collector may pass through a relatively built-up area. In these sections, a lower design speed may be selected with justification. However, the selected design speed should not be less than 30 mph (50 km/h). Consider the following:
 - i. For low to moderate density areas, the design speed may be reduced 5 mph to 10 mph (10 km/h) below the listed design speed.
 - ii. For moderate to high density areas, the design speed may be reduced 10 mph to 15 mph (10 km/h to 20 km/h) below the listed design speed.
 - b. For rural bridge projects, the design speed may be increased to the posted or regulatory speed limit to avoid a deficient NBIS rating for approach roadway alignment appraisal. All elements of the project will be designed to the chosen design speed. The chosen design speed will be certified by the County Engineer.
- (2) Traveled Way Width. On a reconstruction project, an existing 22 ft (6.6 m) traveled way width may be maintained where the alignment and safety records are satisfactory.
- (3) Surface Type. A high-type pavement is desirable.
- (4) Shoulder Width.
 - a. Where roadside barriers are included, provide a minimum offset of 4 ft (1.2 m) from the edge of the traveled way to the roadside barrier. When the 4 ft (1.2 m) width cannot be met because of a proposed or an existing bridge width (see [Section 36-5](#)), [Section 35-4](#) shall be followed to flare the roadside barrier until the 4 ft (1.2 m) width is met or until the length of need is exceeded.
 - b. Where the rural collector passes through a moderate to high density area, the shoulder width may be 4 ft (1.2 m). This width may include the width of Type B gutter or the gutter flag with curb and gutter at the outside edge of the shoulder.
- (5) Shoulder Type.
 - a. Aggregate shoulders may consist of a nominal 4 in (100 mm) thickness where the ADT is less than 750 vehicles/day.
 - b. For ADT's > 750 vehicles/day, an aggregate shoulder should be a minimum thickness of 6 in (150 mm) Type A shoulders.
- (6) Cross Slopes.
 - a. Cross slopes for outside auxiliary lanes will be at least 2.0% and should be 0.5% greater than the adjacent travel lane. Inside auxiliary lane cross slopes are sloped at 1.5% to 2.0% with high-type pavements.
 - b. Use 1.5% to 2.0% with high-type pavement.
- (7) Back Slopes. For isolated restricted right-of-way, the back slope may be 1V:2H for cut depths of 0 ft to 10 ft (0 m to 3 m) or 1V:1.5H for cut depths greater than 10 ft (3 m).

**GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE COLLECTORS
(New Construction/Reconstruction)**

Footnotes to Figure 32-2B

Design Element			Manual Section	Design Volume (ADT)				
				ADT < 250	250 to 400	400 to 750	750 to 2000	ADT > 2000
Design Controls	Design Forecast Year		27-6.02	Current		20 Years		
	Minimum Design Speed * (1)	Level	27-5.02	30 mph (1c/d)	40 mph (1d)	50 mph		
		Rolling		30 mph (1b-d)	30 mph (1d)	40 mph (1d)		
	Level of Service (LOS) *		27-6.04	D				
Cross Section Elements	Traveled Way Width *		31-1.01	18 (2a)	20'	22'		24' (2b)
	Surface Type		Chapter 44	Aggregate Surface or Bituminous Treated (3)		High Type Pavement		
	Shoulder Width *		31-1.06	2' (4a)		4' (4b)	6' (4b)	8' (4b)
	Shoulder Type			Turf	Turf or Aggregate (5a)		Aggregate, Paved, or Comb. (5b)	
	Auxiliary Lanes *	Lane Width	31-1.03	N/A	10'	Desired 11' Minimum 10'		Desired 12' Minimum 11'
		Shoulder Width		N/A	2'	Desired 4' Minimum 2'	Desired 6' Minimum 4'	Desired 8' Minimum 4'
	Cross Slope (6a)	Travel Lane *		2.0% - 4% (6b)		1.5% - 2.0%		
		Shoulder	31-1.08	Turf 5% - 8%	Turf 5% - 8% / Aggregate 4% - 6%		Aggregate 4% - 6% / Paved 4%	
		Rollover Factor		10%		8%		
Roadway Slopes	Side Slope (Maximum)	Cut Section	Front Slope	1V:3H (7a)	1V:3H		1V:4H	
			Ditch Width	Desired 2'	Minimum 2'			
		Back Slope	31-2.03 31-2.04	≤10' 1V:3H >10' 1V:2H (7a/b)	≤10' 1V:3H >10' 1V:2H (7b)	≤10' 1V:3H >10' 1V:2H	<15' 1V:4H 15 - 25' 1V:3H >25' 1V:2H	
	Rock Cut		1V:0.25H					
	Fill Section			≤6' 1V:3H >6' 1V:2H	≤10' 1V:3H >10' 1V:2H	≤25' 1V:4H >25' 1V:2H		

* Controlling design criteria (see [Section 27-7](#)).

ADT = Average Daily Traffic

**GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE LOCAL ROADS
(New Construction/Reconstruction)**

Figure 32-2C (US Customary)

Design Element			Manual Section	Design Volume (ADT)				
				ADT < 250	250 to 400	400 to 750	750 to 2000	ADT > 2000
Design Controls	Design Forecast Year		27-6.02	Current		20 Years		
	Minimum Design Speed * (1)	Level	27-5.02	50 km/h (1c/d)	60 km/h (1d)	80 km/h		
		Rolling	27-5.02	50 km/h (1b-d)	50 km/h (1d)	60 km/h (1d)		
Level of Service (LOS) *			27-6.04	D				
Cross Section Elements	Traveled Way Width *		31-1.01	5.4 m (2a)	6.0 m	6.6 m		7.2 m (2b)
	Surface Type		Chapter 44	Aggregate Surface or Bituminous Treated (3)		High Type Pavement		
	Shoulder Width *		31-1.06	0.6 m (4a)		1.2 m (4b)	1.8 m (4b)	2.4 m (4b)
	Shoulder Type			Turf	Turf or Aggregate (5a)		Aggregate, Paved, or Comb. (5b)	
	Auxiliary Lanes *	Lane Width	31-1.03	N/A	3.0 m	Desired 3.3 m Minimum 3.0 m		Desired 3.6 m Minimum 3.0 m
		Shoulder Width		N/A	0.6 m	Desired 1.2 m Minimum 0.6 m	Desired 1.8 m Minimum 1.2 m	Desired 2.4 m Minimum 1.2 m
	Cross Slope (6a)	Travel Lane *		31-1.08	2.0% - 4% (6b)		1.5% - 2.0%	
		Shoulder			Turf 5% - 8%	Turf 5% - 8% / Aggregate 4% - 6%		Aggregate 4% - 6% / Paved 4%
Rollover Factor		10%			8%			
Roadway Slopes	Side Slope (Maximum)	Cut Section	31-2.03 31-2.04	Front Slope	1V:3H (7a)	1V:3H		1V:4H
				Ditch Width	Desired 0.6 m	Minimum 0.6 m		
		Back Slope		≤3.0 m 1V:3H >3.0 m 1V:2H (7a/b)	≤3.0 m 1V:3H >3.0 m 1V:2H (7b)	≤3.0 m 1V:3H >3.0 m 1V:2H		<4.5 m 1V:4H 4.5 - 7.5 m 1V:3H >7.5 m 1V:2H
	Rock Cut			1V:0.25H				
	Fill Section			≤1.8 m 1V:3H >1.8 m 1V:2H	≤3.0 m 1V:3H >3.0 m 1V:2H		≤7.5 m 1V:4H >7.5 m 1V:2H	

* Controlling design criteria (see [Section 27-7](#)).

ADT = Average Daily Traffic

**GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE LOCAL ROADS
(New Construction/Reconstruction)**

Figure 32-2C (Metric)

BUREAU OF LOCAL ROADS & STREETS
GEOMETRIC DESIGN TABLES

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Footnotes:

(1) Design Speed.

- a. A rural local road may pass through a relatively built-up area. In these areas, for highway projects with no bridges, a lower design speed may be selected with justification. However, the selected design speed should not be less than 20 mph (30 km/h). Consider the following:
 - i. For low to moderate density areas, the design speed may be reduced 5 mph to 10 mph (10 km/h) below the listed design speed.
 - ii. For moderate to high density areas, the design speed may be reduced 10 mph to 15 mph (10 km/h to 20 km/h) below the listed design speed.
- b. For highway projects with no bridges with ADT's less than 50 vehicles/day, the design speed may be 20 mph (30 km/h).
- c. For projects constructed with no bridges, other than Federal funds on the district road system with ADT's less than 150 vehicles/day, no design speed is required.
- d. For rural bridge projects, minimum design speed shall be as determined by the ADT. However, the design speed may be increased to the posted or regulatory speed limit to avoid a deficient NBIS rating for approach roadway alignment appraisal. All elements of the project will be designed to the chosen design speed. The chosen speed will be certified by the County Engineer.

(2) Traveled Way Width.

- a. For projects constructed with other than Federal funds on the district road system with ADT's less than 150 vehicles/day, the minimum width is 16 ft (4.8 m).
- b. On a reconstruction project, an existing 22 ft (6.6 m) traveled way may be maintained where the alignment and safety records are satisfactory.

(3) Surface Type. A high-type pavement may be provided.

(4) Shoulder Width.

- a. Where roadside barriers are included, provide a minimum offset of 4 ft (1.2 m) from the edge of the traveled way to the roadside barrier. When the 4 ft (1.2 m) width cannot be met because of a proposed or an existing bridge width (see [Section 36-5](#)), [Section 35-4](#) shall be followed to flare the roadside barrier until the 4 ft (1.2 m) width is met or until the length of need is exceeded.
- b. Where the rural local road passes through a moderate to high density area, the shoulder width may be 4 ft (1.2 m). This width may include the width of Type B gutter or the gutter flag with curb and gutter at the edge of the shoulder.

(5) Shoulder Type.

- a. Aggregate shoulders may consist of a nominal 4 in (100 mm) thickness where the ADT is less than 750 vehicles/day.
- b. For ADT's > 750 vehicles/day, an aggregate shoulder should be a minimum thickness of 6 in (150 mm) Type A shoulders.

(6) Cross Slopes.

- a. Cross slopes for outside auxiliary lanes will be at least 2.0% and should be 0.5% greater than the adjacent travel lane.
- b. Use 1.5% to 2.0% for high-type pavement.

(7) Side Slopes.

- a. For district road systems constructed with other than Federal funds, front slopes may be 1V:2H and back slopes may be 1V:1.5H.
- b. For isolated restricted right-of-way, the back slope may be 1V:2H for cut depths of 0 ft to 10 ft (0 m to 3 m) or 1V:1.5H for cut depths greater than 10 ft (3 m).

GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE LOCAL ROADS
(New Construction/Reconstruction)

Footnotes to Figure 32-2C

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Design Element		Manual Section	Design Volume (DHV)			
			Two-Way DHV < 1250 (1)	Two-Way DHV 1250 - 2050 (1)	Two-Way DHV 2050 - 2900 (1)	
Design Controls	Highway Type	---	TWS-2	TWS-4	TWS-6	
	Design Forecast Year	27-6.02	20 Years			
	Design Speed * (2)	27-5.02	40 mph – 50 mph			
	Level of Service (LOS) *	27-6.04	C			
Cross Section Elements	Traveled Way	Number of Travel Lanes	31-1.02	2	4	6
		Traveled Way Width *	31-1.01	12'		
		Traveled Lane Width (Shared with Bicycles)	42-3.02	See Section 42-3.02		
	Shoulder Width * (3)	Right	31-1.06	8' Paved		
		Left		N/A	6' (4' Paved)	
	Auxiliary Lanes *	Lane Width	31-1.03	Single Left & Right 12' Dual Lefts & Rights 24'		
		Shoulder / Curb Type and Width		Shoulder 4' and/or B-6.24 CC&G (4)		
	Cross Slope (5a)	Travel Lane (Minimum) *	31-1.08	1.5% - 2.0%		
		Auxiliary Lane		(5b)		
	Median Width	Flush	31-1.05	N/A	Range 4' to 14'	
		Flush (TWLTL)		Desired 12' Range 10' to 14'		
		Traversable		N/A	16'	
		Raised Curb		N/A	18'	
Sidewalk Width		31-2.02	Desired 5' / Minimum 4'			
Roadway Slopes	Side Slope (Maximum)	Cut Section (Uncurbed)	1V:4H			
		Rock Cut	31-2.03			
		Fill Section (Uncurbed)	1V:0.25H			
	Median Slope	Concrete Surface / Traversable	31-1.05	N/A	1.5%	
		Flush / TWLTL Surface		1.5%		
		Grass/ Landscape Surface		N/A	5% (Towards C&G)	

* Controlling design criteria (see [Section 27-7](#)).

DHV = Design Hourly Volume / TWS = Two-Way Street

**GEOMETRIC DESIGN CRITERIA FOR SUBURBAN ARTERIALS
(New Construction/Reconstruction)**

Figure 32-2D (US Customary)

Design Element		Manual Section	Design Volume (DHV)			
			Two-Way DHV < 1250 (1)	Two-Way DHV 1250 - 2050 (1)	Two-Way DHV 2050 - 2900 (1)	
Design Controls	Highway Type	---	TWS-2	TWS-4	TWS-6	
	Design Forecast Year	27-6.02	20 Years			
	Design Speed * (2)	27-5.02	60 km/h – 80 km/h			
	Level of Service (LOS) *	27-6.04	C			
Cross Section Elements	Traveled Way	Number of Travel Lanes	31-1.02	2	4	6
		Traveled Way Width *	31-1.01	3.6 m		
		Traveled Lane Width (Shared with Bicycles)	42-3.02	See Section 42-3.02		
	Shoulder Width * (3)	Right	31-1.06	2.4 m Paved		
		Left		N/A	1.8 m (1.2 m Paved)	
	Auxiliary Lanes *	Lane Width	31-1.03	Single Left & Right 3.6 m Dual Lefts & Rights 7.2 m		
		Shoulder / Curb Type and Width		Shoulder 1.2 m and/or B-15.60 CC&G (4)		
	Cross Slope (5a)	Travel Lane (Minimum) *	31-1.08	1.5% - 2.0%		
		Auxiliary Lane		(5b)		
	Median Width	Flush	31-1.05	N/A	Range 1.2 m to 4.2 m	
		Flush (TWLTL)		Desired 3.6 m Range 3.0 m to 4.2 m		
		Traversable		N/A	4.8 m	
		Raised Curb		N/A	5.5 m	
Sidewalk Width		31-2.02	Desired 1.5 m / Minimum 1.2 m			
Roadway Slopes	Side Slope (Maximum)	Cut Section (Uncurbed)	1V:4H			
		Rock Cut	31-2.03			
		Fill Section (Uncurbed)	1V:0.25H			
	Median Slope	Concrete Surface / Traversable	31-1.05	N/A	1.5%	
		Flush / TWLTL Surface		1.5%		
Grass/ Landscape Surface		N/A		5% (Towards C&G)		

* Controlling design criteria (see [Section 27-7](#)).

DHV = Design Hourly Volume / TWS = Two-Way Street

**GEOMETRIC DESIGN CRITERIA FOR SUBURBAN ARTERIALS
(New Construction/Reconstruction)**

Figure 32-2D (Metric)

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GEOMETRIC DESIGN TABLES

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August 2016

Footnotes:

- (1) Traffic Volumes. The design hourly volumes (DHV) are calculated using a PHF = 1.0; these values may be adjusted using local peak-hour factors. For more information, see the *Highway Capacity Manual (HCM)*.
- (2) Design Speed. A 60 mph (100 km/h) design speed may be considered in open-suburban areas.
- (3) Shoulder Width.
 - a. Concrete Curb & Gutter (CC&G) may be placed on the outside edge of the shoulder, especially if sidewalks will be placed along the shoulder. The gutter flag may be included in the shoulder width.
 - b. Where the design speed is 45 mph (70 km/h) or less, the shoulder may be replaced with a B-6.24 (B-15.60) CC&G.
- (4) Auxiliary Lane. Under restricted conditions, the gutter width adjacent to the edge of the turn lane may be narrowed or eliminated adjacent to a 12 ft (3.6 m) turn lane.
- (5) Cross Slope.
 - a. Use 2.0% minimum cross slopes for travel lanes not adjacent to the crown.
 - b. Curbed left-turn lanes may be sloped at 1.5% to 2.0% away from the median. Two Way Left Turn Lane (TWLTL) and flush left-turn lanes are sloped at the same rate as the adjacent traveled way. Cross slopes for outside auxiliary lanes will be at least 2.0% and desirably should be 0.5% greater than the adjacent travel lane.

GEOMETRIC DESIGN CRITERIA FOR SUBURBAN ARTERIALS
(New Construction/Reconstruction)

Footnotes for Figure 32-2D

Design Element		Manual Section	Design Volume (DHV)			
			Two-Way DHV < 1250 (1)	Two-Way DHV 1250 - 2050 (1)	Two-Way DHV 2050 - 2900 (1)	
Design Controls	Highway Type	---	TWS-2	TWS-4	TWS-6	
	Design Forecast Year	27-6.02	20 Years			
	Design Speed *	27-5.02	30 mph – 40 mph			
	Level of Service (LOS) * (2)	27-6.04	C			
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2	4	6
		Travel Lane	31-1.01	Desired 12' Minimum 11' (3)	Desired 12' Minimum 11'	
		Travel Lane (Shared with Bicycles)	42-3.02	See Section 42-3.02		
		Parking Lane (4)	31-1.04	Desired 10' Minimum 8'		
		Auxiliary Lane	31-1.03	Single Left & Right – Desired 12' / Minimum 11' Dual Lefts & Rights – Desired 24' / Minimum 22'		
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% - 2.0%	1.5% - 2.0% (5a)	
		Auxiliary Lanes		2.0% (5b)	(5b)	
	Outside Curb and Gutter Type	31-1.07	B-6.12, B-6.18, or B-6.24 CC&G (6)			
	Median Width	Flush		N/A	Range 4' to 14'	
		Flush (TWLTL)	31-1.05	Desired 12' Range 10' to 14'		
		Traversable		N/A	16'	
		Raised Curb		N/A	18'	
	Sidewalk Width (7)	31-2.02	Desired 5' / Minimum 4'			
Obstruction Free Zone * (8)	35-2	1.5'				
Roadway Slopes	Side Slope (9) (Maximum)	Cut Section (Curbed)	---			
		Rock Cut	31-2.03	---		
		Fill Section (Curbed)	---			
	Median Slope	Concrete Surface / Traversable		N/A	1.5%	
		Flush / TWLTL Surface	31-1.05	1.5%		
Grass/ Landscape Surface			N/A	5% (Towards C&G)		

* Controlling design criteria (see [Section 27-7](#)).

DHV = Design Hourly Volume / TWS = Two-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN TWO-WAY ARTERIALS
(New Construction/Reconstruction)**

Figure 32-2E (US Customary)

Design Element		Manual Section	Design Volume (DHV)			
			Two-Way DHV < 1250 (1)	Two-Way DHV 1250 - 2050 (1)	Two-Way DHV 2050 - 2900 (1)	
Design Controls	Highway Type	---	TWS-2	TWS-4	TWS-6	
	Design Forecast Year	27-6.02	20 Years			
	Design Speed *	27-5.02	50 km/h – 60 km/h			
	Level of Service (LOS) * (2)	27-6.04	C			
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2	4	6
		Travel Lane	31-1.01	Desired 3.6 m Minimum 3.3 m (3)	Desired 3.6 m Minimum 3.3 m	
		Travel Lane (Shared with Bicycles)	42-3.02	See Section 42-3.02		
		Parking Lane (4)	31-1.04	Desired 3.0 m Minimum 2.4 m		
		Auxiliary Lane	31-1.03	Single Left & Right – Desired 3.6 m / Minimum 3.3 m Dual Lefts & Rights – Desired 7.2 m / Minimum 6.6 m		
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% - 2.0%	1.5% - 2.0% (5a)	
		Auxiliary Lanes		2.0% (5b)	(5b)	
	Outside Curb and Gutter Type	31-1.07	B-15.30, B-15.45, or B-15.60 CC&G (6)			
	Median Width	Flush	31-1.05	N/A	Range 1.2 m to 4.2 m	
		Flush (TWLTL)		Desired 3.6 m Range 3.0 m to 4.2 m		
		Traversable		N/A	4.8 m	
		Raised Curb		N/A	5.5 m	
	Sidewalk Width (7)	31-2.02	Desired 1.5 m / Minimum 1.2 m			
Obstruction Free Zone * (8)	35-2	450 mm				
Roadway Slopes	Side Slope (9) (Maximum)	Cut Section (Curbed)	---			
		Rock Cut	31-2.03			
		Fill Section (Curbed)	---			
	Median Slope	Concrete Surface / Traversable	31-1.05	N/A	1.5%	
		Flush / TWLTL Surface		1.5%		
Grass/ Landscape Surface		N/A		5% (Towards C&G)		

* Controlling design criteria (see [Section 27-7](#)).

DHV = Design Hourly Volume / TWS = Two-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN TWO-WAY ARTERIALS
(New Construction/Reconstruction)**

Figure 32-2E (Metric)

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Footnotes:

- (1) Traffic Volumes. The design hourly volumes (DHV) are calculated using a PHF = 1.0; these values may be adjusted using local peak-hour factors. For more information, see the *Highway Capacity Manual*.
- (2) Level of Service (LOS). A LOS D may be used in heavily developed sections of metropolitan areas.
- (3) Surface Width. The minimum surface width is 30 ft (9.0 m) face-of-curb to face-of-curb.
- (4) Parking Lane Width. The desirable width of the parking lane is 10 ft (3.0 m) and includes the gutter width. If the parking lane may be used as future travel lane, the 10 ft (3.0 m) width should be in addition to the gutter width. An 8 ft (2.4 m) width may be used where it is unlikely the parking lane will be used as through or turning lane in the future.
- (5) Cross Slope.
 - a. Use 2.0% minimum cross slopes for travel lanes not adjacent to the crown.
 - b. Curbed left-turn lanes may be sloped at 1.5% to 2.0% away from the median. Two Way Left Turn Lane (TWLTL) and flush left-turn lanes are sloped at the same rate as the adjacent traveled way. Cross slopes for outside auxiliary lanes will be at least 2.0% and desirably should be 0.5% greater than the adjacent travel lane.
- (6) Gutter Width. Under restricted conditions, the gutter width adjacent to the edge of a 12 ft (3.6 m) turn lane may be eliminated.
- (7) Sidewalk Width. Include a 2 ft to 3 ft (600 mm to 1.0 m) buffer strip between the curb and sidewalk. For sidewalks without a buffer strip, a minimum 6 ft (1.8 m) sidewalk width behind the curb must be provided.
- (8) Obstruction-Free Zone. Distance is measured from the face of the curb. Hazards behind curbs should be located outside of the clear zone shown for uncurbed roadways as discussed in [Section 35-2.02\(f\)](#).
- (9) Side Slopes. Side slopes to be determined on a case-by-case basis considering roadside development and right-of-way restrictions.

GEOMETRIC DESIGN CRITERIA FOR URBAN TWO-WAY ARTERIALS
(New Construction/Reconstruction)

Footnotes for Figure 32-2E

Design Element		Manual Section	Design Volume (DHV)			
			One-Way DHV < 1300 (1)	One-Way DHV 1300 - 1850 (1)	One-Way DHV > 1850 (1)	
Design Controls	Highway Type	---	OWS-2	OWS-3	OWS-4	
	Design Forecast Year	27-6.02	20 Years			
	Design Speed *	27-5.02	30 mph – 40 mph			
	Level of Service (LOS) * (2)	27-6.04	C			
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2	3	4
		Travel Lane	31-1.01	Desired 12' Minimum 11'		
		Travel Lane (Shared with Bicycles)	42-3.02	See Section 42-3.02		
		Parking Lane (3)	31-1.04	Desired 10' Minimum 8'		
		Auxiliary Lane	31-1.03	Single Left & Right – Desired 12' / Minimum 11' Dual Lefts & Rights – Desired 24' / Minimum 22'		
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% (4a)		
		Auxiliary Lanes		2.0% (4b)	(4b)	
	Outside Curb and Gutter Type	31-1.07	B-6.12, B-6.18, or B-6.24 CC&G (5)			
	Sidewalk Width (6)	31-2.02	Desired 5' / Minimum 4'			
	Obstruction Free Zone * (7)	35-2	1.5'			
Roadway Slopes	Side Slope (8) (Maximum)	Cut Section (Curbed)	---			
		Rock Cut	31-2.03			
		Fill Section (Curbed)	---			

* Controlling design criteria (see [Section 27-7](#)).

DHV = Design Hourly Volume / OWS = One-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN ONE-WAY ARTERIALS
(New Construction/Reconstruction)**

Figure 32-2F (US Customary)

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Design Element		Manual Section	Design Volume (DHV)			
			One-Way DHV < 1300 (1)	One-Way DHV 1300 - 1850 (1)	One-Way DHV > 1850 (1)	
Design Controls	Highway Type	---	OWS-2	OWS-3	OWS-4	
	Design Forecast Year	27-6.02	20 Years			
	Design Speed *	27-5.02	50 km/h – 60 km/h			
	Level of Service (LOS) * (2)	27-6.04	C			
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2	3	4
		Travel Lane	31-1.01	Desired 3.6 m Minimum 3.3 m		
		Travel Lane (Shared with Bicycles)	42-3.02	See Section 42-3.02		
		Parking Lane (3)	31-1.04	Desired 3.0 m Minimum 2.4 m		
		Auxiliary Lane	31-1.03	Single Left & Right – Desired 3.6 m / Minimum 3.3 m Dual Lefts & Rights – Desired 7.2 m / Minimum 6.6 m		
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% (4a)		
		Auxiliary Lanes		2.0% (4b)	(4b)	
	Outside Curb and Gutter Type	31-1.07	B-15.30, B-15.45, or B-15.60 CC&G (5)			
	Sidewalk Width (6)	31-2.02	Desired 1.5 m / Minimum 1.2 m			
	Obstruction Free Zone * (7)	35-2	450 mm			
Roadway Slopes	Side Slope (8) (Maximum)	Cut Section (Curbed)	---			
		Rock Cut	31-2.03	---		
		Fill Section (Curbed)	---			

* Controlling design criteria (see [Section 27-7](#)).

DHV = Design Hourly Volume / OWS = One-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN ONE-WAY ARTERIALS
(New Construction/Reconstruction)**

Figure 32-2F (Metric)

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Footnotes:

- (1) Traffic Volumes. The design hourly volumes (DHV) are calculated using a PHF = 1.0; these values may be adjusted using local peak-hour factors. For more information, see the *Highway Capacity Manual*.
- (2) Level of Service (LOS). A LOS D may be used in heavily developed sections of metropolitan areas.
- (3) Parking Lane Width. The desirable width of the parking lane is 10 ft (3.0 m) and includes the gutter width. If the parking lane may be used as a future travel lane, the 10 ft (3.0 m) width should be in addition to the gutter flag. An 8 ft (2.4 m) width may be used where it is unlikely the parking lane will be used as through or turning lane in the future.
- (4) Cross Slope.
 - a. Use 2.0% minimum cross slopes for travel lanes not adjacent to the crown.
 - b. Cross slopes for outside auxiliary lanes will be at least 2.0% and desirably should be 0.5% greater than the adjacent travel lane.
- (5) Gutter Width. Under restricted conditions, the gutter width adjacent to the edge of a 12 ft (3.6 m) turn lane may be eliminated.
- (6) Sidewalk Width. Include a 2 ft to 3 ft (600 mm to 1.0 m) buffer strip between the curb and sidewalk. For sidewalks without a buffer strip, a minimum 6 ft (1.8 m) sidewalk width behind the curb must be provided.
- (7) Obstruction-Free Zone. Distance is measured from the face of the curb. Hazards behind curbs should be located outside of the clear zone shown for uncurbed roadways as discussed in [Section 35-2.02\(f\)](#).
- (8) Side Slopes. Side slopes are determined on a case-by-case basis considering roadside development and right-of-way restrictions.

GEOMETRIC DESIGN CRITERIA FOR URBAN ONE-WAY ARTERIALS
(New Construction/Reconstruction)

Footnotes for Figure 32-2F

Design Element		Manual Section	Design Volume (ADT / DHV)			
			Two-Way ADT < 5000	Two-Way ADT ≥ 5000 and DHV < 1400 (1)	Two-Way DHV 1400 - 2400 (1)	
Design Controls	Highway Type	---	TWS-2		TWS-4	
	Design Forecast Year	27-6.02	Current	20 Years		
	Design Speed * (2)	27-5.02	30 mph	30 mph – 40 mph		
	Level of Service (LOS) *	27-6.04	Desired C / Minimum D			
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2	4	
		Travel Lane	31-1.01	Desired 11' Minimum 10'	Desired 12' Minimum 10' (3)	
		Travel Lane (Shared with Bicycles)	42-3.02	See Section 42-3.02		
		Parking Lane (4)	31-1.04	Minimum 8'	Desired 10' Minimum 8'	
		Auxiliary Lane	31-1.03	Desired 11' Minimum 10'	Desired 12' Minimum 10'	
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% - 2.0%		1.5% - 2.0% (5a)
		Auxiliary Lanes		(5b)		
	Outside Curb and Gutter Type	31-1.07	B-6.12, B-6.18, or B-6.24 CC&G (6)			
	Median Width	Flush	31-1.05	N/A		4'
		Flush (TWLTL)		Desired 12' Range 10' to 14'		
	Sidewalk Width (7)	31-2.02	Desired 5' / Minimum 4'			
Obstruction Free Zone * (8)	35-2	1.5'				
Roadway Slopes	Side Slope (9) (Maximum)	Cut Section (Curbed)	---			
		Rock Cut	---			
		Fill Section (Curbed)	---			

* Controlling design criteria (see [Section 27-7](#)).

ADT = Average Daily Traffic / DHV = Design Hourly Volume / TWS = Two-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN TWO-WAY COLLECTORS
(New Construction/Reconstruction)**

Figure 32-2G (US Customary)

Design Element		Manual Section	Design Volume (ADT / DHV)			
			Two-Way ADT < 5000	Two-Way ADT ≥ 5000 and DHV < 1400 (1)	Two-Way DHV 1400 - 2400 (1)	
Design Controls	Highway Type	---	TWS-2		TWS-4	
	Design Forecast Year	27-6.02	Current	20 Years		
	Design Speed * (2)	27-5.02	50 km/h	50 km/h – 60 km/h		
	Level of Service (LOS) *	27-6.04	Desired C / Minimum D			
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2	4	
		Travel Lane	31-1.01	Desired 3.3 m Minimum 3.0 m	Desired 3.6 m Minimum 3.0 m (3)	
		Travel Lane (Shared with Bicycles)	42-3.02	See Section 42-3.02		
		Parking Lane (4)	31-1.04	Minimum 2.4 m	Desired 3.0 m Minimum 2.4 m	
		Auxiliary Lane	31-1.03	Desired 3.3 m Minimum 3.0 m	Desired 3.6 m Minimum 3.0 m	
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% - 2.0%		1.5% - 2.0% (5a)
		Auxiliary Lanes		(5b)		
	Outside Curb and Gutter Type		31-1.07	B-15.30, B-15.45, or B-15.60 CC&G (6)		
	Median Width	Flush		N/A		1.2 m
		Flush (TWLTL)	31-1.05	Desired 3.6 m Range 3.0 m to 4.2 m		
	Sidewalk Width (7)		31-2.02	Desired 1.5 m / Minimum 1.2 m		
	Obstruction Free Zone * (8)		35-2	450 mm		
Roadway Slopes	Side Slope (9) (Maximum)	Cut Section (Curbed)		---		
		Rock Cut	31-2.03	---		
		Fill Section (Curbed)		---		

* Controlling design criteria (see [Section 27-7](#)).

ADT = Average Daily Traffic / DHV = Design Hourly Volume / TWS = Two-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN TWO-WAY COLLECTORS
 (New Construction/Reconstruction)**

Figure 32-2G (Metric)

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Footnotes:

- (1) Travel Volumes. The design hourly volumes (DHV) are calculated using a PHF = 1.0; these values may be adjusted using local peak-hour factors. For more information, see the *Highway Capacity Manual*.
- (2) Design Speed. A 45 mph (70 km/h) design speed may be used in fringe areas and outlying business districts.
- (3) Surface Width. The minimum surface width is 30 ft (9.0 m) face-of-curb to face-of-curb.
- (4) Parking Lane. The minimum width of the parking lane is 8 ft (2.4 m) and includes the gutter width.
- (5) Cross Slope.
 - a. Use 2.0% minimum cross slopes for travel lanes not adjacent to the crown.
 - b. Curbed left-turn lanes may be sloped at 1.5% to 2.0% away from the median. Two Way Left Turn Lane (TWLTL) and flush left-turn lanes are sloped at the same rate as the adjacent traveled way. Cross slopes for outside auxiliary lanes will be at least 2.0% and desirably should be 0.5% greater than the adjacent travel lane.
- (6) Gutter Width. Under restricted conditions, the gutter width adjacent to the edge of a 12 ft (3.6 m) turn lane may be eliminated.
- (7) Sidewalk Width. Include a 2 ft to 3 ft (600 mm to 1.0 m) buffer strip between the curb and sidewalk. For sidewalks without a buffer strip, a minimum 6 ft (1.8 m) sidewalk width behind the curb must be provided.
- (8) Obstruction-Free Zone. Distance is measured from the face of the curb. Hazards behind curbs should be located outside of the clear zone shown for uncurbed roadways as discussed in [Section 35-2.02\(f\)](#).
- (9) Side Slopes. Side slopes are determined on a case-by-case basis considering roadside development and right-of-way restrictions.

GEOMETRIC DESIGN CRITERIA FOR URBAN TWO-WAY COLLECTORS
(New Construction/Reconstruction)

Footnotes for Figure 32-2G

Design Element		Manual Section	Design Volume (ADT / DHV)			
			One-Way ADT < 5000	One-Way ADT ≥ 5000 and DHV < 1450 (1)	One-Way DHV 1450 - 2150 (1)	
Design Controls	Highway Type	---	OWS-2		OWS-3	
	Design Forecast Year	27-6.02	Current	20 Years		
	Design Speed * (2)	27-5.02	30 mph	30 mph – 40 mph		
	Level of Service (LOS) *	27-6.04	Desired C / Minimum D			
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2	3	
		Travel Lane	31-1.01	Desired 11' Minimum 10'	Desired 12' Minimum 10' (3)	Desired 12' Minimum 10'
		Travel Lane (Shared with Bicycles)	42-3.02	See Section 42-3.02		
		Parking Lane (4)	31-1.04	Minimum 8'	Desired 10' Minimum 8'	
		Auxiliary Lane	31-1.03	Desired 11' Minimum 10'	Desired 12' Minimum 10'	
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% - 2.0%		1.5% - 2.0% (5a)
		Auxiliary Lanes		(5b)		
	Outside Curb and Gutter Type		31-1.07	B-6.12, B-6.18, or B-6.24 CC&G (6)		
	Sidewalk Width (7)		31-2.02	Desired 5' / Minimum 4'		
	Obstruction Free Zone * (8)		35-2	1.5'		
Roadway Slopes	Side Slope (9) (Maximum)	Cut Section (Curbed)	---			
		Rock Cut	---			
		Fill Section (Curbed)	---			

* Controlling design criteria (see [Section 27-7](#)).

ADT = Average Daily Traffic / DHV = Design Hourly Volume / OWS = One-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN ONE-WAY COLLECTORS
 (New Construction/Reconstruction)**

Figure 32-2H (US Customary)

Design Element		Manual Section	Design Volume (ADT / DHV)			
			One-Way ADT < 5000	One-Way ADT ≥ 5000 and DHV < 1450 (1)	One-Way DHV 1450 - 2150 (1)	
Design Controls	Highway Type	---	OWS-2		OWS-3	
	Design Forecast Year	27-6.02	Current	20 Years		
	Design Speed * (2)	27-5.02	50 km/h	50 km/h – 60 km/h		
	Level of Service (LOS) *	27-6.04	Desired C / Minimum D			
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2	3	
		Travel Lane	31-1.01	Desired 3.3 m Minimum 3.0 m	Desired 3.6 m Minimum 3.0 m (3)	
		Travel Lane (Shared with Bicycles)	42-3.02	See Section 42-3.02		
		Parking Lane (4)	31-1.04	Minimum 2.4 m	Desired 3.0 Minimum 2.4	
		Auxiliary Lane	31-1.03	Desired 3.3 m Minimum 3.0 m	Desired 3.6 m Minimum 3.0 m	
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% - 2.0%		1.5% - 2.0% (5a)
		Auxiliary Lanes		(5b)		
	Outside Curb and Gutter Type		31-1.07	B-15.30, B-15.45, or B-15.60 CC&G (6)		
	Sidewalk Width (7)		31-2.02	Desired 1.5 m / Minimum 1.2 m		
	Obstruction Free Zone * (8)		35-2	450 mm		
Roadway Slopes	Side Slope (9) (Maximum)	Cut Section (Curbed)	---			
		Rock Cut	31-2.03			
		Fill Section (Curbed)	---			

* Controlling design criteria (see [Section 27-7](#)).

ADT = Average Daily Traffic / DHV = Design Hourly Volume / OWS = One-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN ONE-WAY COLLECTORS
(New Construction/Reconstruction)**

Figure 32-2H (Metric)

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Footnotes:

- (1) Traffic Volumes. The design hourly volumes (DHV) are calculated using a PHF = 1.0; these values may be adjusted using local peak-hour factors. For more information, see the *Highway Capacity Manual*.
- (2) Design Speed. A 45 mph (70 km/h) design speed may be used in fringe areas and outlying business districts.
- (3) Surface Width. The minimum surface width is 30 ft (9.0 m) face-of-curb to face-of-curb.
- (4) Parking Lane. The minimum width of the parking lane is 8 ft (2.4 m) and includes the gutter width.
- (5) Cross Slope.
 - a. Use 2.0% for lanes away from the crown.
 - b. For turn lanes use 2.0% or greater. If the turn lane is adjacent to the crown, use 1.5%.
- (6) Gutter Width. Under restricted conditions, the gutter width adjacent to the edge of the turn lane may be eliminated adjacent to a 12 ft (3.6 m) lane.
- (7) Sidewalk Width. Include a 2 ft to 3 ft (600 mm to 1.0 m) buffer strip between the curb and sidewalk. For sidewalks without a buffer strip, a minimum 6 ft (1.8 m) sidewalk width behind the curb must be provided.
- (8) Obstruction-Free Zone. Distance is measured from the face of the curb. Hazards behind curbs should be located outside of the clear zone shown for uncurbed roadways as discussed in [Section 35-2.02\(f\)](#).
- (9) Side Slopes. Side slopes are determined on a case-by-case basis considering roadside development and right-of-way restrictions.

GEOMETRIC DESIGN CRITERIA FOR URBAN ONE-WAY COLLECTORS
(New Construction/Reconstruction)

Footnotes for Figure 32-2H

Design Element		Manual Section	Design Volume (ADT)			
			ADT < 1000	1000 - 5000	ADT > 5000	
Design Controls	Highway Type	---	TWS-2 / OWS-2			
	Design Forecast Year	27-6.02	Current		20 Years	
	Design Speed *	27-5.02	30 mph (1)	30 mph		
	Level of Service (LOS) *	27-6.04	D			
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2		
		Travel Lane *	31-1.01	Minimum 10'	Minimum 11'	Minimum 12' (2)
		Travel Lane (Shared with Bicycles)	42-3.02	See Section 42-3.02		
		Parking Lane (3)	31-1.04	Minimum 8'		
		Auxiliary Lane	31-1.03	10'	Desired 11' Minimum 10'	Desired 12' Minimum 10'
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% - 2.0%		
		Auxiliary Lanes		(4)		
	Outside Curb and Gutter Type	31-1.07	B-6.12, B-6.18, or B-6.24 CC&G (5)			
	Sidewalk Width	31-2.02	Desired 5' / Minimum 4'			
	Obstruction Free Zone * (6)	35-2	1.5'			
Roadway Slopes	Side Slope (7) (Maximum)	Cut Section (Curbed)	---			
		Rock Cut	31-2.03			
		Fill Section (Curbed)	---			

* Controlling design criteria (see [Section 27-7](#)).

ADT = Average Daily Traffic / TWS = Two-Way Street / OWS = One-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN LOCAL STREETS
(New Construction/Reconstruction)**

Figure 32-2I (US Customary)

Design Element		Manual Section	Design Volume (ADT)			
			ADT < 1000	1000 - 5000	ADT > 5000	
Design Controls	Highway Type	---	TWS-2 / OWS-2			
	Design Forecast Year	27-6.02	Current		20 Years	
	Design Speed *	27-5.02	50 km/h (1)	50 km/h		
	Level of Service (LOS) *	27-6.04	D			
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2		
		Travel Lane *	31-1.01	Minimum 3.0 m	Minimum 3.3 m	Minimum 3.6 m (2)
		Travel Lane (Shared with Bicycles)	42-3.02	See Section 42-3.02		
		Parking Lane (3)	31-1.04	Minimum 2.4 m		
		Auxiliary Lane	31-1.03	3.0 m	Desired 3.3 m Minimum 3.0 m	Desired 3.6 m Minimum 3.0 m
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% - 2.0%		
		Auxiliary Lanes		(4)		
	Outside Curb and Gutter Type	31-1.07	B-15.30, B-15.45, or B-15.60 CC&G (5)			
	Sidewalk Width	31-2.02	Desired 1.5 m / Minimum 1.2 m			
	Obstruction Free Zone * (6)	35-2	450 mm			
Roadway Slopes	Side Slope (7) (Maximum)	Cut Section (Curbed)	---			
		Rock Cut	31-2.03			
		Fill Section (Curbed)	---			

* Controlling design criteria (see [Section 27-7](#)).

ADT = Average Daily Traffic / TWS = Two-Way Street / OWS = One-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN LOCAL STREETS
(New Construction/Reconstruction)**

Figure 32-2I (Metric)

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Footnotes:

- (1) Design Speed. A 20 mph (30 km/h) design speed may be used where the posted speed limit is 20 mph.
- (2) Surface Width. The minimum surface width is 30 ft (9.0 m) face-of-curb to face-of-curb.
- (3) Parking Lane. The minimum width of the parking lane is 8 ft (2.4 m) and includes the gutter width.
- (4) Cross Slope. Use 2.0% minimum for lanes away from the crown.
- (5) Curb and Gutter. Under restricted conditions, the gutter width adjacent to the edge of an 11 ft (3.3 m) turn lane may be eliminated. A shallow gutter may be used in place of CC&G.
- (6) Obstruction-Free Zone. Distance is measured from the face of the curb. Hazards behind curbs should be located outside of the clear zone shown for uncurbed roadways as discussed in [Section 35-2.02\(f\)](#).
- (7) Side Slopes. Side slopes are determined on a case-by-case basis considering roadside development and right-of-way restrictions.

GEOMETRIC DESIGN CRITERIA FOR URBAN LOCAL STREETS
(New Construction/Reconstruction)

Footnotes for Figure 32-2I

32-3 ALIGNMENT CRITERIA

This Section presents the new construction/reconstruction alignment criteria for various rural and urban facilities based on design speed. Alignment tables are provided for the following:

- Figure 32-3A “Alignment Criteria for Rural Two-Lane Highways,”
- Figure 32-3B “Alignment Criteria for Suburban/Urban Arterials,” and
- Figure 32-3C “Alignment Criteria for Urban Collectors/Local Streets.”

Design Element		Manual Section	Design Speed								
			20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph
Stopping Sight Distance (SSD) *		28-1	115'	155'	200'	250'	305'	360'	425'	495'	570'
Passing Sight Distance (PSD)		28-2	710'	900'	1090'	1280'	1470'	1625'	1835'	1985'	2135'
Intersection Sight Distance * (1)		28-3	225'	280'	335'	390'	445'	500'	555'	610'	665'
Minimum Radii *	$e_{max} = 8\%$	29.2.03	76'	134'	214'	314'	444'	587'	758'	960'	1200'
	$e_{max} = 6\%$		81'	144'	231'	340'	485'	643'	833'	1060'	1330'
	$e_{max} = 4\%$		86'	154'	250'	371'	533'	711'	926'	1190'	1500'
Maximum Superelevation Rate *		29-3.01	Paved 8% / Aggregate 4%						8%		
Superelevation Transition Length (2)	$e_{max} = 8\%$	29-3.02	141'	150'	159'	169'	179'	194'	209'	222'	232'
	$e_{max} = 6\%$		111'	118'	125'	133'	142'	153'	165'	176'	184'
	$e_{max} = 4\%$		81'	87'	92'	98'	104'	112'	121'	129'	135'
Vertical Curvature (K-values based on SSD) *	Crest	30-2.01	7	12	19	29	44	61	84	114	151
	Sag	30-2.02	17	26	37	49	64	79	96	115	136
Vertical Curvature (K-values based on PSD)	Crest	30-2.01	180	289	424	585	772	943	1203	1407	1628
Maximum Grade * (3)	Level	30-1.02	8%	7%				6%			5%
	Rolling		11%	10%	9%		8%		7%		6%
Minimum Grade		30-1.03	Desirable 0.5% / Minimum 0.0%								

* Controlling design criteria (see [Section 27-7](#)).

- (1) Intersection Sight Distance. Table values are for passenger cars at a stop-controlled intersection on a level grade based on the design speed for the major road. Increase these distances 10% for grades > 3.0% on the minor road.
- (2) Superelevation Transition Length. Superelevation transition rates will vary according to design speed, radii, and superelevation rates. Table values are based on the minimum radii for the given design speed, maximum superelevation rate, 11 ft travel lanes, and a 1.5% cross slope for the normal crown section.
- (3) Maximum Grade.
 - a. Grades 1.0% steeper may be used for existing roadways to remain in place.
 - b. Grades 1.0% to 2.0% steeper may be used on local roads and low-volume rural collectors (ADT < 400).

ALIGNMENT CRITERIA FOR RURAL TWO-LANE HIGHWAYS

Figure 32-3A (US Customary)

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Design Element		Manual Section	Design Speed							
			30 km/h	40 km/h	50 km/h	60 km/h	70 km/h	80 km/h	90 km/h	100 km/h
Stopping Sight Distance (SSD) *		28-1	35 m	50 m	65 m	85 m	105 m	130 m	160 m	185 m
Passing Sight Distance (PSD)		28-2	200 m	270 m	345 m	410 m	485 m	540 m	615 m	670 m
Intersection Sight Distance * (1)		28-3	65 m	85 m	105 m	130 m	150 m	170 m	190 m	210 m
Minimum Radii *	$e_{max} = 8\%$	29.2.03	20 m	41 m	73 m	113 m	168 m	229 m	304 m	394 m
	$e_{max} = 6\%$		21 m	43 m	79 m	123 m	184 m	252 m	336 m	437 m
	$e_{max} = 4\%$		22 m	47 m	86 m	135 m	203 m	280 m	375 m	492 m
Maximum Superelevation Rate *		29-3.01	Paved 8% / Aggregate 4%					8%		
Superelevation Transition Length (2)	$e_{max} = 8\%$	29-3.02	42 m	45 m	47 m	52 m	57 m	63 m	67 m	71 m
	$e_{max} = 6\%$		33 m	35 m	37 m	41 m	45 m	50 m	53 m	56 m
	$e_{max} = 4\%$		25 m	26 m	27 m	30 m	33 m	36 m	39 m	41 m
Vertical Curvature (K-values based on SSD) *	Crest	30-2.01	2	4	7	11	17	26	39	52
	Sag	30-2.02	6	9	13	18	23	30	38	45
Vertical Curvature (K-values based on PSD)	Crest	30-2.01	46	84	138	195	272	338	438	520
Maximum Grade * (3)	Level	30-1.02	8%	7%			6%		5%	
	Rolling		11%	10%	9%	8%	7%	6%		
Minimum Grade		30-1.03	Desirable 0.5% / Minimum 0.0%							

* Controlling design criteria (see [Section 27-7](#)).

- (1) Intersection Sight Distance. Table values are for passenger cars at a stop-controlled intersection on a level grade based on the design speed for the major road. Increase these distances 10% for grades > 3.0% on the minor road.
- (2) Superelevation Transition Length. Superelevation transition rates will vary according to design speed, radii, and superelevation rates. Table values are based on the minimum radii for the given design speed, maximum superelevation rate, 3.3 m travel lanes, and a 1.5% cross slope for the normal crown section.
- (3) Maximum Grade.
 - a. Grades 1.0% steeper may be used for existing roadways to remain in place.
 - b. Grades 1.0% to 2.0% steeper may be used on local roads and low-volume rural collectors (ADT < 400).

ALIGNMENT CRITERIA FOR RURAL TWO-LANE HIGHWAYS

Figure 32-3A (Metric)

Design Element		Manual Section	Design Speed						
			30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph
Stopping Sight Distance (SSD) *		28-1	200'	250'	305'	360'	425'	495'	570'
Intersection Sight Distance * (1)		28-3	335'	390'	445'	500'	555'	610'	665'
Minimum Radii *	$e_{\max} = 6\%$ (Open Roadway)	29.2.03	231' (2)	340' (2)	485' (2)	643' (2)	833'	1060'	1330'
	$e_{\max} = 4\%$ (Open Roadway)		250'	371'	533'	711'	926'	1190'	1500'
	$e_{\max} = 4\%$ (Low speed)	29-4.03	250'	371'	533'	711'	---	---	---
Maximum Superelevation Rate *		29-3.01	4% (3)				6%		
Superelevation Transition Length	$e_{\max} = 6\%$ (4a) (Open Roadway)	29-3.02	125'	133'	142'	153'	165'	176'	184'
	$e_{\max} = 4\%$ (4b) (Open Roadway)		92'	98'	104'	112'	121'	129'	135'
	$e_{\max} = 4\%$ (4b) (Low speed)	29-4.04	89'	95'	99'	107'	---	---	---
Vertical Curvature (K-values based on SSD) *	Crest	30-2.01	19	29	44	61	84	114	151
	Sag	30-2.02	37	49	64	79	96	115	136
Maximum Grade *	Level	30-1.02	8%	7%	6%		5%		
	Rolling		9%	8%	7%		6%		
Minimum Grade		30-1.03	Desirable 0.5% / Minimum 0.3% (with Curb and Gutter)						

* Controlling design criteria (see [Section 27-7](#)).

- (1) Intersection Sight Distance. Table values are for passenger cars at a stop-controlled intersection on a level grade based on the design speed for the major road. Increase these distances 10% for grades > 3.0% on the minor road.
- (2) Minimum Radii. For urban streets with design speeds less than 50 mph, use $e_{\max} = 4\%$ (low speed).
- (3) Superelevation Rate. For urban/suburban reconstruction projects, existing horizontal curves may remain in place with a superelevation rate up to 6.0%.
- (4) Superelevation Transition Length. Superelevation transition rates will vary according to design speed, radii, and superelevation rates.
 - a. Values are based on the minimum radii for the given design speed, maximum superelevation rate of 6.0%, 12 ft travel lanes, and a 1.5% cross slope for the normal crown section.
 - b. Values are based on the minimum radii for the given design speed, maximum superelevation rate of 4.0%, 11 ft travel lanes, and a 1.5% cross slope for the normal crown section.

ALIGNMENT CRITERIA FOR SUBURBAN / URBAN ARTERIALS

Figure 32-3B (US Customary)

Design Element		Manual Section	Design Speed					
			50 km/h	60 km/h	70 km/h	80 km/h	90 km/h	100 km/h
Stopping Sight Distance (SSD) *		28-1	65 m	85 m	105 m	130 m	160 m	185 m
Intersection Sight Distance * (1)		28-3	105 m	130 m	150 m	170 m	190 m	210 m
Minimum Radii *	$e_{max} = 6\%$ (Open Roadway)	29-2.03	79 m (2)	123 m (2)	184 m (2)	252 m	336 m	437 m
	$e_{max} = 4\%$ (Open Roadway)		86 m	135 m	203 m	280 m	375 m	492 m
	$e_{max} = 4\%$ (Low speed)	29-4.03	86 m	135 m	203 m	---	---	---
Maximum Superelevation Rate *		29-3.01	4% (3)			6%		
Superelevation Transition Length	$e_{max} = 6\%$ (4a) (Open Roadway)	29-3.02	37 m	41 m	45 m	50 m	53 m	56 m
	$e_{max} = 4\%$ (4b) (Open Roadway)		27 m	30 m	33 m	36 m	39 m	41 m
	$e_{max} = 4\%$ (4b) (Low speed)	29-4.04	28 m	30 m	33 m	---	---	---
Vertical Curvature (K-values based on SSD) *	Crest	30-2.01	7	11	17	26	39	52
	Sag	30-2.02	12	17	23	30	38	45
Maximum Grade *	Level	30-1.02	8%	7%	6%		5%	
	Rolling		9%	8%	7%		6%	
Minimum Grade		30-1.03	Desirable 0.5% / Minimum 0.3% (with Curb and Gutter)					

* Controlling design criteria (see [Section 27-7](#)).

- (1) Intersection Sight Distance. Table values are for passenger cars at a stop-controlled intersection on a level grade based on the design speed for the major road. Increase these distances 10% for grades > 3.0% on the minor road.
- (2) Minimum Radii. For urban streets with design speeds less than 80 km/h, use $e_{max} = 4\%$ (low speed).
- (3) Superelevation Rate. For urban/suburban reconstruction projects, existing horizontal curves may remain in place with a superelevation rate up to 6.0%.
- (4) Superelevation Transition Length. Superelevation transition rates will vary according to design speed, radii, and superelevation rates.
 - a. Values are based on the minimum radii for the given design speed, maximum superelevation rate of 6.0%, 3.6 m travel lanes, and a 1.5% cross slope for the normal crown section.
 - b. Values are based on the minimum radii for the given design speed, maximum superelevation rate of 4.0%, 3.3 m travel lanes, and a 1.5% cross slope for the normal crown section.

ALIGNMENT CRITERIA FOR SUBURBAN / URBAN ARTERIALS

Figure 32-3B (Metric)

Design Element		Manual Section	Design Speed					
			20 mph	25 mph	30 mph	35 mph	40 mph	45 mph
Stopping Sight Distance (SSD) *		28-1	115'	155'	200'	250'	305'	360'
Intersection Sight Distance * (1)		28-3	225'	280'	335'	390'	445'	500'
Minimum Radii *	$e_{max} = 4\%$ (Low speed)	29-4.03	86'	154'	250'	371'	533'	711'
Minimum Radii w/ Normal Crown (Low speed)			105'	194'	324'	495'	736'	1000'
Maximum Superelevation Rate * (2)		29-3.01	4%					
Superelevation Transition Length (3)	$e_{max} = 4\%$ (Low speed)	29-4.04	74'	71'	89'	95'	99'	107'
Vertical Curvature (K-values based on SSD) *	Crest	30-2.01	7	12	19	29	44	61
	Sag	30-2.02	17	26	37	49	64	79
Maximum Grade * (4)	Level	30-1.02	9%					8%
	Rolling		12%	11%	10%	9%		
Minimum Grade		30-1.03	Desirable 0.5% / Minimum 0.3% (with Curb and Gutter)					

* Controlling design criteria (see [Section 27-7](#)).

- (1) Intersection Sight Distance. Table values are for passenger cars at a stop-controlled intersection on a level grade based on the design speed of the major road. Increase these values 10% for grades > 3.0% on the minor road.
- (2) Superelevation Rate. For reconstruction projects, existing horizontal curves may remain in place with a superelevation rate up to 6.0%.
- (3) Superelevation Transition Length. Superelevation transition rates will vary according to design speed, radii, and superelevation rates. Table values are based on the minimum radii for the given design speed, maximum superelevation rate, 11 ft travel lanes, and a 1.5% cross slope for the normal crown section.
- (4) Maximum Grade.
 - a. Collectors. Grades 1.0% to 2.0% steeper may be used on low-volume collectors and on grades less than 500 ft in length.
 - b. Local. Grades on local residential streets should be less than 15.0%.

ALIGNMENT CRITERIA FOR URBAN COLLECTORS / LOCAL STREETS

Figure 32-3C (US Customary)

Design Element		Manual Section	Design Speed					
			30 km/h	40 km/h	50 km/h	60 km/h	70 km/h	
Stopping Sight Distance (SSD) *		28-1	35 m	50 m	65 m	85 m	105 m	
Intersection Sight Distance * (1)		28-3	65 m	85 m	105 m	130 m	150 m	
Minimum Radii *	$e_{max} = 4\%$ (Low speed)	29-4.03	22 m	47 m	86 m	135 m	203 m	
Minimum Radii w/ Normal Crown (Low speed)			27 m	59 m	113 m	183 m	286 m	
Maximum Superelevation Rate * (2)		29-3.01	4%					
Superelevation Transition Length (3)	$e_{max} = 4\%$ (Low speed)	29-4.04	22 m	25 m	28 m	30 m	33 m	
Vertical Curvature (K-values based on SSD) *	Crest	30-2.01	2	4	7	11	17	
	Sag	30-2.02	6	9	13	18	23	
Maximum Grade * (4)	Level	30-1.02	9%					8%
	Rolling		12%	11%	10%	9%		
Minimum Grade		30-1.03	Desirable 0.5% / Minimum 0.3% (with Curb and Gutter)					

* Controlling design criteria (see [Section 27-7](#)).

- (1) Intersection Sight Distance. Table values are for passenger cars at a stop-controlled intersection on a level grade based on the design speed of the major road. Increase these values 10% for grades > 3.0% on the minor road.
- (2) Superelevation Rate. For reconstruction projects, existing horizontal curves may remain in place with a superelevation rate up to 6.0%.
- (3) Superelevation Transition Length. Superelevation transition rates will vary according to design speed, radii, and superelevation rates. Table values are based on the minimum radii for the given design speed, maximum superelevation rate, 3.3 m travel lanes, and a 1.5% cross slope for the normal crown section.
- (4) Maximum Grade.
 - a. Collectors. Grades 1.0% to 2.0% steeper may be used on low-volume collectors and on grades less than 150 m in length.
 - b. Local. Grades on local residential streets should be less than 15.0%.

ALIGNMENT CRITERIA FOR URBAN COLLECTORS / LOCAL STREETS

Figure 32-3C (Metric)

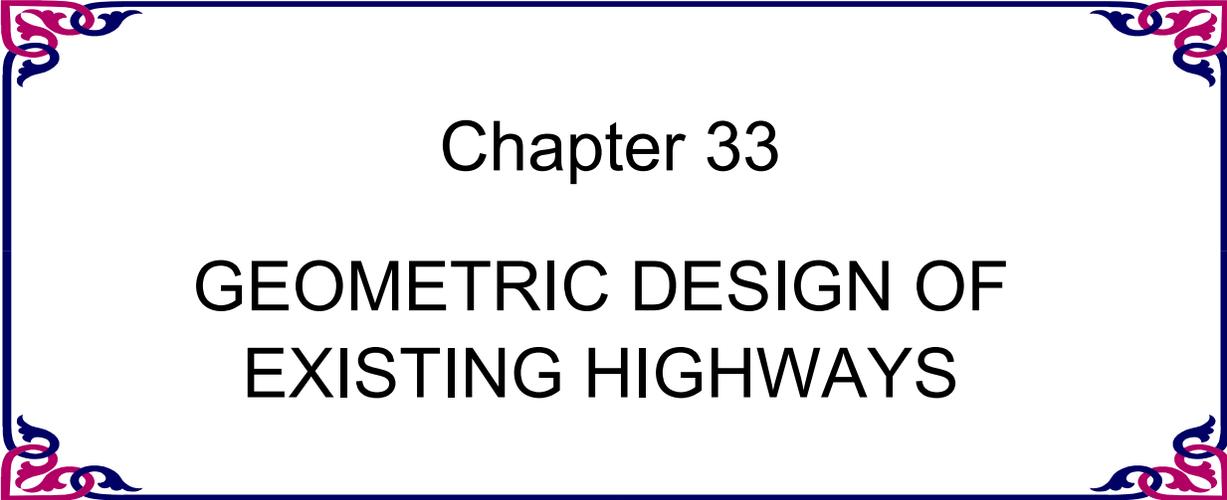
32-4 ACRONYMS

This is a summary of the acronyms used within this chapter.

AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic
BDE	Bureau of Design and Environment
C&G	Curb & Gutter
CC&G	Concrete Curb & Gutter
DHV	Design Hourly Volume
HCM	Highway Capacity Manual
IDOT	Illinois Department of Transportation
LPA	Local Public Agency
OWS	One Way Street
PSD	Passing Sight Distance
SSD	Stopping Sight Distance
TWLTL	Two Way Left Turn Lane
TWS	Two Way Street

32-5 REFERENCES

1. *A Policy on Geometric Design of Highways and Streets*, AASHTO, 2011.
2. *HCM 2010 Highway Capacity Manual*, TRB, 2010
3. [Chapter 47](#) "Rural Two-Lane / Multilane State Highways (New Construction / Reconstruction)", *BDE Manual*, IDOT.



Chapter 33

GEOMETRIC DESIGN OF
EXISTING HIGHWAYS

BUREAU OF LOCAL ROADS AND STREETS MANUAL

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Chapter 33
GEOMETRIC DESIGN OF EXISTING HIGHWAYS

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Chapter 33

GEOMETRIC DESIGN OF EXISTING HIGHWAYS

33-1 GENERAL

[Chapter 32](#) presents the design criteria that apply to new construction and reconstruction projects. For these projects, the designer often has the flexibility to design the highway to meet the most desirable and stringent criteria possible. Therefore, exceptions to these criteria should be relatively rare.

Highways constructed to meet nationally recognized design criteria provide measurable advantages for the motoring public. The safety, comfort, and convenience of modern highways present strong incentives for funding programs based on ideal design considerations. However, available finances do not always permit the reconstruction of existing highways to an ideal level. A comparison of statewide needs demonstrates that, with available revenues, problems must be addressed not only at a project level but on a system-wide basis.

Therefore, the geometric design of projects on existing highways must be viewed from a different perspective. These projects are often initiated for reasons such as pavement deterioration rather than geometric design deficiencies, and they often must be designed within restrictive right-of-way (ROW), financial limitations, and environmental constraints. As a result, the design criteria for new construction and reconstruction are often not attainable without major and, frequently, unacceptable adverse impacts. At the same time, the local public agency (LPA) must exercise the opportunity to make cost-effective, practical improvements to the geometric design of existing highways and streets.

For these reasons, this chapter provides geometric design values for projects on existing highways that are, in many cases, less than the values for new construction/reconstruction. These criteria are based on a sound engineering assessment of the underlying principles behind geometric design, and on how the criteria for new construction/reconstruction can be legitimately modified to apply to existing highways while still providing a safe highway facility. These criteria are intended to find the balance among many competing and conflicting objectives. These include the objective of improving LPA's existing highways; the objective of minimizing the adverse impacts of highway construction on existing highways; and the objective of improving the greatest number of miles (kilometers) within the available funds.

33-2 3R POLICIES

33-2.01 Background

The *Federal-aid Highway Act of 1976* amended the term “construction” to permit Federal-aid funding of resurfacing and widening and resurfacing of existing rural and urban pavements with or without revision to the horizontal or vertical alignment or other geometric features. The 1982 *Surface Transportation Assistance Act* stipulated that resurfacing, rehabilitation, and restoration (3R) projects be constructed to standards to preserve and extend the service life of highways and enhance safety. [Section 49-2](#) of the *Bureau of Design and Environment (BDE) Manual* provides further history on the background and development of 3R criteria for existing highways and streets.

33-2.02 Objectives

From an overall perspective, the 3R program is intended to improve the greatest number of highway miles (kilometers) with the available funds for highway projects. “Improve” is meant to apply to all aspects that determine a facility’s serviceability, including:

- the structural integrity of the pavement, bridges, and culverts;
- the drainage design of the facility to provide pavement drainage and to prevent roadway flooding during the design-year storm;
- from a highway capacity perspective, the level of service provided for the traffic flow;
- the adequacy of access to abutting properties;
- the geometric design of the highway to safely accommodate expected vehicular speeds and traffic volumes;
- the roadside safety design to reduce, within some reasonable boundary, the adverse impacts of run-off-the-road vehicles;
- the traffic control devices to provide the driver with critical information and to meet driver expectancies; and
- see Section [27-2.03](#) for other types.

The objectives of 3R projects are summarized as follows:

1. 3R projects are intended to extend the service life of the existing facility and to return its features to a condition of structural or functional adequacy. This includes providing smoother riding surfaces and structurally improving bridges.
2. 3R projects are intended to enhance highway safety. This includes upgrading roadside safety and improving identified high-crash locations and over-represented crash locations.

3. 3R projects are intended to incorporate cost-effective, practical improvements to the geometric design of the existing facility. This includes increasing roadway and bridge widths and providing spot improvements to correct alignment deficiencies.

To achieve these objectives, the Illinois Department of Transportation (IDOT) has adopted its policy for the geometric design of 3R projects.

33-2.03 Application

The design policies and criteria in Sections 33-2 and 33-3 apply to 3R projects using Federal, State, or MFT funds on existing facilities within the general constraints of the existing alignment and ROW. Section 33-2.04 contains guidance on when it is appropriate to replace a pavement using 3R guidelines. If the purpose and scope of the project is intended to replace or expand the facility, then Chapter 33 is not appropriate, and reconstruction criteria will apply. For definitions and application to new construction and reconstruction projects, see [Section 27-2](#).

The criteria presented in Sections 33-2 and 33-3 apply to the following LPA facilities that is functionally classified as:

- rural and urban local roads and streets,
- rural and urban collectors, and
- urban arterial streets.

For suburban and rural arterials, see the 3R criteria presented in [Chapter 49](#) of the *BDE Manual*.

The LPA may use either the criteria in Sections 33-2 and 33-3 or the criteria in [Chapter 32](#) when designing a 3R project.

33-2.04 3R Project Evaluation

Section 33-3 presents the specific geometric design and roadside safety criteria that will be used to define the scope of 3R projects. Items not discussed in Section 33-3 do not need to be considered in the development of a 3R project. In addition, the designer should consider several other factors and conduct applicable technical evaluations. The potential evaluations are discussed below:

1. Conduct Field Review. The LPA should normally conduct a thorough field review of the proposed 3R project to ascertain the appropriateness of 3R criteria and on-site conditions and their effects on project development decisions. Other personnel should accompany the designer as appropriate, including personnel from the district. Objectives of the field review should be to collect relevant field data, to identify potential safety

problems, and to determine the type of improvements to the facility needed to extend its service life.

2. Document Existing Geometrics. The designer will normally review the most recent as-built highway plans and combine this with the field review to determine the adequacy of the existing geometrics within the project limits. The review includes lane and shoulder widths, horizontal and vertical alignment, intersection geometrics, and the roadside safety design. A field survey may also be needed to verify certain geometric features.
3. Crash Data. Crash data and analysis of the data are critical to the identification of problem areas. This should include the following:
 - Evaluate the last five years of crash data available from the IDOT Division of Traffic Safety and from the LPA's records.
 - Identify over-represented crash trends and High Accident Locations (HAL) and propose appropriate countermeasures.
 - Evaluate Wet-Pavement Crash Location clusters in accordance with the Illinois Skid-Accident Reduction Program.
4. Right-of-Way (ROW) Acquisition. 3R projects are generally constructed within the constraints of the existing ROW. However, ROW acquisition is sometimes justified for 3R projects to flatten slopes, for changes in horizontal and vertical alignment, and for safety enhancements. Therefore, determine the improvements that will be incorporated into the project design as early as feasible. If significant ROW can be obtained, give consideration to using the criteria for new construction or reconstruction presented in [Chapter 32](#).
5. Pavement Condition. 3R projects are often programmed because of a significant deterioration of the pavement structure. The extent of deterioration will influence the decision on whether a project can be designed using the 3R design criteria or whether it should be designed using new construction/reconstruction criteria. The use of the 3R Policy for full-depth pavement replacement may be justified in some instances. This includes projects with short sections of pavement replacement within longer project lengths and projects where the existing alignment is adequate, but the pavement needs to be replaced and the existing ROW width is too narrow to accommodate the required side slopes and clear zones for reconstruction. See [Chapter 46](#) for the policies, procedures, and criteria for the rehabilitation of existing pavements.
6. Geometric Design of Adjacent Highway Sections. Consistency is an important factor to be considered in the development of 3R projects. The designer should examine the geometric features and operating speeds of highway sections adjacent to the 3R project. This will include investigating any highway improvements in the planning stages. The 3R project should provide design continuity with the adjacent sections. This involves a consideration of factors such as driver expectancy, geometric design consistency, and proper transitions between sections of different geometric designs. Continuity of design may justify constructing certain highway elements to higher or lower design criteria than normally prescribed.

7. Level of Service. 3R projects are based on current traffic; however, consider if the 3R project will adequately accommodate traffic during the design life of the project. Except for relatively short sections, 3R work does not include the addition of continuous through lanes that change the basic number of lanes throughout the project.
8. Physical Constraints. The physical constraints within the limits of the 3R project may determine what geometric improvements are practical and cost-effective. These include topography, adjacent development, ROW, utilities, and environmental constraints. Identified safety countermeasures relative to impacts and costs should be considered and an appropriate balance achieved. The designer should work with the district to identify possible geometric and safety deficiencies that will remain in place (i.e., no improvement will be made).
9. Traffic Control Devices. Ensure all signing and pavement markings on 3R projects meet the criteria of the [Illinois Supplement to the Manual of Uniform Traffic Control Devices \(ILMUTCD\)](#).
10. Urban Streets. Urban widening and resurfacing may include lane widening, addition of auxiliary lanes, channelization, median installation, revision of median type, median widening, resurfacing in conjunction with appropriate widening, new or replaced curb and/or gutter, curb ramps to meet ADA / PROWAG requirements, pavement markings, landscaping, highway lighting, pedestrian and bicycle accommodations and any associated adjustments.
11. Bridges within Project Limits. One or more bridges may be within the limits of a 3R project. If bridge improvements are needed, they may be performed prior to, simultaneous with, or deferred from highway projects in accordance with the priorities established in Section 33-3.13.

Highway bridge improvements include all work necessary for the improvement of existing rural or urban bridges to be consistent with 3R objectives for increased safety, improved operating conditions, and structural adequacy. Bridge improvements could include complete replacement of a bridge when no other cost-effective means of meeting these criteria are feasible. For definition and clarification, a bridge constructed at a different location or an existing bridge requiring replacement of all elements as a part of a 3R project is designated as a replacement rather than a new bridge. New bridge designations are reserved for new construction/reconstruction projects because they generally are subject to different width requirements than replacement bridges.

12. Design Exceptions. The use of lower design criteria than that described in Section 33-3 or [Chapter 32](#) will require approval from IDOT. Where variances from these criteria are necessary, they should be processed according to the procedures described in [Section 27-7](#). There are no minimum design criteria for the geometric design elements not addressed in Section 33-3.
13. Spot Improvements. Recently completed spot improvements (e.g., safety or bridge projects) may be considered for omission from 3R projects. The proposed limits of an omission should be identified and the omissions reviewed to ensure that the omissions are in accordance with 3R policies. Identify and address any variances to the 3R criteria

in accordance with the 3R procedures. For Federally funded projects, all applicable features within the limits of the spot improvement should be discussed at district coordination meetings and included in the Project Development Report (PDR).

33-3 3R GEOMETRIC DESIGN CRITERIA

33-3.01 Tables of Design Criteria

Figures 33-3A through 33-3F present the summary tables of the design criteria for the geometric design of LPA 3R projects. They apply to LPA 3R projects for roads and streets functionally classified as local, collectors, and minor arterials in both rural and urban areas, and for arterials in the urban areas. The criteria for rural principal arterials can be found in [Chapter 49](#) of the *BDE Manual*. Local rural two-lane principal arterial projects should be brought to early coordination for discussion. The designer should consider the following in the use of these tables:

1. Functional Classification. The selection of design values depends on the functional classification of the highway facility. Functional classification is discussed in [Section 27-3](#). The first step in the design process is to determine the functional classification of the proposed improvement. If the classification is unknown, contact the district.
2. Manual Section References. These tables are intended to provide a listing of design values for easy use. However, the designer should review the *Manual* section reference for more information on the design elements.
3. Footnotes. The tables include many footnotes, which are identified by a number in parentheses. The information in the footnote is critical to the proper use of these design tables.
4. Cross Section Elements. The designer should realize that some of the cross section elements included in a table (e.g., median width) are not automatically warranted in the project design. The values in the tables will only apply after the decision has been made to include the element in the highway cross section.
5. Bridge Elements. Design criteria for bridge elements are provided in Section 33-3.13.
6. Controlling Design Criteria. Controlling design criteria are the elements judged to be the most critical indicators of highway safety and overall serviceability. The tables provide an asterisk to indicate controlling design criteria. [Section 27-7](#) discusses this in more detail and presents the process for approving design variances to controlling criteria.

33-3.02 Design Speed

Figures 33-3A through 33-3F provide the minimum design speed based on functional classification of the facility. The selected design speed may be the regulatory speed or the posted speed, if it is less than the design speed for the functional classification. In urban and suburban areas, use a maximum design speed of 45 mph (70 km/h) where there is a two-way left-turn lane (TWLTL) in the street/highway design, and/or where there is continuous curbing used to delineate the edges of the traveled way.

Design Element		Manual Section	Design Volume (Two-Way DHV)	
			Elements to Remain-in-Place DHV < 975 (2)	
Design Controls	Design Forecast Year		20 Years	
	Minimum Design Speed * (1a)	Level	60 mph (3b)	100 km/h (3b)
		Rolling	50 mph (3b)	80 km/h (3b)
	Access Control		Controlled by Regulations (4)	
Level of Service (LOS) *		C		
Cross Section Elements	Traveled Way Width *		22'	6.6 m
	Surface Type		High Type Pavement	
	Shoulder Width *		8'	2.4 m
	Shoulder Type		4' Paved w/ Remainder Aggregate	1.2 m Paved w/ Remainder Aggregate
	Auxiliary Lanes *	Lane Width	11'	3.3 m
		Shoulder Width	4' (Paved)	1.2 m (Paved)
	Flush / TWLTL Widths		12'	3.6 m
	Cross Slope	Travel Lane *		1.5% (5)
Shoulder		Paved 4% / Aggregate 6% (5b)		
Rollover Factor		10%		
Roadway Slopes	Side Slope (Maximum)	Cut Section	1V:4H	
			Ditch Width	2' (6)
		Back Slope	≤10' 1V:3H >10' 1V:2H (7)	≤3.0 m 1V:3H >3.0 m 1V:2H (7)
	Rock Cut		1V:0.25H	
	Fill Section		1V:4H to Clear Zone (8) 1V:3H (max) to Toe of Slope (8)	

* Controlling design criteria (see [Section 27-7](#)).

DHV = Design Hourly Volume

**GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE MINOR ARTERIALS
 (3R Projects)**

Figure 33-3A (US Customary / Metric)

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Footnotes:

- (1) Design Criteria. The criteria for the minimum cross-section elements allowed to remain in place provided it is cost effective and the safety record is satisfactory.
- (2) Traffic Volumes. The design hourly volumes (DHV) assumes base conditions (except for 8% heavy vehicles) and a PHF = 1 for LOS shown. Adjust these values according to the actual factors. [Section 27-6](#) further discusses capacity methodology and traffic volumes.
- (3) Design Speed.
 - a. In rolling terrain, a minimum design speed of 55 mph (90 km/h) may be considered with study and justification.
 - b. To determine the minimum design speed allowed to remain in place, consider the following:
 - i. Existing horizontal curves may remain in place provided they have a comfortable operating speed of 60 mph (100 km/h) (level) or 50 mph (80 km/h) (rolling) and there is no history of crashes.
 - ii. Existing sag vertical curves may remain in place if they have a design speed of 50 mph (80 km/h) or greater and do not have a history of crashes. If not, reconstruct the sag vertical curve to a design speed of 60 mph (100 km/h).
 - iii. Existing crest vertical curves may remain in place if they have a design speed of 50 mph (80 km/h) or greater and do not have a history of crashes. If not, reconstruct the crest vertical curve to a design speed of 60 mph (100 km/h).
 - iv. Consider the relationship between horizontal and vertical alignments simultaneously to obtain a desirable condition. [Chapter 33](#) of the *BDE Manual* discusses these relationships and their effect on aesthetics and safety.
- (4) Access Control. For bypass routes on new alignment, design the roadway with partial access control. See [Section 35-1](#) of the *BDE Manual*.
- (5) Cross Slopes.
 - a. Cross slopes for outside auxiliary lanes will be at least 2.0% and should be 0.5% greater than the adjacent travel lane.
 - b. Where an aggregate shoulder is part of the shoulder width, slope the aggregate portion of the shoulder at 6%.
- (6) Ditch Bottom Width. Provide a wider outside ditch bottom where detention storage of storm water is a consideration.
- (7) Back Slope. Where the height of cut exceeds 10 ft (3.0 m), consider using a 1V:2H back slope beyond the clear zone. Also, for heights of cut greater than 30 ft (9.0 m), consider the use of benching.
- (8) Fill Slope. For fill heights greater than 30 ft (9.0 m), use a 1V:2H uniform slope with a roadside barrier. Also, for heights greater than 30 ft (9.0 m), consider the use of benching.

**GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE MINOR ARTERIALS
(3R Projects)****Footnotes to Figure 33-3A**

Design Element			Manual Section	Design Volume (ADT)				
				ADT < 400	400 to 1000	1000 to 3000	ADT > 3000	
Design Controls	Design Forecast Year		27-6.02	Current				
	Minimum Design Speed * (1)	Level	27-5.03	40 mph	50 mph	55 mph		
		Rolling		30 mph	40 mph	50 mph		
Level of Service (LOS) *			27-6.04	Existing				
Cross Section Elements	Traveled Way Width *		31-1.01	18'	22' (2)	24' (2)		
	Surface Type		Chapter 44	Aggregate Surface or Bituminous Treated	High Type Pavement			
	Shoulder Width *		31-1.06	2' (3a)	4' (3b)	6' (3b)		
	Shoulder Type			Turf (4a) or Aggregate Wedge (4b)	Aggregate Wedge (4b) or Aggregate (4c)			
	Auxiliary Lanes *	Lane Width	31-1.03	9'	Desired 11' Minimum 10'		Desired 12' Minimum 11'	
		Shoulder Width		2'	4'		Desired 6' Minimum 4'	
	Cross Slope	Travel Lane * (5a)		31-1.08	2.0% - 4% (5b)		1.5% - 2.0%	
		Shoulder			Turf 5% - 8% / Aggregate 4% - 6%		Aggregate 4% - 6% / Paved 4%	
Rollover Factor (6)		12%			10%			
Roadway Slopes	Side Slope (7) (Maximum)	Cut Section	Front Slope	Existing				
			Ditch Width	Existing				
			Back Slope	Existing				
		Rock Cut		31-2.03	Existing			
		Fill Section		31-2.04	Existing			

* Controlling design criteria (see [Section 27-7](#)).

ADT = Average Daily Traffic

GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE COLLECTORS
 (3R Projects)

Figure 33-3B (US Customary)

Design Element		Manual Section	Design Volume (ADT)			
			ADT < 400	400 to 1000	1000 to 3000	ADT > 3000
Design Controls	Design Forecast Year		Current			
	Minimum Design Speed * (1)	Level	60 km/h	80 km/h	90 km/h	
		Rolling	50 km/h	60 km/h	80 km/h	
Level of Service (LOS) *		27-6.04	Existing			
Cross Section Elements	Traveled Way Width *		31-1.01	5.4 m	6.6 m (2)	7.2 m (2)
	Surface Type		Chapter 44	Aggregate Surface or Bituminous Treated	High Type Pavement	
	Shoulder Width *		31-1.06	0.6 m (3a)	1.2 m (3b)	1.8 m (3b)
	Shoulder Type			Turf (4a) or Aggregate Wedge (4b)	Aggregate Wedge (4b) or Aggregate (4c)	
	Auxiliary Lanes *	Lane Width	31-1.03	2.7 m	Desired 3.3 m Minimum 3.0 m	Desired 3.6 m Minimum 3.3 m
		Shoulder Width		0.6 m	1.2 m	Desired 1.8 m Minimum 1.2 m
	Cross Slope	Travel Lane * (5a)	31-1.08	2.0% - 4% (5b)	1.5% - 2.0%	
		Shoulder		Turf 5% - 8% / Aggregate 4% - 6%	Aggregate 4% - 6% / Paved 4%	
Rollover Factor (6)		12%		10%		
Roadway Slopes	Side Slope (7) (Maximum)	Cut Section	Front Slope	Existing		
			Ditch Width	Existing		
			Back Slope	Existing		
		Rock Cut	Existing			
		Fill Section	Existing			

* Controlling design criteria (see Section 27-7).

ADT = Average Daily Traffic

**GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE COLLECTORS
 (3R Projects)**

Figure 33-3B (Metric)

Footnotes:

- (1) Design Speed. When the regulatory or posted speed is less than the design speed values in the table, the regulatory or posted speed may be used as the design speed. However, the selected design speed should not be less than 30 mph (50 km/h).
- (2) Traveled Way Width. On resurfacing only project, the traveled way width may be reduced by 2 ft (600 mm).
- (3) Shoulder Width.
 - a. Where roadside barriers are included, provide a minimum offset of 4 ft (1.2 m) from the edge of the traveled way to the roadside barrier.
 - b. Where the rural collector passes through a moderate to high density area, the shoulder width may be 4 ft (1.2 m). This width may include the width of Type B gutter or the gutter flag with curb and gutter at the edge of the shoulder.
- (4) Shoulder Type.
 - a. Turf shoulders should consist of compacted stable roadway embankment or granular material capable of supporting growth and should not contain a high percentage of organic or unstable material.
 - b. The width of the aggregate wedge should be 3 ft (900 mm) or equal to the width of the usable shoulder if less than 3 ft (900 mm). The minimum wedge thickness will equal the depth of the resurfacing at the edge of pavement and tapering to zero. The aggregate wedge should be reviewed for maximum shoulder slope and/or maximum breakover.
 - c. For ADT's > 5000, provide a 6 in (150 mm) thick aggregate shoulder over the full width of a shoulder.
- (5) Cross Slopes.
 - a. Cross slopes for outside auxiliary lanes will be at least 2.0% and desirably should be 0.5% greater than the adjacent travel lane. Inside auxiliary lane cross slopes are sloped at 1.5% to 2% with high-type pavements.
 - b. Use 1.5% to 2% with high-type pavement.
- (6) Rollover Factor. The maximum rollover factor should be 10% when the shoulder is 6 ft (1.8 m) or wider.
- (7) Slopes. When the roadway is widened it may be necessary to steepen the existing front and back slopes to remain within the existing ROW or to maintain the existing drainage. Where existing ROW may permit significant slope flattening or grading, consider flattening slopes, particularly at horizontal curves. See [Figure 32-2A](#) for recommended slope criteria.

**GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE COLLECTORS
(3R Projects)****Footnotes to Figure 33-3B**

Design Element			Manual Section	Design Volume (ADT)						
				ADT < 250	250 to 400	400 to 1000	1000 to 3000	ADT > 3000		
Design Controls	Design Forecast Year		27-6.02	Current						
	Minimum Design Speed * (1)	Level	27-5.02	30 mph (1a-c)	40 mph (1c)	50 mph				
		Rolling		30 mph (1a-c)	30 mph (1c)	40 mph				
Level of Service (LOS) *			27-6.04	Existing						
Cross Section Elements	Traveled Way Width *		31-1.01	18 (2a/c)	18' (2c)	22' (2b)		24' (2b)		
	Surface Type		Chapter 44	Aggregate Surface or Bituminous Treated		High Type Pavement				
	Shoulder Width *			2' (3a)		4' (3b)		6' (3b)		
	Shoulder Type		31-1.06	Turf (4a)	Turf (4a) or Aggregate Wedge (4b)		Aggregate Wedge (4b) or Aggregate (4c)			
	Auxiliary Lanes *	Lane Width	31-1.03	N/A	9'	Desired 11' Minimum 10'		Desired 12' Minimum 10'		
		Shoulder Width		N/A	2'	Desired 4' Minimum 2'	4'			
	Cross Slope (5a)	Travel Lane *			2.0% - 4% (5b)		1.5% - 2.0%			
		Shoulder		31-1.08	Turf 5% - 8%	Turf 5% - 8% / Aggregate 4% - 6%		Aggregate 4% - 6% / Paved 4%		
Rollover Factor (6)			12%			10%				
Roadway Slopes	Side Slope (7) (Maximum)	Cut Section	Front Slope	31-2.03					Existing	
			Ditch Width	31-2.04					Existing	
			Back Slope	31-2.04					Existing	
		Rock Cut								Existing
		Fill Section								Existing

* Controlling design criteria (see [Section 27-7](#)).

ADT = Average Daily Traffic

**GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE LOCAL ROADS
 (3R Projects)**

Figure 33-3C (US Customary)

Design Element		Manual Section	Design Volume (ADT)					
			ADT < 250	250 to 400	400 to 1000	1000 to 3000	ADT > 3000	
Design Controls	Design Forecast Year	27-6.02	Current					
	Minimum Design Speed * (1)	Level	27-5.02	50 km/h (1a-c)	60 km/h (1c)	80 km/h		
		Rolling		50 km/h (1a-c)	50 km/h (1c)	60 km/h		
	Level of Service (LOS) *	27-6.04	Existing					
Cross Section Elements	Traveled Way Width *		31-1.01	5.4 m (2a/c)	5.4 m (2c)	6.6 m (2b)		7.2 m (2b)
	Surface Type		Chapter 44	Aggregate Surface or Bituminous Treated		High Type Pavement		
	Shoulder Width *			0.6 m (3a)		1.2 m (3b)		1.8 m (3b)
	Shoulder Type		31-1.06	Turf (4a)	Turf (4a) or Aggregate Wedge (4b)		Aggregate Wedge (4a) or Aggregate (4b)	
	Auxiliary Lanes *	Lane Width	31-1.03	N/A	2.7 m	Desired 3.3 m Minimum 3.0 m		Desired 3.6 m Minimum 3.0 m
		Shoulder Width		N/A	0.6 m	Desired 1.2 m Minimum 0.6 m	1.2 m	
	Cross Slope (5a)	Travel Lane *	31-1.08	2.0% - 4% (5b)		1.5% - 2.0%		
Shoulder		Turf 5% - 8%		Turf 5% - 8% / Aggregate 4% - 6%		Aggregate 4% - 6% / Paved 4%		
Rollover Factor (6)		12%			10%			
Roadway Slopes	Side Slope (7) (Maximum)	Cut Section	Front Slope	Existing				
			Ditch Width	Existing				
			Back Slope	Existing				
		Rock Cut	Existing					
		Fill Section	Existing					

* Controlling design criteria (see [Section 27-7](#)).

ADT = Average Daily Traffic

**GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE LOCAL ROADS
 (3R Projects)**

Figure 33-3C (Metric)

BUREAU OF LOCAL ROADS & STREETS

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GEOMETRIC DESIGN OF EXISTING HIGHWAYS

33-3-9

Footnotes:

- (1) Design Speed. The design speed may be reduced to the posted or regulatory speed if less than the values in the figure, but should not be less than 30 mph (50 km/h) with the following exceptions:
 - a. For ADT's less than 50 vehicles/day the design speed may be 20 mph (30 km/h).
 - b. For projects constructed with other than Federal funds on the district road system with ADT's fewer than 150 vehicles/day, no design speed is required.
 - c. For highway-rail grade crossing approaches constructed with other than Federal funds on the district road system, the design speed may be reduced by 10 mph (15 km/h); however, the crossing surface should be at the same plane as the top of the rails for a distance of 2 ft (0.6 m) outside the rails and the surface of the highway should also not be more than 3 in (75 mm) higher or lower than the top of the nearest rail at a point 30 ft (9 m) from the rail unless track super-elevation makes a different level appropriate. ([Requirements for Railroad/Highway Grade Crossing Protection](#))
 - d. For rural bridge projects, minimum design speed shall be as determined by the ADT. However, the design speed may be increased to the posted or regulatory speed limit to avoid a deficient NBIS rating for approach roadway alignment appraisal. All elements of the project will be designed to the chosen design speed. The chosen speed will be certified by the County Engineer.
- (2) Traveled Way Width.
 - a. For projects constructed with other than Federal funds on the district road system with ADT's fewer than 150 vehicles/day, the minimum width is 16 ft (4.8 m).
 - b. On resurfacing only projects the traveled way width may be reduced by 2 ft (600 mm).
 - c. For highway-rail grade crossings constructed with other than Federal funds on the district road system, the traveled way width may be 16 ft (4.8 m) or the existing traveled way width, whichever is greater. ([Requirements for Railroad/Highway Grade Crossing Protection](#))
- (3) Shoulder Width.
 - a. Where roadside barriers are included, provide a minimum offset of 4 ft (1.2 m) from the edge of the traveled way to the roadside barrier.
 - b. Where the rural local road passes through a moderate to high density area, the shoulder width may be 4 ft (1.2 m). This width may include the width of Type B gutter or the gutter flag with curb and gutter at the edge of the shoulder.
- (4) Shoulder Type.
 - a. Turf shoulders should consist of compacted stable roadway embankment or granular material capable of supporting growth and should not contain a high percentage of organic or unstable material.
 - b. The width of the aggregate wedge should be 3 ft (900 mm) or equal to the width of the usable shoulder if less than 3 ft (900 mm). The minimum wedge thickness will equal the depth of the resurfacing at the edge of pavement and tapering to zero. The aggregate wedge should be reviewed for maximum shoulder slope and/or maximum breakover.
 - c. For ADT's > 5000, provide a 6 in (150 mm) thick aggregate shoulder over the full width of a shoulder.
- (5) Cross Slopes.
 - a. Cross slopes for outside auxiliary lanes will be at least 2.0% and desirably should be 0.5% greater than the adjacent travel lane.
 - b. Use 1.5% to 2 % for high-type pavements.
- (6) Rollover Factor. The maximum rollover factor is 10% when the shoulders are 6 ft (1.8 m) or wider.
- (7) Side Slopes. Where the roadway is widened, it may be necessary to steepen the front and back slopes to remain within existing ROW and maintain existing drainage. Where existing ROW may permit significant slope flattening or grading, consider flattening slopes, particularly at horizontal curves. See [Figure 32-2B](#) for recommended slope criteria.

GEOMETRIC DESIGN CRITERIA FOR RURAL TWO-LANE LOCAL ROADS (3R Projects)

Footnotes to Figure 33-3C

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Design Element		Manual Section	Design Volume (DHV)			
			Two-Way DHV < 1400 (1)	Two-Way DHV 1400 - 2400 (1)	Two-Way DHV 2400 - 3400 (1)	
Design Controls	Highway Type	---	TWS-2	TWS-4	TWS-6	
	Design Forecast Year	27-6.02	Current			
	Design Speed *	27-5.02	30 mph – 40 mph			
	Level of Service (LOS) *	27-6.04	D			
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2	4	6
		Travel Lane	31-1.01	Desired 11' Minimum 10'		
		Travel Lane (Shared with Bicycles)	42-3.03	See Section 42-3.02		
		Parking Lane (2)	31-1.04	8'		
		Auxiliary Lane (2)	31-1.03	Single Left & Right – Desired 11' / Minimum 10' Dual Lefts & Rights – Desired 22' / Minimum 20'		
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% - 2.0%	1.5% - 2.0% (3a)	
		Auxiliary Lanes		2.0% (3b)	(3b)	
	Outside Curb and Gutter Type	31-1.07	B-6.12, B-6.18, or B-6.24 CC&G (4)			
	Median Width	Flush		N/A	Existing	
		Flush (TWLTL) (5)	31-1.06	11'		
		Traversable		N/A	Existing	
		Raised Curb		N/A	Existing	
	Sidewalk Width (6)	31-2.02	Desired 5' / Minimum 4'			
Obstruction Free Zone * (7)	35-2	1.5'				
Roadway Slopes	Side Slope (8) (Maximum)	Cut Section (Curbed)		---		
		Rock Cut	31-2.03	---		
		Fill Section (Curbed)		---		
	Median Slope	Concrete Surface / Traversable		N/A	1.5%	
		Flush / TWLTL Surface	31-1.06	1.5%		
Grass/ Landscape Surface			N/A	5% (Towards C&G)		

* Controlling design criteria (see [Section 27-7](#)).

DHV = Design Hourly Volume / TWS = Two-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN TWO-WAY ARTERIALS AND COLLECTORS
 (3R Projects)**

Figure 33-3D (US Customary)

Design Element		Manual Section	Design Volume (DHV)			
			Two-Way DHV < 1400 (1)	Two-Way DHV 1400 - 2400 (1)	Two-Way DHV 2400 - 3400 (1)	
Design Controls	Highway Type	---	TWS-2	TWS-4	TWS-6	
	Design Forecast Year	27-6.02	Current			
	Design Speed *	27-5.02	50 km/h – 60 km/h			
	Level of Service (LOS) *	27-6.04	D			
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2	4	6
		Travel Lane	31-1.01	Desired 3.3 m Minimum 3.0 m		
		Travel Lane (Shared with Bicycles)	42-3.03	See Section 42-3.02		
		Parking Lane (2)	31-1.04	2.4 m		
		Auxiliary Lane (2)	31-1.03	Single Left & Right – Desired 3.3 m / Minimum 3.0 m Dual Lefts & Rights – Desired 6.6 m / Minimum 6.0 m		
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% - 2.0%	1.5% - 2.0% (3a)	
		Auxiliary Lanes		2.0% (3b)	(3b)	
	Outside Curb and Gutter Type		31-1.07	B-15.30, B-15.45, or B-15.60 CC&G (4)		
	Median Width	Flush		N/A	Existing	
		Flush (TWLTL) (5)	31-1.06	3.3 m		
		Traversable		N/A	Existing	
		Raised Curb		N/A	Existing	
	Sidewalk Width (6)		31-2.02	Desired 1.5 m / Minimum 1.2 m		
Obstruction Free Zone * (7)		35-2	450 mm			
Roadway Slopes	Side Slope (8) (Maximum)	Cut Section (Curbed)		---		
		Rock Cut	31-2.03	---		
		Fill Section (Curbed)		---		
	Median Slope	Concrete Surface / Traversable		N/A	1.5%	
		Flush / TWLTL Surface	31-1.05	1.5%		
	Grass/ Landscape Surface		N/A	5% (Towards C&G)		

* Controlling design criteria (see [Section 27-7](#)).

DHV = Design Hourly Volume / TWS = Two-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN TWO-WAY ARTERIALS AND COLLECTORS
 (3R Projects)**

Figure 33-3D (Metric)

Footnotes:

- (1) Traffic Volumes. The design hourly volumes (DHV) are calculated using a peak hour factor = 1.0; adjust these values using local peak-hour factors. For more information, see the *Highway Capacity Manual (HCM)*.
- (2) Parking Lane Width and Auxiliary Lane Width. The minimum width lane may include the gutter width.
- (3) Cross Slope.
 - a. Use 2% minimum cross slopes for travel lanes not adjacent to the crown.
 - b. Curbed left-turn lanes may be sloped at 1.5% to 2% away from the median. TWLTL and flush left-turn lanes are sloped at the same rate as the adjacent traveled way. Cross slopes for outside auxiliary lanes will be at least 2% and desirably should be 0.5% greater than the adjacent travel lane.
- (4) Gutter Width. Under restricted conditions, the gutter width adjacent to the edge of the turn lane may be considered part of the 10 ft (3.0 m) turn lane.
- (5) TWLTL Width. For resurfacing projects on collectors, the width of a TWLTL may be 10 ft (3.0 m).
- (6) Sidewalk Width. Include a 2 ft to 3 ft (600 mm to 1.0 m) buffer strip between the curb and sidewalk. For sidewalks without a buffer strip, a minimum 6 ft (1.8 m) sidewalk width behind the curb must be provided.
- (7) Obstruction-Free Zone. Distance is measured from the face of the curb. Hazards behind curbs should be located outside of the clear zone shown for uncurbed roadways as discussed in Section 35-2.02(f).
- (8) Side Slopes. For rural cross sections, possible side slopes flattening will be determined on a case-by-case basis considering roadside development and ROW restrictions.

**GEOMETRIC DESIGN CRITERIA FOR URBAN TWO-WAY ARTERIALS AND COLLECTORS
(3R Projects)****Footnotes for Figure 33-3D**

Design Element		Manual Section	Design Volume (DHV)			
			One-Way DHV < 1450 (1)	One-Way DHV 1450 - 2150 (1)	One-Way DHV > 2150 (1)	
Design Controls	Highway Type	---	OWS-2	OWS-3	OWS-4	
	Design Forecast Year	27-6.02	Current			
	Design Speed *	27-5.02	30 mph – 40 mph			
	Level of Service (LOS) *	27-6.04	D			
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2	3	4
		Travel Lane	31-1.01	Desired 11' / Minimum 10'		
		Travel Lane (Shared with Bicycles)	42-3.02	See Section 42-3.02		
		Parking Lane (2)	31-1.04	8'		
		Auxiliary Lane (2)	31-1.03	Single Left & Right – Desired 11' / Minimum 10' Dual Lefts & Rights – Desired 22' / Minimum 20'		
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% (3a)		
		Auxiliary Lanes		2.0% (3b)	(3b)	
	Outside Curb and Gutter Type	31-1.07	B-6.12, B-6.18, or B-6.24 CC&G (4)			
	Sidewalk Width (5)	31-2.02	Desired 5' / Minimum 4'			
	Obstruction Free Zone * (6)	35-2	1.5'			
Roadway Slopes	Side Slope (7) (Maximum)	Cut Section (Curbed)	---			
		Rock Cut	31-2.03			
		Fill Section (Curbed)	---			

* Controlling design criteria (see [Section 27-7](#)).

DHV = Design Hourly Volume / OWS = One-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN ONE-WAY ARTERIALS AND COLLECTORS
 (3R Projects)**

Figure 33-3E (US Customary)

Design Element		Manual Section	Design Volume (DHV)			
			One-Way DHV < 1450 (1)	One-Way DHV 1450 - 2150 (1)	One-Way DHV > 2150 (1)	
Design Controls	Highway Type	---	OWS-2	OWS-3	OWS-4	
	Design Forecast Year	27-6.02	Current			
	Design Speed *	27-5.02	50 km/h – 60 km/h			
	Level of Service (LOS) *	27-6.04	D			
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2	3	4
		Travel Lane	31-1.01	Desired 3.3 m Minimum 3.0 m		
		Travel Lane (Shared with Bicycles)	42-3.03	See Section 42-3.02		
		Parking Lane (2)	31-1.04	2.4 m		
		Auxiliary Lane (2)	31-1.03	Single Left & Right – Desired 3.3 m / Minimum 3.0 m Dual Lefts & Rights – Desired 6.6 m / Minimum 6.0 m		
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% (3a)		
		Auxiliary Lanes		2.0% (3b)	(3b)	
	Outside Curb and Gutter Type	31-1.07	B-15.30, B-15.45, or B-15.60 CC&G (4)			
	Sidewalk Width (5)	31-2.02	Desired 1.5 m / Minimum 1.2 m			
	Obstruction Free Zone * (6)	35-2	450 mm			
Roadway Slopes	Side Slope (7) (Maximum)	Cut Section (Curbed)	---			
		Rock Cut	31-2.03	---		
		Fill Section (Curbed)		---		

* Controlling design criteria (see [Section 27-7](#)).

DHV = Design Hourly Volume / OWS = One-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN ONE-WAY ARTERIALS AND COLLECTORS
 (3R Projects)**

Figure 33-3E (Metric)

Footnotes:

- (1) Traffic Volumes. The design hourly volumes (DHV) are calculated using a peak hour factor = 1.0; adjust these values using local peak-hour factors. For more information, see the *Highway Capacity Manual (HCM)*.
- (2) Parking Lane Width and Auxiliary Lane Width. The minimum width lane may include the gutter width.
- (3) Cross Slope.
 - a. Use 2% minimum cross slopes for travel lanes not adjacent to the crown.
 - b. Cross slopes for outside auxiliary lanes will be at least 2% and desirably should be 0.5% greater than the adjacent travel lane.
- (4) Gutter Width. Under restricted conditions, the gutter width adjacent to the edge of the turn lane may be considered part of the 10 ft (3.0 m) turn lane.
- (5) Sidewalk Width. Include a 2 ft to 3 ft (600 mm to 1.0 m) buffer strip between the curb and sidewalk. For sidewalks without a buffer strip, a minimum 6 ft (1.8 m) sidewalk width behind the curb must be provided.
- (6) Obstruction-Free Zone. Distance is measured from the face of the curb. Hazards behind curbs should be located outside of the clear zone shown for uncurbed roadways as discussed in Section 35-2.02(f).
- (7) Side Slopes. For rural cross sections, possible side slopes flattening will be determined on a case-by-case basis considering roadside development and ROW restrictions.

**GEOMETRIC DESIGN CRITERIA FOR URBAN ONE-WAY ARTERIALS AND COLLECTORS
(3R Projects)****Footnotes for Figure 33-3E**

Design Element		Manual Section	Design Volume (ADT)		
			ADT < 1000	ADT > 1000	
Design Controls	Highway Type	---	TWS-2 / OWS-2		
	Design Forecast Year	27-6.02	Current		
	Design Speed *	27-5.02	30 mph (1)	30 mph	
	Level of Service (LOS) *	27-6.04	D		
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2	
		Travel Lane *	31-1.01	10'	Desired 11' Minimum 10'
		Travel Lane (Shared with Bicycles)	42-3.03	See Section 42-3.02	
		Parking Lane (2)	31-1.04	8'	
		Auxiliary Lane	31-1.03	10'	Desired 11' Minimum 10'
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% - 2.0%	
		Auxiliary Lanes		(3)	
	Outside Curb and Gutter Type		31-1.07	B-6.12, B-6.18, or B-6.24 CC&G (4)	
	Sidewalk Width		31-2.02	Desired 5' / Minimum 4'	
	Obstruction Free Zone * (5)		35-2	1.5'	
Roadway Slopes	Side Slope (6) (Maximum)	Cut Section (Curbed)	---		
		Rock Cut	31-2.03		
		Fill Section (Curbed)	---		

* Controlling design criteria (see [Section 27-7](#)).

ADT = Average Daily Traffic / TWS = Two-Way Street / OWS = One-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN LOCAL STREETS
 (3R Projects)**

Figure 33-3F (US Customary)

Design Element		Manual Section	Design Volume (ADT)		
			ADT < 1000	ADT > 1000	
Design Controls	Highway Type	---	TWS-2 / OWS-2		
	Design Forecast Year	27-6.02	Current		
	Design Speed *	27-5.02	50 km/h (1)	50 km/h	
	Level of Service (LOS) *	27-6.04	D		
Cross Section Elements	Surface Width *	Number of Travel Lanes	31-1.02	2	
		Travel Lane *	31-1.01	3.0 m	Desired 3.3 m Minimum 3.0 m
		Travel Lane (Shared with Bicycles)	42-3.03	See Section 42-3.02	
		Parking Lane (2)	31-1.04	2.4 m	
		Auxiliary Lane	31-1.03	3.0 m	Desired 3.3 m Minimum 3.0 m
	Cross Slope	Travel Lane (Minimum) *	31-1.08	1.5% - 2.0%	
		Auxiliary Lanes		(3)	
	Outside Curb and Gutter Type	31-1.07	B-15.30, B-15.45, or B-15.60 CC&G (4)		
	Sidewalk Width	31-2.02	Desired 1.5 m / Minimum 1.2 m		
	Obstruction Free Zone * (5)	35-2	450 mm		
Roadway Slopes	Side Slope (6) (Maximum)	Cut Section (Curbed)	---		
		Rock Cut	31-2.03		
		Fill Section (Curbed)	---		

* Controlling design criteria (see [Section 27-7](#)).

ADT = Average Daily Traffic / TWS = Two-Way Street / OWS = One-Way Street

**GEOMETRIC DESIGN CRITERIA FOR URBAN LOCAL STREETS
 (3R Projects)**

Figure 33-3F (Metric)

Footnotes:

- (1) Design Speed. A 20 mph (30 km/h) design speed may be used where the posted speed limit is 20 mph.
- (2) Parking Lane. The minimum width of the parking includes the gutter width.
- (3) Cross Slope. Use 2% minimum for lanes away from the crown.
- (4) Gutter Width. Under restricted conditions, the gutter width adjacent to the edge of the turn lane may be considered part of the 10 ft (3.0 m) lane or included in the width of the turn lane. A valley gutter may be used in place of curb and gutter.
- (5) Obstruction-Free Zone. Distance is measured from the face of the curb. Hazards behind curbs should be located outside of the clear zone shown for uncurbed roadways as discussed in Section 35-2.02(f).
- (6) Side Slopes. For rural cross sections, possible side slope flattening will be determined on a case-by-case basis considering roadside development and ROW restrictions.

GEOMETRIC DESIGN CRITERIA FOR URBAN LOCAL STREETS
(3R Projects)**Footnotes for Figure 33-3F**

33-3.03 Horizontal Alignment

33-3.03(a) Rural and Open Roadway Conditions

An existing horizontal curve may remain in place if its design speed is not less than the design speed required by Figure 33-3B or Figure 33-3C or more than 15 mph (25 km/h) less than the regulatory speed for the highway but not less than 30 mph (50 km/h). Horizontal alignment warning signs shall be provided on horizontal curves per Chapter 2C of the [ILMUTCD](#).

Ensure that the superelevation rates for horizontal curves on rural facilities to remain-in-place are commensurate with the comfortable operating speed of the curve using a maximum rate of 8%. See [Section 29-2](#) for guidance on determining the design speed on curves to remain in place.

Through horizontal curves, the maximum “rollover” factor (algebraic difference between slopes) at the traveled way/shoulder intersection should not be greater than 10% where the proposed (or remaining) shoulder width is wider than 4 ft. (1.2 m). Where the shoulder width is 4 ft (1.2 m) or less, the maximum rollover factor may be 12%. Where 1 ft (300 mm) paved shoulders are used, the rollover factor should be applied at the edge of the paved shoulder rather than at the traveled way edge for ease of construction.

33-3.03(b) Urban Conditions

For low-speed ($V \leq 45$ mph (70 km/h)) urban arterials, use [Figure 29-4B](#) to determine the acceptability of existing horizontal curves. Where a horizontal curve will be improved (i.e., flatten the radius and/or increase the superelevation), the designer should also use [Figure 29-4B](#) for the reconstructed horizontal curve. The basic objective for improving conditions on the existing horizontal alignment of low-speed urban streets is to retain the existing alignment and to check for comfortable operating speeds. See [Section 29-4](#) for more information.

Where a considerable amount of ROW is being acquired along a significant length of a project on a collector to accommodate widening and resurfacing, the horizontal alignment should be in accord with [Chapter 32](#). For other projects the horizontal alignment should be consistent with site conditions.

33-3.04 Vertical Alignment

33-3.04(a) Crest Vertical Curves

The following will apply to rural crest vertical curves:

<u>Current ADT</u>	<u>Treatment</u>
1000 or more	<p>Existing crest curves that do not meet the criteria for the design speed in Figures 33-3B and 33-3C and are not within 15 mph (25 km/h) of the posted or regulatory speed, as determined from the available stopping sight distance (SSD), will be upgraded by one of the following options:</p> <ul style="list-style-type: none"> • flatten the crest curve within the existing ROW to desirably satisfy the design speed required by Figures 33-3B or 33-3C; or if the design speed is 50 mph or greater, to a minimum 45 mph (70 km/h) design speed; or • flatten the crest curve by obtaining additional ROW to satisfy the required design speed if the design speed is less than or equal to 50 mph (80 km/h) or to meet a 50 mph to 55 mph (80 km/h to 90 km/h) design speed if the required design speed is greater than 50 mph (80 km/h). <p>The designer should consider sight distances, intersection influences, overall safety, and the need for road closures, detours, stage construction, and especially the prevailing vertical alignment in evaluating the above alternatives. This analysis will allow designers to determine the most practical alternative for flattening crest vertical curves.</p>
Less than 1000	<p>Crest curves may be retained if the available SSD is adequate for the required design speed or for 20 mph (30 km/h) less than the posted or regulatory speed, but not less than a 30 mph (50 km/h).</p>

Unless safety indicates otherwise, existing crest vertical curves on urban streets may be retained.

33-3.04(b) Sag Vertical Curves

Sag curves generally may be retained.

33-3.04(c) Grades

On 3R projects, retaining the existing roadway grades is acceptable. Flattening grades is typically not within the scope of a 3R project.

33-3.04(d) Vertical Clearance

The minimum vertical clearance for bridges to remain in place is 14 ft (4.3 m).

33-3.05 Intersections**33-3.05(a) Superelevation Rates through Intersections**

Superelevation rates less than that specified for the design speed may be used on the major road through certain intersections where there is no stop control for the major road so that slowing or stopped vehicles do not slide across the pavement during wet or icy conditions. An appropriate advisory speed should be posted for the curve and noted in the PDR and/or the project file.

33-3.05(b) Stop-Controlled Approaches on Horizontal Curves

On curved, stop-controlled approaches to intersections, it is desirable to have as flat an alignment as practical, with lower superelevation rates, even though traffic is operating at lower speeds than on comparable non-stopped approaches. On a project-by-project basis, the benefits of higher superelevation rates for high-operating speeds (during clear conditions) versus the benefits of lower superelevation for low-operating speeds (during icy pavement conditions) should be carefully considered when selecting an appropriate superelevation rate.

33-3.05(c) Side Road Approach Grades

Where considerable amounts of additional ROW are required, geometric design criteria for side road approach grades should be in accordance with applicable new construction/reconstruction criteria where practical. Some elements may be consistent with site conditions when based on special study and analysis results.

33-3.05(d) Turning Radii

In urban areas, right-turn radii maneuvers at intersections are important for two reasons. The radius affects the speed at which the design vehicle can make a right turn from the main road onto a side street. The radius also determines how much encroachment, assuming the selected design vehicle, will occur into opposing lanes when the design vehicle makes a right turn onto the main road. For right turns at urban intersections, consider the following guidelines for 3R projects:

1. Passenger Cars. Simple radii of 15 ft to 25 ft (4.5 m to 7.5 m) are adequate for a passenger car design vehicle. These radii may be retained on existing side streets:
 - (a) where very few trucks are expected to turn into the side street,
 - (b) where encroachment by a single unit or tractor/semitrailer unit into opposing lanes of the main road is acceptable, or

- (c) where a parking lane is present and parking is restricted a sufficient distance from the intersection thereby providing a larger area for a right-turn maneuver.
2. Trucks. Where practical, use a simple radius of 30 ft (9 m) or a two-centered curve at all major intersections and at all minor intersections that have some frequency of truck turning volumes. This design will provide for the single-unit vehicle and the occasional tractor/ semitrailer unit.
 3. Tractor/Semitrailers. At intersections where tractor/semitrailer combinations and buses turn frequently, provide a simple radius at a minimum of 40 ft (12 m) or a two-centered curve.

33-3.05(e) Curb Cuts/Ramps

Ensure that curb cuts/ramps meet the accessibility criteria presented in [Section 41-6](#).

33-3.05(f) Intersection Sight Distance

At rural, public road intersections with a stop condition on the side road, the designer should strive to provide the intersection sight distance as shown in [Section 28-3](#), based on the selected design speed. However, the designer may use a maximum sight distance of 465 ft (140 m) for the stopped approach in both the left and right directions along the free-flowing highway and a 12 ft (3.5 m) distance from the edge of the traveled way to the driver's eye.

33-3.06 Diagonal Parking

Parking (existing or proposed) should generally be parallel and adjacent to the curb. Diagonal parking may be permitted to remain if an engineering analysis of the existing angle parking clearly demonstrates that there will be no adverse effect on street capacity and safety. The analysis must describe parking characteristics, crash history, and an observation of street operations and potential problems. For projects processed through IDOT a design exception shall be submitted add or to remain in place.

Proposed diagonal parking, where none previously existed and that will not interfere with the free movement of traffic in the travel lanes, may be permitted if spaces are available for entering and exiting the parking space off of the traveled way. [Section 31-1.04](#) provides the minimum criteria for this backing maneuver. Diagonal parking should be monitored after implementation to determine whether the effects on operational safety and efficiency might warrant a change to the configuration.

33-3.07 Roadside Hazards and Highway Appurtenances

33-3.07(a) General

The intent of these guidelines is to provide cost-effective design that may reduce the number and severity of run-off-the-road crashes. Remove or shield obstacles within the clear zone, including protrusions that extend greater than 4 in (100 mm) above the groundline, where cost effective.

33-3.07(b) Earth Slopes

Other than specifically described in Section 33-3.07, existing earth slopes should generally be retained. Where the existing ROW permits significant slope flattening or where grading within existing ROW is necessary, the designer should consider flattening earth slopes, particularly at horizontal curves.

33-3.07(c) Clear Zone

The roadside environment on a 3R project may include any number of natural and man-made obstacles. To remove or relocate these obstacles can present significant problems and public opposition, and it can be very costly. On the other hand, the designer cannot ignore the consequences to a run-off-the-road vehicle. Therefore, the designer must exercise considerable judgment when determining the appropriate clear zone on a 3R project. The designer should consider the following:

1. Application. The designer may consider a selective application of the roadside clear zone criteria. Along some sections of highway, it may be practical to provide the 3R clear zone criteria; along other sections, it may be impractical. In addition, some obstacles will be more hazardous than others. Judgment will be necessary for the application of the clear zone criteria.
2. Public. Public acceptance of widened clear zones can be a significant issue, especially when the removal of trees is being considered. The designer must judge the community impact and subjectively factor this into the decision-making process.
3. Rural Roads. The recommended clear zone widths, measured from the traveled way edge, are shown in Figure 33-3G. [Figure 35-2A](#) may also be used.
4. Urban Streets. Clear zones along urban streets are as follows:
 - a. Curb Streets. Where the street has curbs, an obstruction-free zone should be located from the face of the curb to 1.5 ft (500 mm) from the face of curb. This distance is not considered a clear zone but an operational offset. Where parallel parking lanes are included, a 1 ft (300 mm) clearance to the face of curb may be considered.
 - b. Streets with Shoulders. Where the street has a rural cross section, the minimum clear zone widths shall be:

- 18 ft (5.4 m) for arterials and 14 ft (4 m) for collectors, or the non-traversable ditch if less, where the regulatory speed is 50 mph (80 km/h) or greater;
 - 10 ft (3 m) where the regulatory speed is 45 mph (70 km/h); or
 - the shoulder width where the regulatory speed is 40 mph (60 km/h) or less.
 - The clear zone width in [Figure 35-2A](#) may be used in place of the above widths.
5. Crash Data. The designer should review the crash data to estimate the extent of the roadside safety problem. In particular, there may be sites where clusters of run-off-the-road crashes have occurred.
 6. Safety Appurtenances. During the design of a 3R project, all existing safety appurtenances should be examined to determine if they meet IDOT's current safety performance and design criteria. This includes guardrail, sign supports, luminaire supports, etc. Normally, all existing safety appurtenances will be upgraded to meet the most recent criteria.
 7. Other. For the treatment of roadsides and highway appurtenances other than described above, use the clear zone widths appropriate for the cross section.

Roadway Criteria		Cross Sections	Clear Zone
On Tangent	Regulatory Speed 50 mph (80 km/h) or greater and ADT greater than 1000	Fill or Traversable Ditch ⁽¹⁾	14 ft (4 m) or ROW Line ⁽²⁾
		Non-Traversable Ditch	14 ft (4 m) or Toe of Back Slope ⁽²⁾
	All Others	All	10 ft (3 m)
On Curve ⁽³⁾	Curve Design Speed 50 mph (80 km/h) or greater	Same as Tangent Clear Zone above	
	Curve Design Speed less than 50 mph (80 km/h)	Fill or Traversable Ditch ⁽¹⁾	20 ft (6 m) or ROW Line ⁽²⁾
		Non-Traversable Ditch	20 ft (6 m) or Toe of Back Slope ⁽²⁾

Notes:

- (1) *Traversable ditch cross sections are those with at least 1V:4H front slopes, 1V:3H back slopes, and 2 ft (600 mm) wide ditches. If any of these criteria are not satisfied, the ditch cross section is considered non-traversable.*
- (2) *Use whichever is less, except when the foreslope is 1:3 or greater, then use the Toe of Back Slope.*
- (3) *Clear zone values apply only to the outside of curve. Tangent clear zone values apply to inside of curve.*
- (4) *The clear zone values in [Figure 35-2A](#) may be used in lieu of the above values.*

**CLEAR ZONES FOR RURAL ROADS
(3R Projects)**

Figure 33-3G

33-3.07(d) Guardrail

Installing guardrail is an alternative to providing a wider clear zone. However, this can lead to lengthy runs of barrier along the roadside. The designer should realize that barrier warrants are based on the relative severity between hazard and barrier; they do not address the question of whether or not a barrier installation is cost-effective. Therefore, on 3R projects, the designer must judge whether or not barrier should be installed to shield a hazard within the clear zone.

Guardrail warrants on 3R projects can be especially difficult to resolve. The evaluation process will be:

1. Determine if guardrail is warranted. As part of this process, the designer must decide if the guardrail will create a greater hazard than the obstacle that it is shielding.
2. If an existing run of guardrail is located where none is warranted, remove the guardrail.
3. If guardrail is warranted, consider removing or relocating the hazard; reducing the hazard (e.g., flattening a slope); or making it breakaway.
4. If the hazard cannot be eliminated and guardrail is considered cost effective, then install guardrail. For existing runs of guardrail, ensure that they meet the applicable performance and design criteria, including:
 - operational acceptability (e.g., hardware, height, etc.);
 - dynamic deflection criteria;
 - length of need;
 - flare rate;
 - lateral placement;
 - placement on slopes and behind curbs;
 - terminal treatments; and
 - transitions.

[Chapter 35](#) presents the criteria for the layout of roadside barriers. The following also applies:

1. Guardrail Removal. An existing guardrail installation should be removed when the hazard can be removed at a cost less than guardrail upgrading and maintenance.
2. Guardrail Upgrading. Existing guardrail that is warranted should be upgraded per Section 49-3.07(d) - Item 2 of the *BDE Manual*.
3. Terminal Sections. Existing Breakaway Cable Terminal (BCT) end sections, regardless of the amount of flare, may remain in place if no other upgrading of the guardrail is required for the installation. Connections to bridges which are rigid to minimize deflection may also remain in place if no other upgrading of the guardrail is required. When a terminal is replaced, the new terminal must meet the [IDOT Highway Standards](#).
4. Length of Need. Use the length-of-need criteria in [Section 35-4](#) to determine the sufficiency of the existing length of guardrail based on the design speed. Upgrade existing guardrail that is deficient in length by more than 37.5 ft. (34 m) to provide a proper length of need. Other guardrail with a deficient length of need may remain in place unless crash data shows that the additional length will reduce crash severity. Also, provide the proper length of need if placement of a new terminal is required.
5. New Guardrail Installation. Install new guardrail in accordance with [Chapter 35](#). For embankments, new guardrail is warranted based on [Section 35-3.04](#) or Figure 33-3H.

For roadside obstacles, guardrail should be installed where it is cost effective to shield an obstacle.

33-3.07(e) Culverts

1. Cross Drainage Structures. Existing culverts with headwalls within the proposed shoulder widths should be addressed in accordance to the following hierarchy of preferences:
 - Preference 1. Remove or fill the structure and grade slopes to match the prevailing cross-section. This may be possible in rare instances for abandoned cattle passes, etc. Removal of culverts used as passes; a much smaller culvert may still be required for drainage. This will pose a smaller and less severe hazard.
 - Preference 2. Where existing ROW is adequate or where right-of-way acquisition would be allowed and is economical to obtain, flatten the front slope to 1V:4H or flatter. Terminate culverts 36 in (915 mm) or less by matching the culvert into the front slope and adding a standard end section with no further treatment required. Terminate culverts greater than 36 in (915 mm) with an end section and grate from the [IDOT Highway Standards](#). An example of a grading plan is shown in Figure 33-3J.
 - Preference 3. Extend the culverts to the proposed shoulder edge and: terminate culverts 36 in (915 mm) or less with a standard end section with no further treatment required; terminate culverts with diameters greater than 36 in (915 mm) and less than or equal to 54 in (1400 mm) with an end section from the [IDOT Highway Standards](#) and a standard end section grate terminate culverts with diameters greater than 54 in (1400mm) with an appropriate end section and determine if guardrail is warranted based on an analysis in [Chapter 35](#) or in lieu of analytical calculations, Figure 33-3.H may be used.
 - Preference 4. Delineate the hazard according to [ILMUTCD](#) requirements if the above options are not appropriate.

The end treatments of culvert pipes greater than 36 in (915 mm) described in Preference 3 should also be applied to proposed and existing culverts at or beyond the shoulder edge but within the clear zone. For existing culverts 36 in (915 mm) or less in diameter with headwalls at or beyond the shoulder but within the clear zone and protruding 4 in (100 mm) or higher, remove the headwall or shield the headwall by re-grading, however, flared end sections are not required for culverts 36 in (915 mm) or less.

These guidelines generally apply at locations where the size of the overall hazard approximates the size of the culvert. However, where earth cover or headwalls will remain or are proposed above the top of culverts and yields a drop-off of more than 36 in (915 mm) within the clear zone, apply the above treatments or other practical mitigating measures in accordance to the drop off.

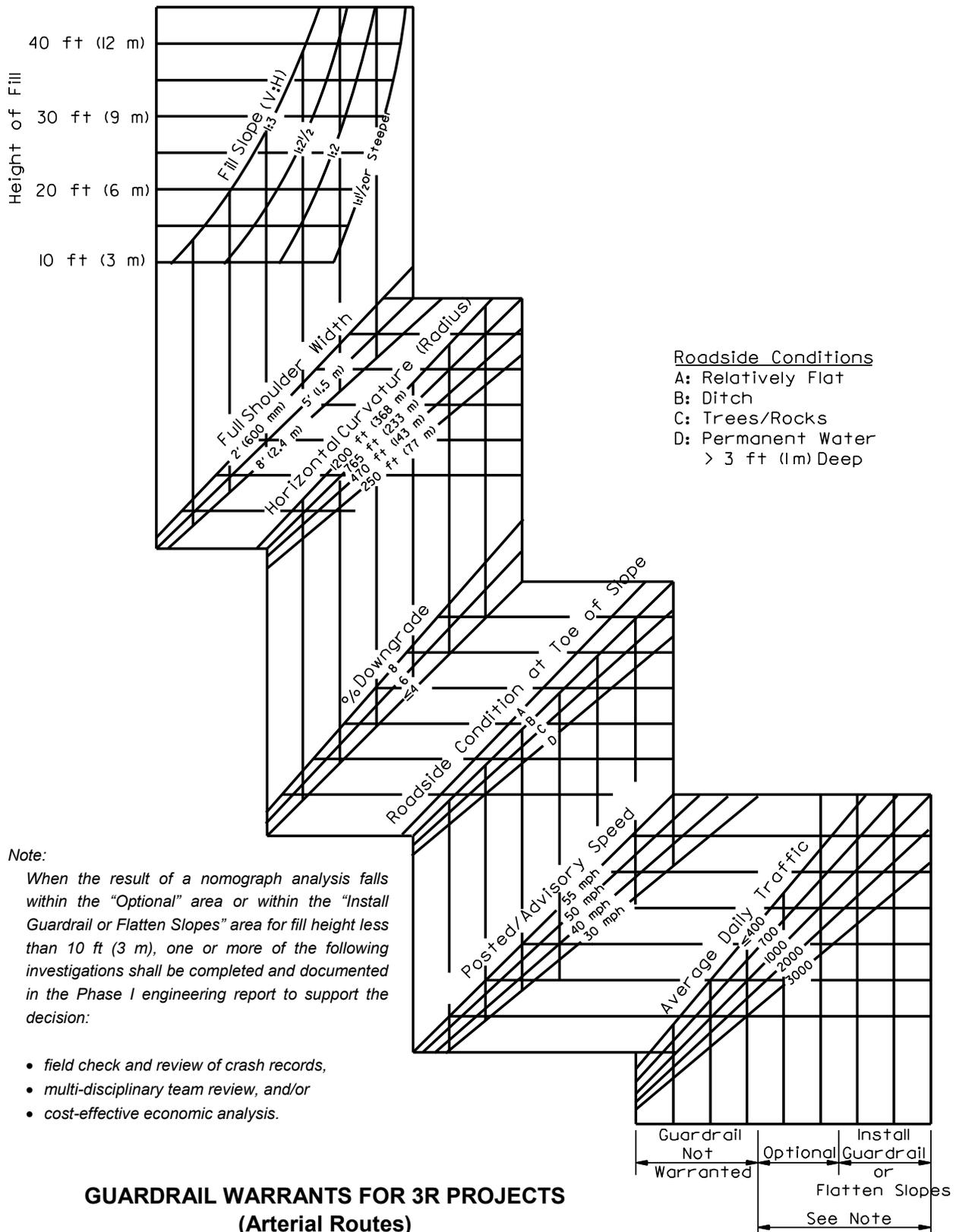
2. Parallel Drainage Structures. Remove or eliminate the entrance, and thus the culvert, there an entrance is closed or abandoned. Where culverts are replaced or extended for entrances or side roads and are still within the ROW, re-grade the transverse side slopes out to the highway ROW to conform to the design side slope of the main road. These slopes may not be steeper than 1V:4H. This requirement is not mandatory for culverts beyond the main road ROW if the work will require additional ROW.

The designer should reference Section 3-500, "Construction/Reconstruction and Maintenance of Sideroad and Street Intersections with State Highways" of the Bureau of Operations *Maintenance Policy Manual* for guidance. In addition to re-grading the transverse slope provide safety treatments for parallel culverts (entrances and side roads) in accordance to the following hierarchy of preferences subject to site conditions and economic analysis:

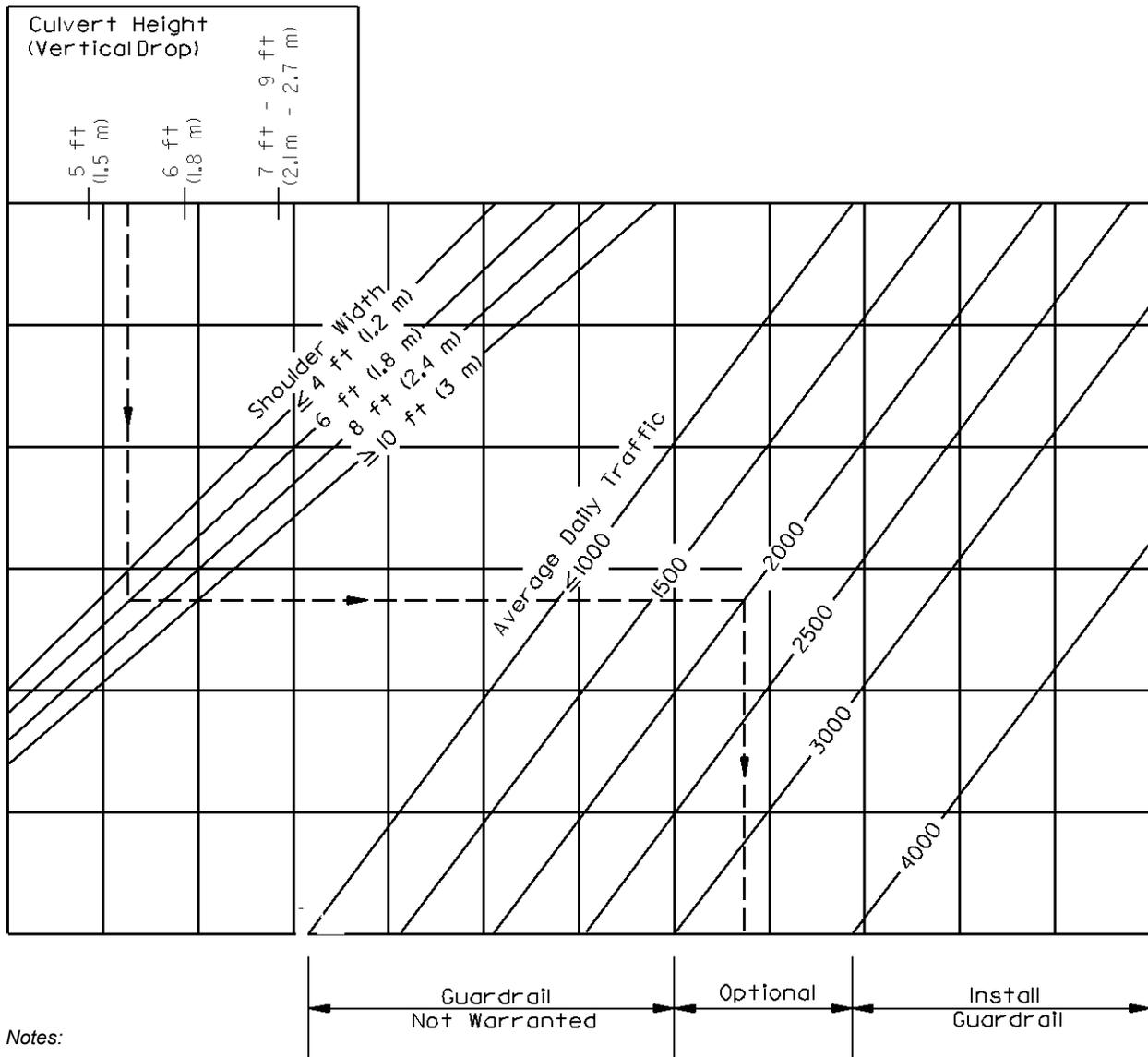
- Preference 1. Subject to consideration of stream drift including crop debris, tree branches, or other items, match the existing or proposed culvert end into the front slope and eliminate the hazards by making them traversable. For culverts with diameters greater than 24 in (600 mm), place a current standard end section or specifically designed end section with a grating See Figure 35-3E for design guidance and any applicable Bridge Office resources (e.g., *Culvert Manual*).
- Preference 2. Reroute the parallel ditch outside of the clear zone. This will have the effect of flattening front slopes and allowing placement of the culvert further away from the traveled way. This strategy will create a longer (and flatter) ditch profile and may affect hydraulics.

Note: Preference 3 and Preference 4 follow Figure 33-3.

- Preference 3. Shield the culvert hazard with guardrail or other approved roadside barrier. Provide grading for guardrail end-terminal locations as shown in the [IDOT Highway Standards](#).
- Preference 4. Delineate the hazard according to [ILMUTCD](#) requirements if the above options are not appropriate.



**GUARDRAIL WARRANTS FOR 3R PROJECTS
 (Arterial Routes)
 Figure 33-3H**



Notes:

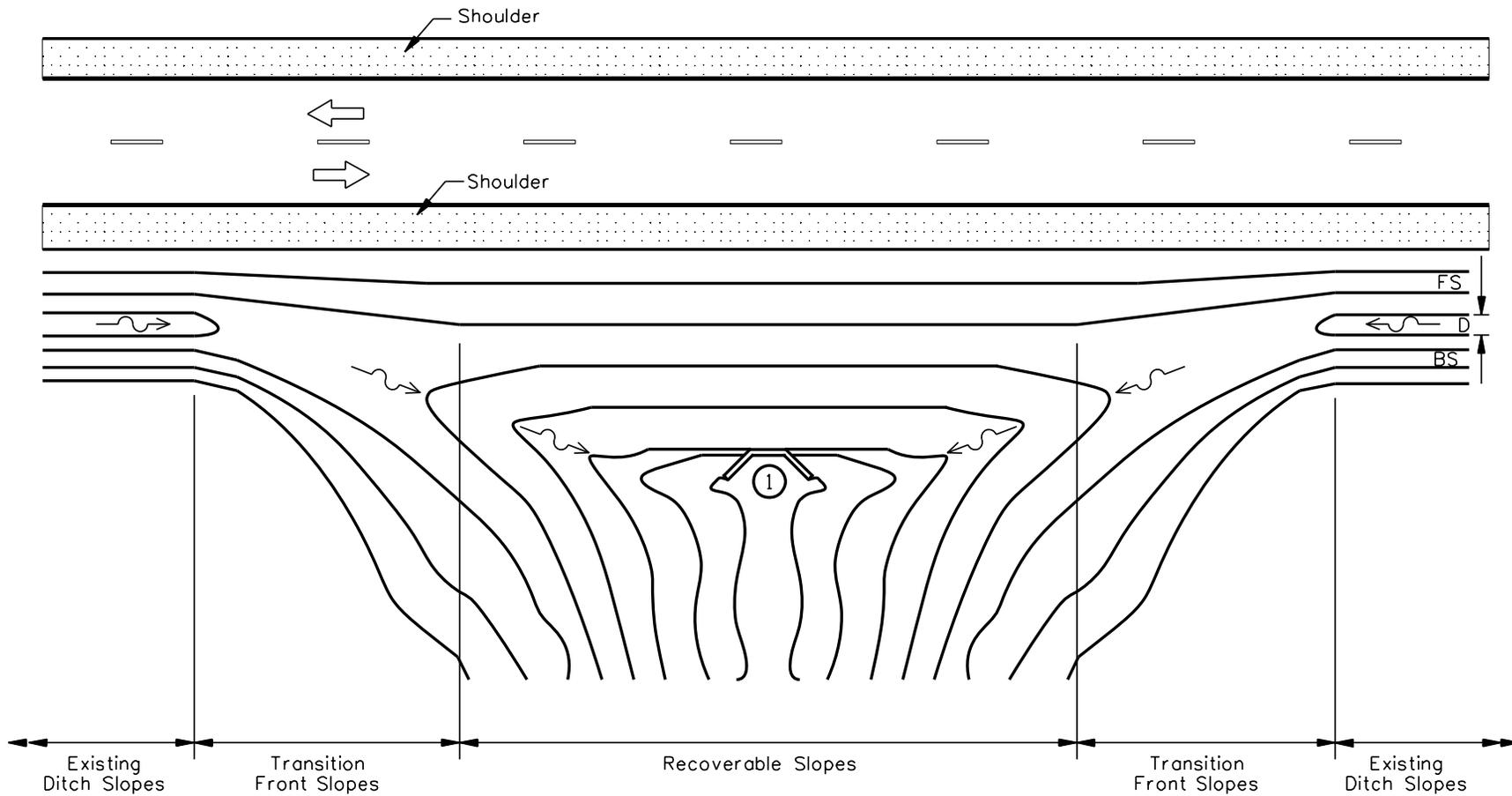
1. This nomograph supplements, but does not supersede Figure 49-3.F.
2. Culvert height includes the earth cover immediately above the culvert if it increases the "drop-off." Where the culvert height is 10 ft (3 m) or greater, guardrail is warranted. Follow the hierarchy of preferences in [Section 49-3.07\(e\)](#) of the BDE Manual for cross road culverts.
3. When the result of a nomograph analysis falls within the "optional" area, one or more of the following investigations shall be completed and documented in the Phase I engineering report to support the decision:
 - field check and review of alignment and crash records,
 - multi-disciplinary team review, and/or
 - cost-effective economic analysis.

3R GUARDRAIL WARRANTS FOR CULVERTS > 54 in (1400 mm)

Figure 33-31

① Provide stable embankment cone at end of wingwall or culvert, which must be sufficient length to allow completion of the cone without encroaching into hydraulic opening of culvert.

FS = Front Slope (Recoverable)
D = Ditch Bottom
BS = Back Slope
Combined ditch section according to Section 33-3.07(e)



**REGRAIDING PLAN FOR CULVERTS
(3R Rural Arterial Projects)**

Figure 33-3J

33-3.07(f) Sign and Light Supports

Posts or poles used to support signs or lights to remain within the clear zone should be made breakaway. Wood sign supports may be modified to properly reduce the cross sectional area or replaced with breakaway supports. Where pedestrian traffic is significant, do not use breakaway sign and light supports.

33-3.07(g) Trees

Unless shielded by a protective device required for other purposes, remove trees within the clear zone that will mature to a diameter greater than 4 in (100 mm). Where the removal of trees may adversely affect the roadside environment, remove these trees only where it is necessary for reasons of safety. In cases where unusual specimens are in jeopardy, guardrail or attenuator protection may be considered as an alternative to removal. Trees on backslopes that are not likely to be impacted by vehicles may generally remain in place.

33-3.07(h) Concrete Signal Bases

Remove concrete signal bases (Type B) if they are within the clear zone and extend higher than 4 in (100 mm), and install standard supports with frangible bases where appropriate. Mast arm signal supports cannot have frangible bases.

33-3.07(i) Curbs

Curbs higher than 4 in (100 mm) within the shoulder area should be removed where posted speeds are greater than 45 mph. Review the proper placement of traffic control devices before considering the removal of corner island curbs where these devices are located.

Curb removal is not intended to include intermittent center channelizing islands separating two-lane, two-way traffic and supplemented by illumination. Reflectorizing devices should be placed on these curbs in accordance with the [IDOT Highway Standards](#) to improve delineation.

33-3.07(j) Above-Ground Utilities

Utility poles are a common roadside obstacle on 3R projects. Relocation is mandatory when the utility poles physically interfere with construction. Other relocations for safety benefits must be evaluated on a project-by-project basis. When practical, above-ground utility facilities should not be allowed to remain inside the clear zone, except where protected by devices required for other purposes. Existing utility facilities may generally remain:

- where located beyond non-traversable ditch cross sections, or
- where ROW is so narrow that the maximum adjustment practical within the existing ROW is minimal and considered impractical.

Where re-grading of the back slopes is necessary for a significant length within the area of utility facilities, the utilities should be relocated in accordance with the criteria in [Section 41-11](#).

33-3.07(k) Other

There may be other objects within the desired clear zone that may be roadside obstacles. They should receive the appropriate attention.

Where appropriate, the designer should discuss the mailbox supports considered hazardous and within the clear zone with the property owners:

- to inform the owner of the potential severity of the support, such as the results of pertinent research and tests as reported in the TRR No. 769 Paper “The Rural Mailbox – A Little Known Roadside Hazard”;
- to inform the owner of the possibility of personal liability; and
- to request the owner to change the support to reduce the potential seriousness of the hazard. Changed supports will be consistent with the designs contained in Chapter 11 of the American Association of State Highway and Transportation Officials (AASHTO) publication *Roadside Design Guide*.

33-3.08 Traffic Control Devices

Ensure all traffic control devices are in conformance with the [ILMUTCD](#).

33-3.09 Mailbox Turnouts

The design and construction of mailbox turnouts should be in accordance with [Section 41-8.02](#).

33-3.10 Lighting and Landscaping

Consider installing lighting to improve operations and/or safety in accordance with [Section 41-7](#). Generally, landscaping should be directed toward replacing appropriate existing plants and turf removed or damaged by construction and, where practical, planting for safety or erosion control purposes.

33-3.11 Railroad Crossings and Signals

Railroad crossings and signals should be upgraded prior to, or concurrent with, 3R projects. When this is not possible, documentation of reasoning and railroad coordination should be included in the project file. [Section 4-2](#) discusses the Illinois Grade Crossing Protection Funds (GCPF).

Where the existing railroad crossing surface is in good condition, is of adequate width for the proposed roadway cross-section, and will remain, taper the roadway overlay to match the existing crossing profile. The crossing surface outside the traveled way should consist of bituminous or other approved material and encompass the entire improved shoulder width. If no

improved shoulder is present, the crossing surface should extend at least 2 ft beyond the edges of the traveled way. If the roadway will be widened, the LPA will be responsible for the costs and coordination necessary to allow the railroad to widen the crossing surface to encompass the new roadway width, including the shoulders, in accordance with [Subpart C of Title 92 Illinois Administrative Code \(IAC\) Part 1535](#). If the LPA desires a crossing surface type other than the railroad's standard crossing surface material ("premium surface"), the LPA should seek an agreement with the railroad for full replacement of the crossing surface, to be funded at project cost. Where the crossing surface is not in good condition, contact the Illinois Commerce Commission (ICC) Rail Safety Section (RSS) at railsafety@icc.illinois.gov for an evaluation of whether the current crossing surface conditions meet the minimum requirements of 92 IAC Part 1535. If the ICC RSS determines that the crossing fails to meet the IAC requirements, the railroad will be required to make immediate repairs and may also be required to schedule the replacement of the crossing surface with its standard material at the railroad's own cost. A non-compliance finding by the ICC RSS will not negate the LPA's need to coordinate with the railroad for payment of costs to widen the crossing surface and/or install a "premium surface".

In the case of roadway widening, the railroad will need to locate the crossing warning signal devices and control equipment in accordance with current safety requirements and upgrade if not in conformance with the guidelines discussed in [Chapter 40](#) and in the IDOT publication [Requirements for Railroad/Highway Grade Crossing Protection](#). Any other associated work performed must also meet ICC guidelines and the [ILMUTCD](#). The LPA will need to coordinate with the railroad for payment of costs associated with the railroad's relocating or replacing of warning devices due to roadway widening.

If, as an exceptional case, the relocation of railroad warning signal devices cannot be scheduled for completion in advance of the roadway widening, the widened pavement should be constructed up to the crossing. Offsets to the existing warning signal devices should temporarily consist of tapered edge lines and diagonal pavement markings, and channelization devices. If the location of the existing warning signal devices precludes this treatment, taper the widened pavement to the existing pavement width at or near the signal location and place temporary impact attenuation measures in advance of the warning devices, taking care not to obstruct the motorist's forward view of the warning devices.

Contact the ICC RSS and the railroad for coordination of required changes in railroad facilities early in the project to enable agreement negotiations to be concluded so that railroad work may proceed concurrently with that of the highway contract.

33-3.12 Pavement Design

The pavement design for 3R projects will be in accordance with the guidelines in [Chapter 46](#). In addition, all pavement surfaces in a 3R project are required to meet the IDOT's skid resistance criteria.

33-3.13 Bridges**33-3.13(a) Scope of Work**

These guidelines can be used for all work necessary for the improvement of existing rural or urban bridges to be consistent with 3R objectives for increased safety and improved operating conditions. This includes the total replacement of a bridge when other cost-effective means of meeting these criteria are not feasible. For definition and clarification purposes, a bridge constructed at a different location, or an existing bridge requiring replacement of all elements as a part of a 3R project, is designated as a replacement rather than a new bridge. New bridge designations are reserved for new construction/reconstruction projects because they are generally subject to different width requirements than replacement bridges.

Bridge work may be performed prior to, simultaneous with, or deferred from highway projects according to the guidance provided in this section. Bridges will be improved to correct operational, structural, and significant safety deficiencies, and will be subject to the following conditions:

- The roadway template is not anticipated to be widened beyond the proposed bridge cross section within the next 20 years.
- Where an existing bridge is not of sufficient width to remain in place, it may be gapped within the project limits if its future rehabilitation or replacement is committed as stage construction to be completed within 5 years of the completion of the roadway project. No bridge will be gapped for more than 1 year if the clear roadway bridge width is less than the approach traveled way width.
- Hazard panels and appropriate pavement markings will be required for all bridges that remain in place and that are narrower than the improved traveled way width.

33-3.13(b) Criteria for Rural Bridges to Remain in Place

Bridges on rural roads may remain in place provided that the clear roadway bridge width is equal to or greater than the values given in Figure 33-3K and that the structural capacity is met.

The designer should repair, retrofit, or replace any rails on bridges to remain in place that could be easily penetrated by a passenger vehicle, that show evidence of crash damage, that are in questionable condition, or that contain irregularities that could cause intolerable vehicular decelerations. If replaced, ensure rails and their connections to the deck are designed to meet current AASHTO strength and safety performance standards.

Curb sections that project horizontally more than 9 in (225 mm) but less than 3 ft (900 mm) from the face of rail shall be removed, or new rail elements installed in accordance with the standards for bridge rail retrofit.

Structurally sound bridge decks with poor riding quality that could jeopardize the safety of the motorist or cause undue discomfort should be repaired and resurfaced. However, resurfacing

may not be extended across decks without necessary repair or when the additional dead load resulting from the resurfacing would cause a load posting on the bridge.

Current ADT ⁽²⁾ Under 400	Current ADT 400 - 999	Current ADT 1000-3000	Current ADT Over 3000
Clear Roadway Bridge Width ⁽³⁾⁽⁴⁾			
20 ft (6.0 m)	22 ft (6.6 m)	24 ft (7.2 m)	28 ft (8.4 m)

Notes:

- (1) *In all cases, except as noted in (2) below, the bridge to remain in place must have a structural inventory capacity of H-15 (M-13.5) loading (Inventory Rating Factor ≥ 0.75), the structure condition ratings must be "satisfactory" or better, and the structure must be able to carry legal loads (no load posting required).*
- (2) *When the current ADT is less than 75, a bridge with a structural inventory capacity of H-10 (M-9) loading (Inventory Rating Factor ≥ 0.50), structure condition ratings of "satisfactory" or better, and able to carry legal loads (no load posting required) will be acceptable if it meets the width criteria.*
- (3) *Between rails or between curbs if the curb projects more than 9 in (225 mm) beyond the face of the rail.*
- (4) *In no case will the bridge be narrower than the approach traveled way.*

3R WIDTHS OF RURAL BRIDGES TO REMAIN IN PLACE

Figure 33-3K

33-3.13(c) Criteria for Improved Bridges

Construct all rehabilitated or replaced bridges to a minimum clear roadway width equal to the values in Figure 33-3L. The widths assume a rural type cross section approaching the bridge.

Current ADT Under 400	Current ADT 400 - 999	Current ADT 1000 - 2999	Current ADT 3000 - 5000	Current ADT Over 5000
Clear Roadway Bridge Width ⁽¹⁾				
22 ft (6.6 m)	26 ft (7.8 m)	28 ft (8.4 m)	32 ft (9.6 m)	36 ft (10.8 m)

Notes:

- (1) *The designer may use the width criteria in [Chapter 36](#) if it is less than stated above.*

3R WIDTHS OF IMPROVED RURAL BRIDGES

Figure 33-3L

33-3.13(d) Criteria for Urban Bridges to Remain in Place

Urban bridges may remain in place:

- where they meet the structural requirements for rural bridges including the requirements for decks and bridge rails;
- where the clear roadway bridge width is sufficient to accommodate the number of approach lanes; and
- where the clear roadway bridge width includes traffic lanes 10 ft (3 m) or wider.

For urban bridges, bridge deck repairs similar to those cited for rural bridges may be undertaken. Urban bridges not meeting the criteria to satisfactorily remain in place should be improved:

- to meet the structural requirements of improved rural bridges,

33-3.13(e) Criteria for Improved Urban Bridges

Urban bridges not meeting the criteria to satisfactorily remain in place should be improved:

- to meet the structural requirements of improved rural bridges,
- to accommodate the number of lanes and the median on the approach roadways, and
- to provide lane widths equal to those on the roadway approaches but not less than 11 ft (3.3 m) or as allowed in [Chapter 36](#).

Parking lanes on the approach roadways usually are not carried across urban bridges.

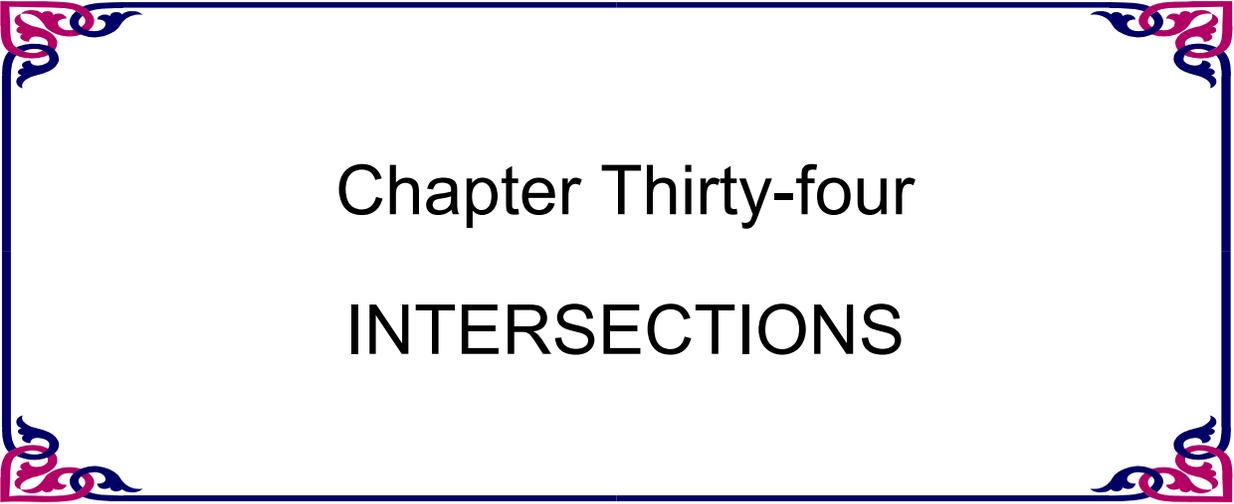
33-4 ACRONYMS

This is a summary of the acronyms used within this chapter.

3R	Resurfacing, Rehabilitation, and Restoration
AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic
BDE	Bureau of Design and Environment
C&G	Curb & Gutter
CC&G	Concrete Curb & Gutter
DHV	Design Hourly Volume
HAL	High Accident Locations
HCM	Highway Capacity Manual
ICC	Illinois Commerce Commission
IDOT	Illinois Department of Transportation
LPA	Local Public Agency
OWS	One Way Street
PDR	Project Development Report
PSD	Passing Sight Distance
ROW	Right-of-Way
RSS	Railroad Safety Section
SSD	Stopping Sight Distance
TWLTL	Two Way Left Turn Lane
TWS	Two Way Street

33-5 REFERENCES

1. *A Policy on Geometric Design of Highways and Streets*, AASHTO, 2011.
2. *Roadside Design Guide*, AASHTO, 2011.
3. Special Report 214 *Designing Safer Roads; Practices for Resurfacing, Restoration and Rehabilitation*, TRB, 1987.
4. Technical Advisory T5040.28 "Developing Geometric Design Criteria and Processes for Non-Freeway RRR Projects," FHWA, 1988.
5. [Chapter 49](#), "3R Guidelines for Rural and Urban Highways (Non Freeways)," *BDE Manual*, IDOT, November 2014.



Chapter Thirty-four
INTERSECTIONS

BUREAU OF LOCAL ROADS AND STREETS MANUAL

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Chapter Thirty-four
INTERSECTIONS

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Chapter Thirty-four

INTERSECTIONS

Intersections are an important part of the highway system. The operational efficiency, capacity, safety, and cost of the overall system are largely dependent upon its design, especially in urban areas. The primary objective of intersection design is to provide for the convenience, ease, comfort, and safety of those traversing the intersection while reducing potential conflicts between vehicles, bicycles, and pedestrians. Chapter 34 provides guidance in the design of intersections including alignment, profile, design vehicles, turning radii, right-turning roadways, left- and right-turn lanes, channelized islands, and intersections near railroads. Information that is also applicable to intersections is included in the following sources:

- Guidelines for preparing and processing intersection design studies are discussed in Chapter 10.
- Application of bicycle lanes through intersections is discussed in Chapter 42 of the *BLRS Manual* and Chapter 17 of the *BDE Manual*.
- Intersection sight distance is discussed in Chapter 28.
- The various curb types used for channelization, islands, and medians are discussed in Chapter 31.
- Two-way, left-turn lanes are discussed in Chapter 31 and Chapter 36 of the *BDE Manual*.
- Criteria for intersections on 3R projects are discussed in Chapter 33.
- Curb ramps for disabled accessibility at intersections are discussed in Chapter 41.
- Other intersection design features (e.g., intersection types, intersection spacing, turn-lane guidelines) can be found in Chapter 36 of the *BDE Manual* and the *AASHTO Policy on Geometric Design of Highways and Streets (Green Book)*.
- Where a local facility intersects with a State facility, the design of the intersection as it affects the State highway will be in accordance with Chapter 36 of the *BDE Manual*.

34-1 GENERAL DESIGN CONTROLS

34-1.01 Intersection Alignment

34-1.01(a) Angled Intersections

Highways should intersect at right angles. Intersections at acute angles are undesirable because they:

- restrict vehicular turning movements,
- require additional pavement and channelization for large trucks,

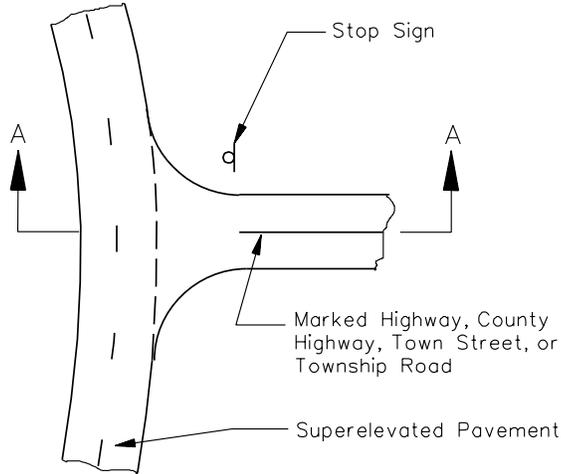
- increase the exposure time for vehicles and pedestrians crossing the main traffic flow, and
- restrict the crossroad sight distance.

Preferably, the angle of intersection should be within 15° of the perpendicular. This amount of skew can often be tolerated because the impact on sight lines and turning movements is not significant. Under restricted conditions where obtaining the right-of-way to straighten the angle of intersection would be impractical, an intersection angle up to 30° from the perpendicular may be used. Where turning movements are significantly unbalanced, the intersections may be angled to favor the predominant movement. Intersection angles beyond these ranges may warrant more positive traffic control (e.g., all stop, traffic signals) or geometric improvements (e.g., realignment, greater corner sight distance). Avoid using short-radius curves or abnormal travel paths near the intersection simply to reduce the intersection skew. Figure 34-1A illustrates various angles of intersections and potential improvements to the alignment.

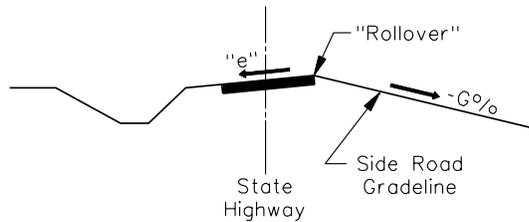
34-1.01(b) Intersections on Curves

Preferably, all legs of an intersection should be on a tangent section. Where a minor road intersects a major road on a horizontal curve, the geometric design of the intersection becomes significantly more complicated, particularly for sight distance, turning movements, channelization, and superelevation. The following guidelines address horizontal alignment at intersections:

1. Realignment. If relocation of the intersection is not practical, the designer may be able to realign the minor road to intersect the major road perpendicular to a tangent on the horizontal curve; see example “E” in Figure 34-1A. Although an improvement, this arrangement may still result in difficult turning movements due to superelevation on the major road.
2. Superelevation on the Major Road. If the major road is on a horizontal curve, the major road superelevation rate must be minimized so that slowing or stopped vehicles do not slide across the pavement during wet or icy conditions. Figure 34-1B provides the criteria for the maximum superelevation rate that should be used where a crossroad intersects a superelevated highway.



PLAN VIEW



CROSS SECTION A-A

Type of Improvement Category	Maximum Superelevation Rate "e" for Intersections on Curve
"New Construction" at a major crossroad (> 400 ADT)	6% (4% Desirable)
To remain in place with "Reconstruction" at a major crossroad	6%
To remain in place with "Reconstruction" at a minor crossroad	8%

INTERSECTIONS AND SUPERELEVATED MAJOR ROAD

Figure 34-1B

3. Curved Approach. Where a local road is on a curved alignment and is approaching a stop condition, special consideration is required in the design of the horizontal curvature prior to the intersection. When designing this type of an approach, the designer should consider the following guidelines:
- To design the horizontal curve, assume a design speed of 20 mph (30 km/h) less than the approach speed, but not less than 30 mph (50 km/h) for design speeds less than or equal to 50 mph (80 km/h).
 - The superelevation rate on the approach curve to an intersection should be limited to a maximum superelevation rate of 6% or less. The objective is to use as flat an alignment as practical with lower superelevation. The preferred design is to maintain a normal crown section through the curve relying on the friction factor rather than superelevation. The minimum radius should not be less than that permitted for the highway classification based on the selected design of the approach curve, rural or urban location, and the superelevation rate (i.e., maximum of 6%). For additional guidance on horizontal curve designs, see Chapter 29.
 - Provide a tangent section equal to 2/3 of the superelevation transition length prior to the intersection radius returns. This will allow for the superelevation runoff to be developed outside of the intersection radius returns; see Figure 36-1F of the *BDE Manual*.

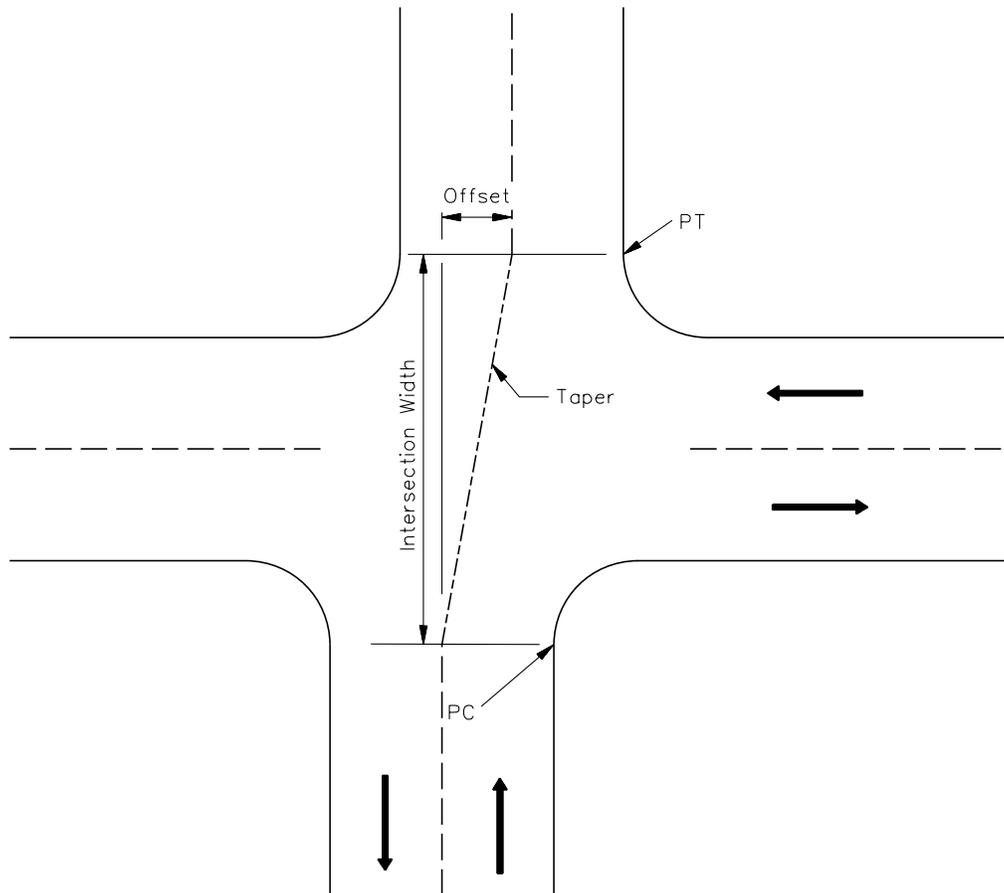
This procedure recognizes the need to accommodate a reasonable operating speed on a stop-controlled approach, while minimizing the potential for adverse operations on superelevated pavements during snow and ice conditions.

34-1.01(c) Offset Intersections

In general, 4-leg intersections should be designed so that opposing approaches line up with each other (i.e., there is no offset between opposing approaches). However, this is not always practical. Because of possible conflicts with overlapping turning vehicles, offset intersections should only be allowed to remain on low-volume approaches. Also, consider the following:

1. Maximum Offset. The maximum offset is determined from the application of a taper equal to $V:1$ ($0.6V:1$) applied to the intersection width, where V is the design speed in miles per hour (kilometers per hour); see Figure 34-1C. In restricted locations and where $V \leq 45$ mph (70 km/h), the applied taper may be $V^2/60$ ($V^2/155$). V is selected as follows:
- $V = 20$ mph (30 km/h) for stop-controlled approaches.
 - $V =$ the roadway design speed for the free-flowing approaches at a stop-controlled intersection.

- V = the roadway design speed for the offset approaches at a signalized intersection.



Notes:

1. Desirable taper rate is $V:1$ ($0.6V:1$), where V = design speed in mph (km/h).
2. See discussion in Section 34-1.01(c) for more information.

OFFSET INTERSECTION

Figure 34-1C

2. Turning Conflicts. Evaluate the entire intersection for conflicts that may result from turning vehicles at an offset intersection. For example, offsets where the “jog” is to the left may result in significant interference between simultaneous left-turning vehicles.
3. Evaluation Factors. In addition to potential vehicular conflicts, the designer should evaluate the following at existing or proposed offset intersections:
 - through and turning volumes;
 - type of traffic control;
 - impact on all turning maneuvers;
 - intersection geometrics (e.g., sight distance, curb/pavement edge radii); and
 - crash history at existing intersections.

34-1.01(d) Roundabouts

Roundabouts are circular intersections with specific design and traffic control features. These features include yield control of all entering traffic, channelized approaches, and appropriate geometric curvature to ensure that travel speeds on the circulatory roadway are typically less than 30 mph (50 km/h). Roundabouts are defined by the following two basic operational and design principles:

1. Yield-at-Entry. Yield-at-entry is also known as off-side priority or the yield-to-left rule. Yield-at-entry requires that vehicles on the circulatory roadway of the roundabout have the right-of-way and all entering vehicles on the approaches have to wait for a gap in the circulating flow. To maintain free flow and high capacity, yield signs are used as the entry control. As opposed to nonconforming traffic circles, roundabouts are not designed for weaving maneuvers, thus permitting smaller diameters. Even for multilane roundabouts, weaving maneuvers are not considered a design or capacity criterion.
2. Deflection of Entering Traffic. Entrance roadways that intersect the roundabout along a tangent to the circulatory roadway are not permitted. Instead, entering traffic is deflected to the right by the central island of the roundabout and by channelization at the entrance into an appropriate curved path along the circulating roadway. Thus, no traffic is permitted to follow a straight path through the roundabout.

Roundabouts range in size from mini-roundabouts with inscribed circle diameters as small as 50 ft (15 m), to compact roundabouts with inscribed circle diameters between 100 ft and 115 ft (30 m and 35 m), to large roundabouts, often with multilane circulating roadways and more than four entries up to 500 ft (150 m) in diameter. However, the greater speeds permitted by larger roundabouts, with inscribed circle diameters greater than 250 ft (75 m), may reduce their safety benefits.

Designing the geometry of a roundabout involves choosing the best operational and capacity performance while retaining the best safety enhancements. Roundabouts operate best when

their geometry forces traffic to enter and circulate at slow speeds. Horizontal curvature and narrow pavement widths are used to produce this reduced-speed environment. However, the capacity of roundabouts is negatively affected by these low-speed design elements. As the widths and radii of the entry and circulatory roadways are reduced, the capacity of the roundabout is also reduced. Furthermore, many of the geometric criteria used in design of roundabouts are governed by the maneuvering needs of the largest vehicles expected to travel through the intersection. Thus, designing a roundabout is a process of determining the optimal balance between safety provisions, operational performance, and the accommodation of oversized vehicles. Reasons why the designer may consider installing a roundabout include the following:

- community enhancement,
- traffic calming,
- safety improvement,
- operational improvement, and/or
- a special situation.

For detailed information on roundabouts, see FHWA's publication, *Roundabouts: An Informational Guide*.

34-1.02 Profiles

The design should avoid combinations of grade lines that make vehicular control difficult at intersections. To accomplish this, consider the profile for all roadway approaches to and through the intersection. The following criteria will apply.

34-1.02(a) Profiles at Intersections

1. Gradients. The area on approaches that will be used for storage of stopped vehicles is commonly referred to as the storage space or storage platform. Intersection gradients should be as flat as practical but not be greater than 5.0%. Note that approach gradients of 3.0% or steeper may require correction of certain design factors to produce operating conditions equivalent to those on level highways (e.g., stopping sight distances, deceleration lengths). However, any gradient through the intersection must reflect the practicalities of matching the basic profiles of the intersecting roadways and shoulders. On major side roads, the storage platform gradient should be a minimum of 1.0% and a maximum of 2.0% draining away from the mainline highway. When other local roads intersect a State highway, the maximum gradient may be 4.0% draining away from the State highway. Maintain this gradient through the expected storage distance on that leg. At a minimum, provide the storage platform gradient on the side road for a distance of 30 ft to 50 ft (9 m to 15 m) beyond the edge of the mainline travelway or to the ditch line of an arterial highway.

2. Crossover Slope. The algebraic difference between the main highway cross slope and side road gradient should not exceed the rollover guidelines described in Figure 34-1D.

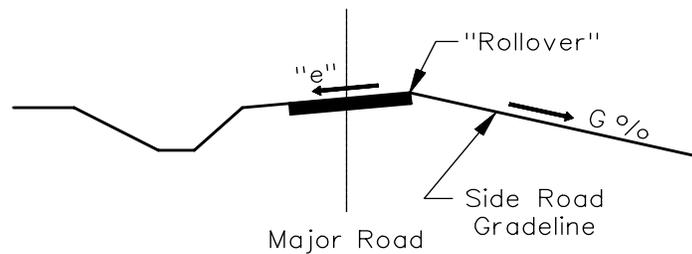
3. Transitions. Where the cross section of the minor road is transitioned to meet the major road, provide a vertical curve between the side road approach gradient and the mainline pavement, especially when traffic signals may be needed; see Figures 34-1E and 34-1F. The design speed of the vertical approach alignment may be up to 20 mph (30 km/h) less than the project design, but not less than design speed of 30 mph (50 km/h). The following vertical curve options are presented in order from the most desirable to the least desirable:
 - a. Vertical Curves (SSD). The criteria for stopping sight distance as described in Section 30-2 should be used for the vertical curve. For non-stopped conditions, design the vertical curve based on the design speed of the highway. For stopped-conditions, design the vertical curve using a 30 mph (50 km/h) design speed.

 - b. Sag Vertical Curves (Minimum Comfort). Under restricted conditions where the SSD criteria is not practical, the sag vertical curves at intersection approaches may be based on the following formulas:

$$K = (0.1V)^2 \quad \text{(US Customary)}$$

$$K = (0.034V)^2 \quad \text{(Metric)}$$

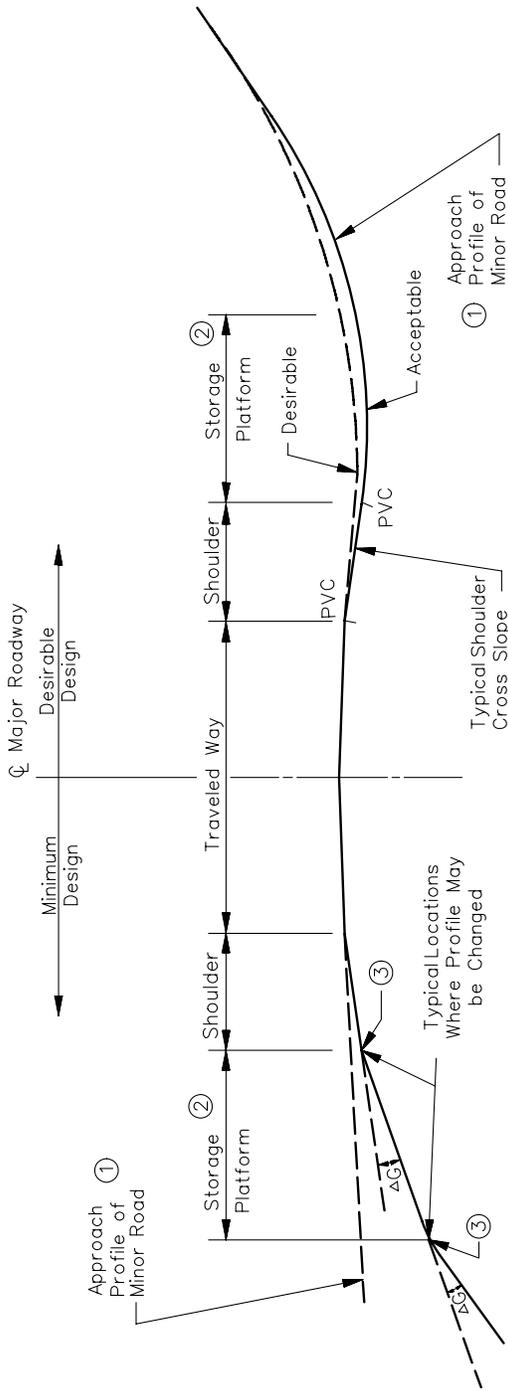
$$L = KA$$



Rollover Factor Guidelines	
"New Construction" at a major crossroad (> 400 ADT)	5% Desirable Maximum 6% Maximum
To remain in place with "Reconstruction" at a major crossroad	7% Desirable Maximum 8% Maximum
To remain in place with "Reconstruction" at a minor crossroad	9% Desirable Maximum 10% Maximum

ROLLOVER FACTOR GUIDELINES

Figure 34-1D

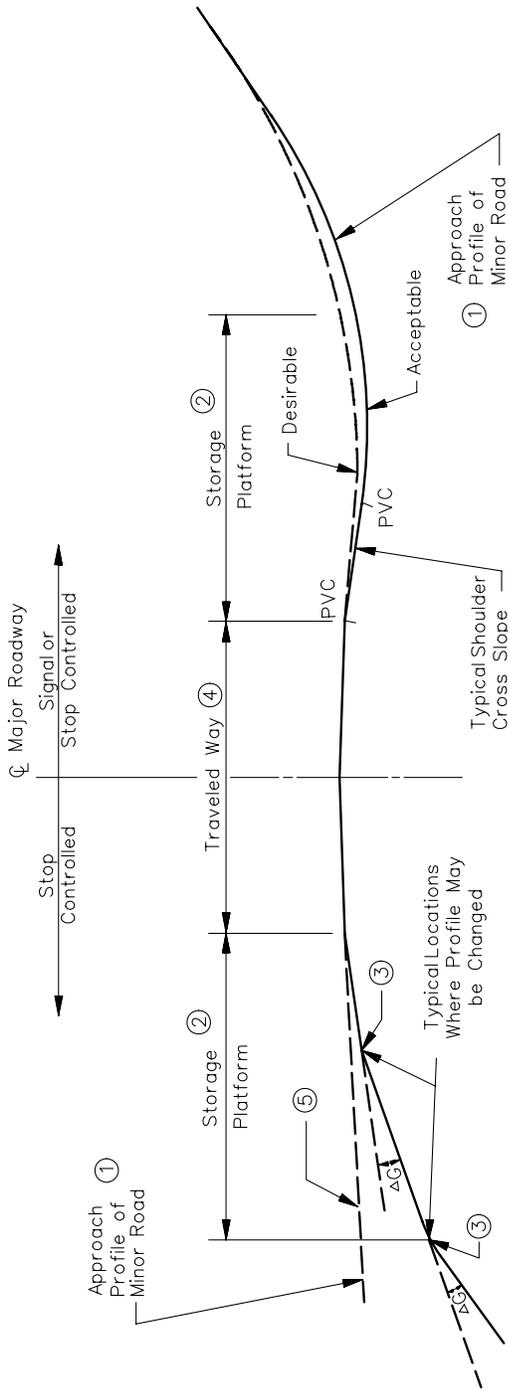


Notes:

1. Desirably, the minor road profile should tie into the major road travel lane cross slope; however, where the minor road is stop-controlled, it will be acceptable for the minor road profile to tie into the major route shoulder cross slope.
2. See Section 34-1.02(a) for storage platform gradients.
3. Check Figure 34-1D for maximum rollover rates.

VERTICAL PROFILES OF RURAL INTERSECTING ROADS

Figure 34-1E



Notes:

1. *Desirably, the minor road profile should tie into the major road travel lane cross slope; however, where the minor road is stop-controlled, it will be acceptable for the minor road profile to tie into the major road shoulder cross slope.*
2. *See Section 34-1.02(a) for storage platform gradients.*
3. *Check Figure 34-1D for maximum rollover rates.*
4. *At signalized intersections, the most desirable cross slope option will be to transition all approach legs into a planar surface through the intersection and to limit the centerline rollover on the major road to 2% - 3%.*
5. *For a signal controlled minor road descending from the major road, maintain the travel lane cross slope of the major roadway through the length of the storage platform.*

VERTICAL PROFILES OF URBAN INTERSECTING STREETS

Figure 34-1F

Where:

K = horizontal distance needed to produce a 1% change in the gradient along the curve, ft/% (m/%)

A = algebraic difference between the two tangent grades, %

V = design speed, mph (km/h)

L = length of vertical curve, ft (m)

4. Angular Breaks. At stop-controlled intersections, angular breaks are typically provided when transitioning the cross section of the minor approach to meet the major road cross section. Figures 34-1E and 34-1F present schematics of vertical profiles through intersections for rural and urban conditions. Figure 34-1D provides the maximum rollover guidelines that are also applicable for changes in angular breaks.
5. Grade Lines. The principals for coordinating the horizontal and vertical alignment discussed in Chapter 30 are also applicable to vertical profiles through intersections. In addition, do not place intersections on or near crest vertical curves unless the vertical curve is flat enough for the intersection pavement to be seen assuming decision sight distance.

34-1.02(b) Cross-Section Transitions

One or more of the approaching legs of an intersection may need to be transitioned to meet the cross section of the two crossing roads. The following applies:

1. Stop-Controlled. Where the minor road is stop-controlled, maintain the profile and cross section of the major road through an intersection and transition the cross slope of the stop-controlled roadway to match the major road cross slope and profile.
2. Signalized Intersection. At signalized intersections, or potentially signalized intersections, transition the cross section of the minor road to meet the profile and cross slope of the major road. Where compromises are necessary between two major roadways, provide the smoother riding characteristics to the roadway with the higher traffic volumes and operating speeds.
3. Transition Rates. Where one or both intersecting roadways are transitioned, the designer must determine the length and rate of transition from the typical section to the modified section. Desirably, design the transition to meet the general principles of superelevation transition that apply to that roadway (i.e., open-roadway or low-speed urban street conditions). When these criteria are applied to intersection transition rates, the applied design speed is typically:

- 20 mph (30 km/h) below the design speed but not less than 30 mph (50 km/h) for a stop-controlled roadway,
- the highway design speed for a free-flowing roadway, or
- the highway design speed on each roadway of a signalized intersection.

At a minimum and consistent with field conditions, transition the approach pavements of an urban intersection within the curb or radius returns and for rural intersections within a distance of 50 ft (15 m).

34-1.02(c) Drainage

Evaluate the profile and transitions at all intersections for impacts on drainage. This is especially important for channelized intersections on curves and grades. This may require the designer to check superelevation transition lengths to ensure flat sections are minimized. Low points on approach roadway profiles should be beyond a raised corner island to prevent water from being trapped and causing ponding.

34-1.03 Intersection Capacity Analysis

Capacity analysis influences several geometric design features including the number of approach lanes, auxiliary lanes, lane widths, channelization, and number of departure lanes. In addition, this analysis in conjunction with the *Illinois Manual on Uniform Traffic Control Devices* (ILMUTCD) will determine whether an intersection may need to be signalized or stop-controlled.

It is important that the level of service for a signalized intersection be calculated for each lane group (a lane group may be one or more movements), each intersection approach, and the intersection as a whole. Levels of service criteria are provided in the geometric design tables in Chapter 32.

Once the minimum level of service has been selected and design traffic volumes are determined, use the *Highway Capacity Manual* (HCM) and the *Highway Capacity Software* (HCS) to perform the detailed capacity analyses. Ensure that data used in the analyses are applicable for the intersection (i.e., do not assume the program default values are automatically applicable for the intersection). Other capacity and signal analysis programs may be used provided they are approved for use by the BLRS. To be eligible for approval, the output results must be comparable to the HCS.

If the intersection is part of a traffic signal system, check the intersection design with an approved traffic progression program. These programs analyze all signalized intersections in the system to determine the overall capacity of the system. Also, see Figure 36-1C of the *BDE Manual*.

34-1.04 Design Vehicles

34-1.04(a) Types

The design vehicle affects the radius returns, left-turn radii, lane widths, median openings, turning roadways, and sight distances at an intersection. Typical design vehicles used for intersection design are:

- P — Passenger car; includes vans and pickup trucks.
- S-BUS-40 (S-BUS-12) — 84-passenger school bus.
- SU — Single-unit truck.
- WB-40 (WB-12) — Tractor/Semitrailer combination with an overall wheelbase of 40 ft (12.2 m).
- WB-50 (WB-15) — Tractor/Semitrailer combination with an overall wheelbase of 50 ft (15.2 m).
- WB-55 (WB-17) — Tractor/Semitrailer combination with an overall wheelbase of 55 ft (16.8 m).
- WB-65 (WB-20) — Tractor/Semitrailer combination with an overall wheelbase of 65 ft (19.4 m).
- P/T — Recreational vehicle, car, and camper trailer.

Chapter 36 of the *BDE Manual* and the *AASHTO Green Book* provide the vehicular dimensions and turning templates for each of the above design vehicles.

34-1.04(b) Selection

Figure 34-1G presents the recommended design vehicles at intersections based on the functional classification (see Section 27-3) of the intersecting highways from which and onto which the vehicle is turning. The design vehicles shown in Figure 34-1G are for new construction and reconstruction projects. Figure 34-1H presents the recommended truck type that should be used based on the Illinois “Designated State Truck Route System.” For 3R projects, the design vehicle will be site specific, and it may be a design vehicle with a more restrictive turning radius than those for new construction and reconstruction projects.

In addition to Figure 34-1G, consider the following guidelines when selecting a design vehicle:

1. Minimum Designs. The SU and/or school bus design vehicles are generally the smallest vehicles used in the design of local intersections. This design reflects that, even in residential areas, garbage trucks, delivery trucks, and school buses will be negotiating turns with some frequency. Rural and suburban intersections that may serve school bus traffic should, at a minimum, accommodate a turning school bus without encroachment. Urban intersections only need to accommodate design vehicles that are expected to use that intersection.
2. Recreational Areas. Recreational areas typically will be designed using the SU design vehicle. This reflects that service vehicles are typically required to maintain the

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recreational area. Under some circumstances the passenger car with a trailer (P/T) may be the appropriate design vehicle (e.g., campground areas, boat launches).

For Turn Made		Design Vehicle ⁽¹⁾⁽²⁾⁽³⁾⁽⁴⁾⁽⁵⁾
From	Onto	
Freeway Ramp	Other Facilities	WB-65 (WB-20)
Other Facilities	Freeway Ramp	WB-65 (WB-20)
Arterial	Arterial	WB-65 (WB-20)
	Collector	WB-55 (WB-17)
	Local	WB-50 (WB-15)
	Local (Residential)	SU*
Collector	Arterial	WB-55 (WB-17)
	Collector	WB-55 (WB-17)
	Local	WB-50 (WB-15)
	Local (Residential)	SU*
Local	Arterial	WB-50 (WB-15)
	Collector	WB-50 (WB-15)
	Local	SU*
	Local (Residential)	SU**
Local (Residential)	Arterial	SU*
	Collector	SU*
	Local	SU**
	Local (Residential)	SU**

*With encroachment, a WB-50 (WB-15) vehicle should physically be able to make the turn.

**With encroachment, the selected design vehicle should physically be able to make the turn.

Notes:

0. Use this Figure for new construction and reconstruction projects.
1. A smaller design vehicle may be considered after an investigation of conditions. Justification must be submitted for intersections with State highways.
2. For 3R projects, the design vehicle will be site specific. See Chapter 33.
3. A larger design vehicle may be required for intersections of two 80,000 lb (36,000 kg) truck routes.

**SELECTION OF DESIGN VEHICLE AT INTERSECTIONS
(Functional Classification)**

Figure 34-1G

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Type of Truck Route	Design Vehicle	Maximum Length of Trailer Allowed (m)	Maximum Length Kingpin to Center Rear Axle (m)
Class I	WB-65 (WB-20)	53' (16.16 m)	45.5' (13.87 m)
Class II	WB-65 (WB-20)	53' (16.16 m)	45.5' (13.87 m)
Class III	WB-55 (WB-17)	53' (16.16 m)	42.5' (12.96 m)
Non-Designated State Highway	WB-55 (WB-17)	53' (16.16 m)	42.5' (12.96 m)
Non-Designated Local Highway	WB-50 (WB-15)	Not Specified	Not Specified

Illinois Statutes allow additional access off designated truck routes under different conditions. These are defined as follows:

1. *Any tractor/semitrailer vehicle operating on a Class I truck route shall have access onto any street or highway for a distance of 1 mile (1.61 km) from a Class I highway to load and unload and to allow the driver to obtain food, fuel, rest, or repairs. However, some local highway authorities may post truck restrictions altering this provision. Under this condition, the combination truck units allowed access off the Class I truck route may be up to 8 ft (2.59 m) wide with a 53 ft (16.16 m) long trailer.*

2. *Any tractor/semitrailer vehicle operating on a designated State highway (Class I, II, III, or Other State Highways) shall have access on another designated State highway for a distance of 5 mi (8.05 km) on such streets or highways to load and unload and to allow the driver to obtain food, fuel, rest, or repairs.*

3. *If local authorities designate any street or highway for the same large vehicles and the same uses as stated above, such large vehicles may also use these locally designated highways as truck routes. However, these large vehicles are prohibited from using all other streets and highways under local jurisdiction unless an exception is applicable. An exception would be applicable on a local highway where a combination truck unit is within 5 mi (8.05 km) of a designated truck route and where no restricted weight limit is posted on the local highway. In such cases, the combination truck unit may be up to 8 ft (2.59 m) wide, and can have an overall length of 65 ft (19.82 m).*

DESIGN VEHICLE SELECTION

Figure 34-1H

3. Mixed Use. Some portions of an intersection may be designed with one design vehicle and other portions with another vehicle. For example, it may be desirable to design physical characteristics (e.g., corner islands) for the WB-65 (WB-20) truck but provide painted channelization for the SU design vehicle.

34-1.05 Pedestrians and Bicyclists

Safe and convenient movement of pedestrians and bicyclists through the intersection needs to be considered in the design of an intersection. However, this often causes conflicting objectives in the overall design of an intersection. Wider intersection designs to accommodate the design vehicle significantly increase the crossing distance for pedestrians. At signalized intersections, longer crossing times and conflicts with turning vehicles can significantly affect the overall capacity of the intersection. To reduce these problems, the geometric layout of the intersection may need to be revised, refuge islands included within the intersection, special turn lanes added for bicyclists, or other factors included in the design.

Section 41-6 discusses the application of curb ramps at intersections for disabled individuals. The *BDE Manual* and *ILMUTCD* provide several applications for accommodating bicycle lanes and pedestrians through an intersection.

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34-2 TURNING RADII

Turning radii treatments for intersections are important design elements in that they influence the operation, safety, right-of-way requirements, and construction costs of the intersection. The designer must ensure that the proposed design is compatible with the intersection design vehicle from Figure 34-1G.

34-2.01 Design for Right-Turning Vehicles

The following Sections present several basic parameters the designer needs to consider in determining the proper pavement edge/curb line for right-turning vehicles. The discussion in this Section applies to moderate to high-volume intersections. In residential urban areas and elsewhere where there are heavy pedestrian movements, provide a minimum curve radius of at least 15 ft (4.5 m). In special cases (e.g., resurfacing rehabilitation projects where widening is not involved) existing curve radii may be retained.

34-2.01(a) Design Vehicle

Section 34-1.04 discusses the selection of the applicable design vehicle for different intersections. These vehicles are used to determine the pavement edge or curb line. Note that the design vehicle will determine the turning width, vehicular path width, or swept-path width. The assumed speed of the vehicle is less than 10 mph (15 km/h).

34-2.01(b) Inside Clearance

Desirably, the selected design vehicle will make the right turn while maintaining approximately a 2 ft (600 mm) clearance from the pavement edge (with shoulders) or face of curb.

34-2.01(c) Encroachment

To determine the amount of acceptable encroachment, the designer should evaluate several factors. These would include traffic volumes, 1-way or 2-way operations, urban/rural location, and the type of traffic control. For turns made onto a collector or arterial road or street, desirably, the selected design vehicle will not encroach into the opposing travel lanes. However, this is not always practical or cost effective in urban areas. The designer must evaluate these encroachment conditions against the construction and right-of-way impacts. If these impacts are significant and if through and/or turning volumes are relatively low, the designer may consider accepting some encroachment of the design vehicle into opposing lanes.

The encroachment allowed into adjacent lanes of the road or street onto which the turn is made will depend on the following:

1. Urban. Desirably, no encroachment should be allowed into opposing lanes for a right-turning vehicle from a sideroad or street to an arterial or collector.
2. Rural. For rural intersections, the selected design vehicle should not encroach into the opposing lanes of traffic from a sideroad or street to an arterial or collector.
3. Multilane Highways. If there are two or more lanes of traffic in the same direction on the road onto which the turn is made, the selected design vehicle can occupy both travel lanes. Desirably, the right-turning vehicle will be able to make the turn while remaining entirely in the right through lane.
4. Shoulder/Parking Lanes. Under restricted conditions, the designer may take advantage of shoulder and/or parking lane to ease the problems of large vehicles turning right at intersections with small radius returns. It will be necessary to restrict the parking a significant distance from the intersection. This area should be delineated with striped pavement markings.

34-2.01(d) Pedestrian/Bicyclist Considerations

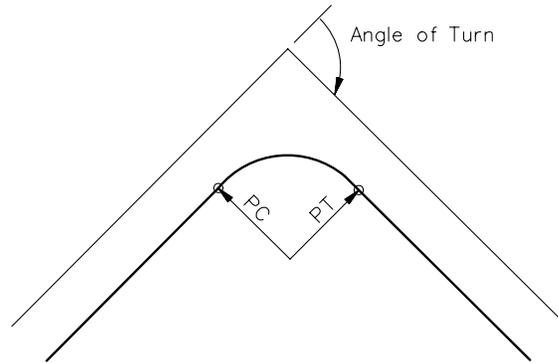
The larger the right-turning radius, the farther pedestrians must walk across the street. This is especially important to persons with disabilities. Also, large intersections may be a problem in directing bicyclists through the intersection. Therefore, the designer must consider the number and type of pedestrians using an intersection when determining the edge of pavement or curb line design. This may lead to a decision to design a right-turn corner island (small or intermediate) for use as a pedestrian and bicycle refuge.

34-2.01(e) Types of Right-Turn Designs

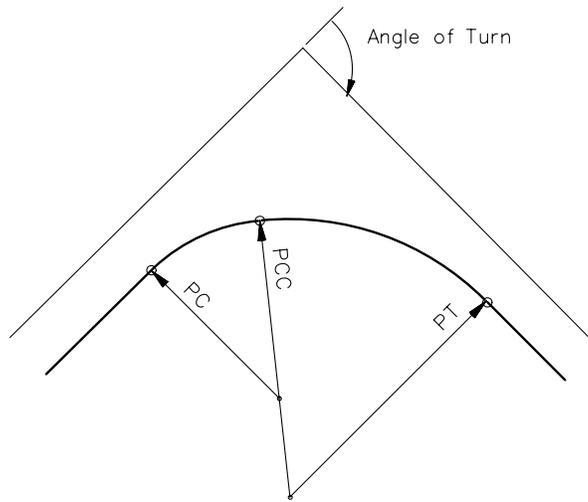
Once the designer has determined the basic right-turning parameters (e.g., design vehicle, amount of allowable encroachment, inside clearance), it will be necessary to select the type of turning design for the curb return or pavement edge that will meet these criteria and will fit the intersection constraints.

The simple radius is the easiest to design and construct. However, two-centered or three-centered curves provide a better fit to the transitional turning paths of tractor/semitrailer design vehicles. Figure 34-2A presents the corner radii for simple, two-centered, and three-centered curves. Note that using these curves may require a corner island.

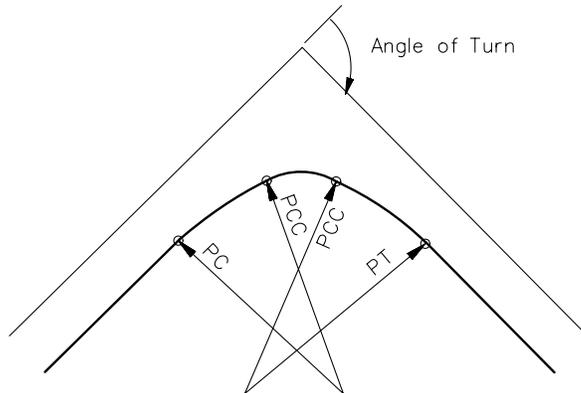
Some of the advantages of the two-centered and three-centered curves as compared to the simple radius design include:



MINIMUM SIMPLE CURVE
-A-



TWO-CENTER COMPOUND CURVE
-B-



THREE-CENTERED COMPOUND CURVE
-C-
RIGHT-TURNING DESIGN CURVES

Figure 34-2A

- When accommodating a specific design vehicle, they require less intersection pavement than a simple radius design, and especially for angles of turn greater than 90°. For large vehicles, a simple radius is often an unreasonable design unless a corner island is used and, in effect, a turning roadway is provided.
- There are less right-of-way impacts at the intersection corners.
- A simple radius results in greater distances for pedestrians to cross the intersection.

34-2.01(f) Curbing

If certain conditions (e.g., drainage requirements, restricted right-of-way, greater delineation, the desire to minimize off-tracking) warrant the use of curbing along the radius return at rural intersections, terminate the curbing at the shoulder edge and transition the curb height as indicated in Figure 34-2B. Use a mountable curb where posted speeds are 50 mph (80 km/h) or greater.

34-2.01(g) Stop Sign Locations

The edge of the stop signs are typically 12 ft (3.6 m) from the edge of the major road traveled way for a rural cross section and a minimum of 2 ft (600 mm) from the face of curb for an urban cross section. They are usually located before the beginning of the radius return, but must be no more than 50 ft (15.25 m) from the edge of the major road traveled way. Stop lines should be located at a point where a road user should stop.

Stop sign locations should be checked against the criteria in the *ILMUTCD* at wide throat intersections. This is especially important where no corner island is used.

34-2.01(h) Turning Template(s)

To determine the preliminary right-turn design, the designer should use the applicable turning template for the selected design vehicle and speed. Check the final intersection design with the applicable turning templates or with a computer simulated turning template program.

34-2.02 Left-Turn Control Radii

For left turns, the motorist generally has a guide at the beginning and end of the turn and an open intersection in the middle. Therefore, the precise alignment of a two-centered or three-centered curve is generally not applicable. Simple curves are typically used for left-turn control radii. Occasionally, a two-centered curve may be desirable to accommodate the off-tracking of large vehicles provided the second curve has a larger radius.

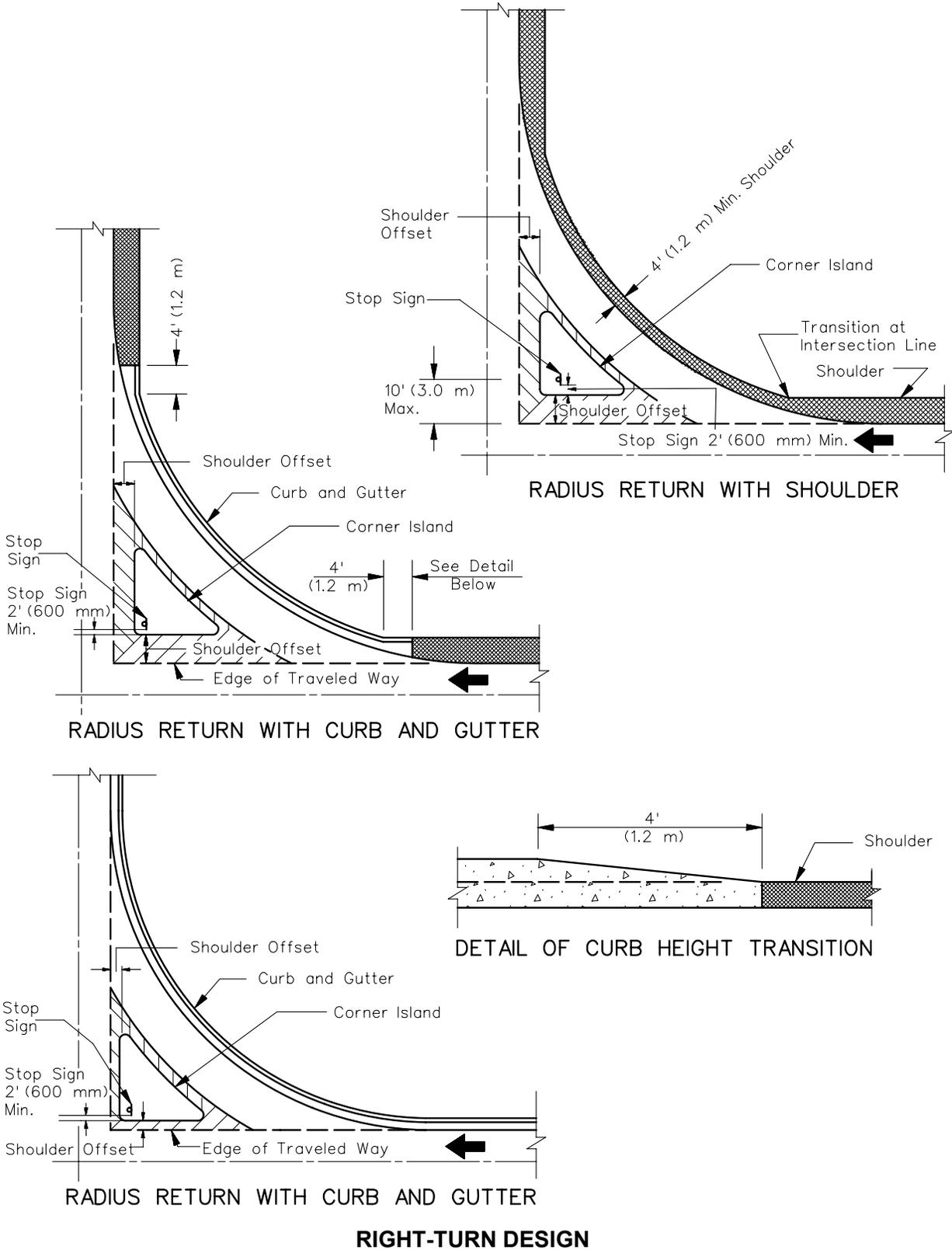


Figure 34-2B

The design values for left-turn control radii are usually a function of the design vehicle, angle of intersection, number of lanes, and median widths. For roadways intersecting at approximately 90°, radii of 50 ft to 80 ft (15 m to 24 m) should typically satisfy all controlling factors. If center divisional islands are present, select control radii so that the nose of each divisional island is no closer than 4 ft (1.2 m) nor greater than 10 ft (3.0 m) from the edge of the traveled way of the intersecting highway. The nose location is also affected by the selected nose radii. For additional guidance on median openings and median nose designs, see Section 36-4 of the *BDE Manual*.

Left-turn control radii for dual-lane turning movements should be larger than those indicated for the single-lane design. See Section 34-3.04 for additional design details.

34-3 AUXILIARY TURN LANES

When turning maneuvers for left- and right-turning vehicles occur from the through travel lanes, it typically disrupts the flow of through traffic. This is especially true on high-volume highways. To minimize potential conflicts and to improve the level of service and safety, the use of turn lanes may be warranted for intersections.

34-3.01 Turn Lane Guidelines

34-3.01(a) Right-Turn Lanes

The use of right-turn lanes at intersections can significantly improve operations. Consider using an exclusive right-turn lane in the following situations:

- at unsignalized intersections on a high-speed urban or rural highway where traffic operations indicate the need for right-turn lanes;
- at any intersection where a capacity analysis determines a right-turn lane is necessary to meet the level-of-service criteria;
- at any signalized intersection where the right-turning volume is greater than 150 vehicles per hour and where there is greater than 300 vehicles per hour per lane on the major road;
- for uniformity of intersection design along the highway if other intersections have right-turn lanes;
- at any intersection where the pavement is curved to the left and where the major road curve requires superelevation;
- where a railroad crossing is located close to the intersection and a right-turn lane would be desirable to efficiently move through traffic by moving turning traffic stopped for a train from the through lane.
- at any intersection where the crash experience, existing traffic operations, sight distance restrictions (e.g., intersection beyond a crest vertical curve), or engineering judgment indicates a significant conflict related to right-turning vehicles.

For further guidance, see Figures 36-3A and 36-3B of the *BDE Manual*.

34-3.01(b) Left-Turn Lanes

The accommodation of left turns is often the critical factor in proper intersection design. Left-turn lanes can significantly improve both the level of service and intersection safety. In general, use an exclusive left-turn lane at all intersections on highways with a median wide enough to accommodate a left-turn lane, regardless of traffic volumes. Consider using an exclusive left-turn lane for the following:

- at any signalized intersection where the left-turning volume is equal to or greater than 75 vehicles per hour for a single turn lane or 300 vehicles per hour for a dual turn lane;
- any intersection where a capacity analysis determines a left-turn lane or dual left-turn lanes are necessary to meet the level-of-service criteria;
- for uniformity of intersection design along the highway if other intersections have left-turn lanes (i.e., to satisfy driver expectancy); or
- any intersection where the crash experience, traffic operations, sight distance restrictions (e.g., intersection beyond a crest vertical curve), or engineering judgment indicates a significant conflict related to left-turning vehicles.

For further guidance, see Figures 36-3C through 36-3G of the *BDE Manual*.

34-3.02 Design of Turn Lanes

Figure 34-3A provides a schematic of auxiliary lanes at an intersection.

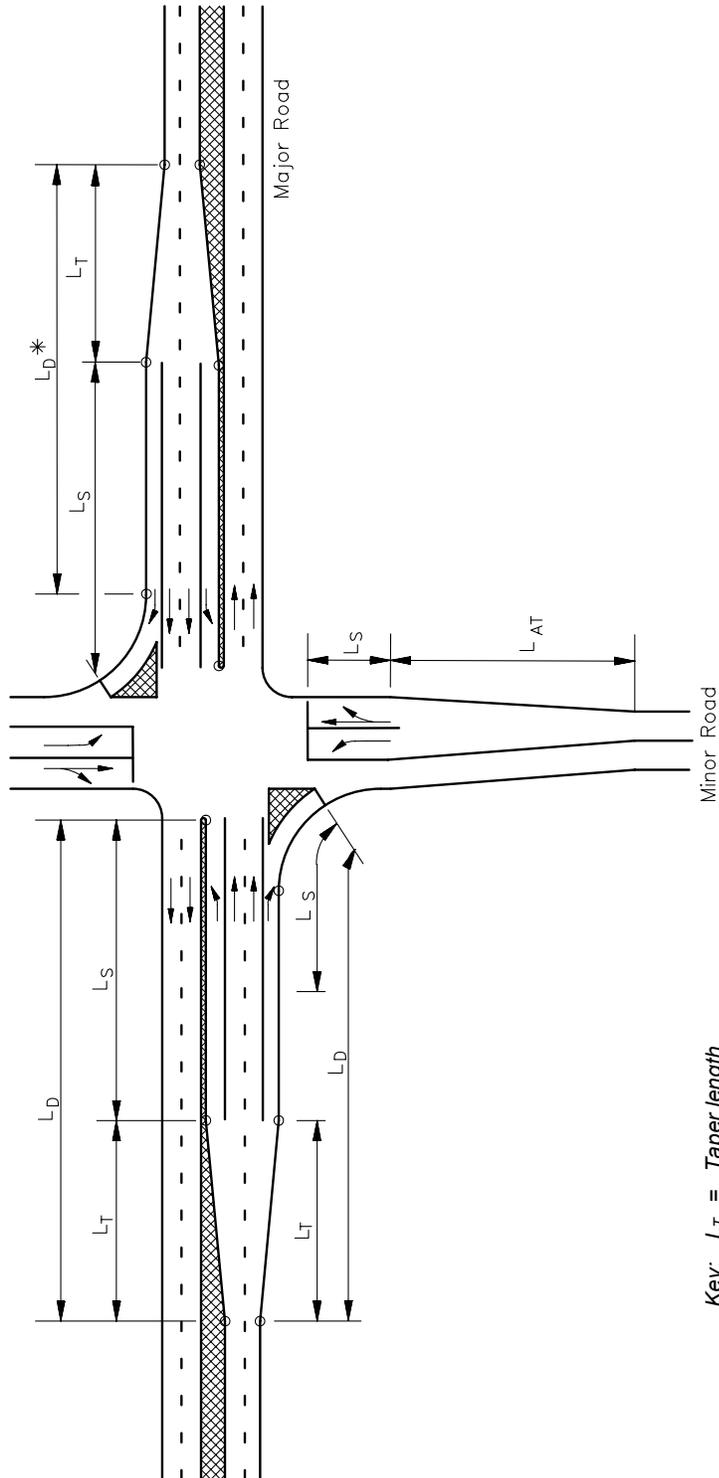
34-3.02(a) Turn Lane Widths

The width of the turn lane should be determined relative to the functional class, urban/rural location, and project scope of work (new construction, reconstruction, 3R). Chapters 32 and 33 present the applicable widths for auxiliary lanes based on these criteria. Desirably, turn-lane widths should be 12 ft (3.6 m) or a minimum of 10 ft (3.0 m). The geometric design tables in Chapters 32 and 33 also provide criteria for the applicable shoulder widths adjacent to auxiliary lanes. In general, the minimum shoulder widths adjacent to a turn lane with shoulders should be 4 ft (1.2 m). For curbed sections, the width of the gutter adjacent to the turn lane should be 6 in to 2 ft (150 mm to 600 mm).

34-3.02(b) Turn Lane Lengths

The length of auxiliary lanes will be determined by a combination of its taper length (L_T) and storage length (L_S). The following discusses the criteria for turn-lane lengths:

1. Taper. The entrance taper into the turn lane may be either a straight or a reverse curve taper. Always use the straight taper across bridges for ease of construction. Figure 34-3B provides the recommended deceleration distances for straight and reverse curve tapers.



Key: L_T = Taper length

L_D = Deceleration length (minimum length required)

L_S = Storage length

L_{AT} = Approach Taper Length — $L = WS$ for $S \geq 45$ mph, $L = \frac{WS^2}{60}$ for $S < 45$ mph (US Customary)

$L = 0.6WS$ for $S \geq 70$ km/h, $L = \frac{WS^2}{155}$ for $S \leq 60$ km/h (Metric)

W = Offset in feet (US Customary)

W = Offset in meters (Metric)

S = 85th Percentile Speed

See Section 34-3.02 for additional guidance.

Note: The schematic of the major road (free flowing) also applies to all legs of a signalized intersection.

* $L_S + L_T$ may be greater than L_D when the capacity analysis shows $L_S > L_D - L_T$ (from Figure 34-3B). The greater should be used.

TYPICAL AUXILIARY LANES AT AN INTERSECTION

Figure 34-3A

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US Customary											
Design Speed of Highway (mph)	Assumed Running Speed (mph) ⁽¹⁾	Length of Taper (ft)	Stop Condition	Speed Reduced to (mph)							
				15	20	25	30	35	40	45	50
				Total Length of Deceleration Lane Including Taper Length (ft)							
30	28	135	235	200	170	140	—	—	—	—	—
35	32	155	280	250	210	185	150	—	—	—	—
40	36	175	320	295	265	235	185	155	—	—	—
45	40	200	385	350	325	295	250	220	—	—	—
50	44	220	435	405	385	355	315	285	225	175	—
55	48	240	480	455	440	410	380	350	285	235	—
60	52	265	530	500	480	460	430	405	350	300	240
65	55	285	570	540	520	500	470	440	390	340	280
70	58	310	615	590	570	550	520	490	440	390	340
Metric											
Design Speed of Highway (km/h)	Assumed Running Speed (km/h) ⁽¹⁾	Length of Taper (m)	Stop Condition	Speed Reduced to (km/h)							
				20	30	40	50	60	70	80	
				Total Length of Deceleration Lane Including Taper Length (m)							
50	47	45	75	70	60	45	—	—	—	—	—
60	55	50	95	90	80	65	55	—	—	—	—
70	63	60	110	105	95	85	70	55	—	—	—
80	70	70	130	125	115	100	90	80	55	—	—
90	77	75	145	140	135	120	110	100	75	60	—
100	85	85	170	165	155	145	135	120	100	85	—
110	91	90	180	180	170	160	150	140	120	105	—

Grade Adjustment Factors ⁽²⁾			
Downgrade			
6.00% to 5.00%	4.99% to 4.00%	3.99% to 3.01%	3.00% to 0%
1.35	1.28	1.20	1.00
Upgrade			
0% to 3.00%	3.01% to 3.99%	4.00% to 4.99%	5.00% to 6.00%
1.00	0.90	0.85	0.80

(1) Average running speed assumed for calculations.

(2) Ratio from this table multiplied by the length provided above will yield the total deceleration length adjusted for grade. Adjustment factors apply to all design speeds and are added to the tangent or storage length.

DECELERATION DISTANCES FOR TURNING LANES

Figure 34-3B

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Where the highway is on a curved alignment, the taper of the turn lane should be more pronounced than usual to ensure that the through motorists are not inadvertently directed into the turn lane. This is accomplished by shortening the taper length.

2. Storage Length (Signalized Intersections). The storage length (L_s) for turn lanes should be sufficient to store the number of vehicles likely to accumulate in a signal cycle during the design hour. The designer should consider the following in determining the recommended storage lengths for signalized intersections:

- a. Determine the distance using the criteria for signalized intersections in the *Highway Capacity Manual* or use the following formula:

$$\text{Storage Length (ft)} = \frac{(1-G/C)(\text{DHV})(1 + \frac{\% \text{trucks}}{100})(2 \times 25)}{(\# \text{ cycles per hour})(\# \text{ traffic lanes})} \quad (\text{US Customary})$$

$$\text{Storage Length (m)} = \frac{(1-G/C)(\text{DHV})(1 + \frac{\% \text{trucks}}{100})(2 \times 7.5)}{(\# \text{ cycles per hour})(\# \text{ traffic lanes})} \quad (\text{Metric})$$

Where:

G = green time (secs)
C = cycle length (secs)
DHV = Design Hourly Volume (vph) for turn lane

- b. Where right-turns-on-red are permitted or where separate right-turn signal phases are provided, the length of the right-turn lane may be reduced due to less accumulation of turning vehicles. The storage length (L_s) needed for a separate right-turn lane is measured from the stop bar for the right-turning roadway; see Figure 34-3A.
- c. At signalized intersections, the designer should also consider that entry into right- and left-turn lanes may be blocked by the signal storage needs of the adjacent through lanes. If this occurs, provide longer lengths of turn lanes.
3. Storage Length (Unsignalized Intersections). To determine the storage length for unsignalized intersections, assume that the intersection is signalized with a two-phase signal using a 40 to 60 second cycle length. Then use the *Highway Capacity Manual* to determine the expected storage length.
4. Minimum Storage Length. For all intersections where traffic volumes are too low to govern, the minimum storage length will be 115 ft (35 m). These minimum lengths may also apply to right-turn lanes at unsignalized intersections if there is little likelihood of the turning vehicle having to wait.

5. Queue Length of Through Traffic. In addition to the storage for turn-lane volumes, the length of the turning lane should exceed the calculated queue length in the through travel lane adjacent to the turning lane for the design hour.
6. Clearance Distance of Opposing Left Turns. A minimum 6 ft (1.8 m) clearance between opposing left-turning vehicles shall be provided for single left-turn lanes. A desirable 10 ft (3 m) should be provided for opposing dual left-turn lanes. See Figure 36-3U of the *BDE Manual*.

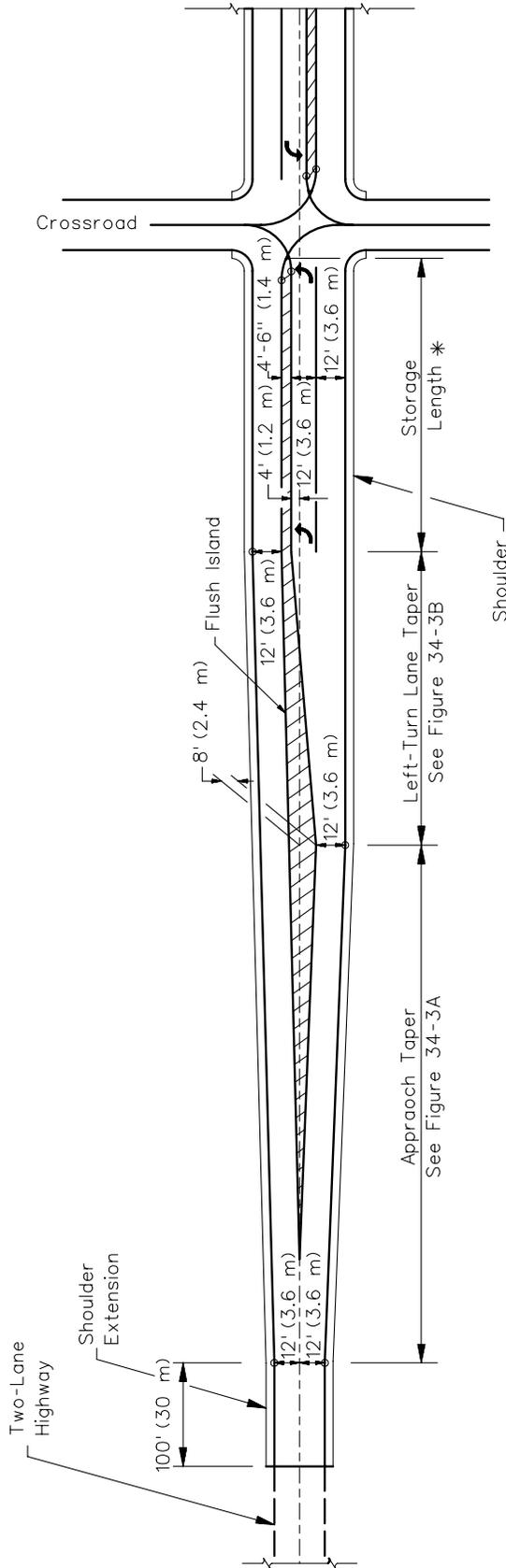
34-3.03 Typical Treatments for Auxiliary Turn Lanes

The following presents typical treatments for right- and left-turn lanes:

1. Right-Turn Lanes. Figure 34-3A illustrates the typical development of an exclusive right-turn lane using a straight taper. Reverse curves may also be considered for the taper.
2. Channelized Left-Turn Lanes. On divided highways, the design presented in Figure 34-3A will apply to the development of an exclusive left-turn lane in the median. Figure 34-3C illustrates the typical development for new construction or reconstruction project of a channelized left-turn lane on a rural 2-lane highway. Figure 34-3D illustrates the typical development of channelized left-turn lane on an urban street or for a 3R or safety improvement project on a rural 2-lane highway.
3. By-Pass Area. Figure 34-3E illustrates the typical design for a by-pass area. This is a relatively inexpensive design to provide for through and left-turn movements at intersections. The by-pass area is appropriate for T-intersections (only unsignalized) where left-turning volumes are light to moderate.

The decision to use either the channelized left-turn (Figures 34-3C and 34-3D) or the by-pass area (Figure 34-3E) will be based on comparative costs, crash history, right-of-way availability, through and turning volumes, design speed, and available sight distance.

4. Offset Turn Lanes. Providing an offset design ensures that opposing left-turning motorists can see past one another to view oncoming through traffic. Offset left-turn lanes can be either a parallel or taper type. For additional guidance on offset left-turn lanes, see Section 36-3 in the *BDE Manual*.

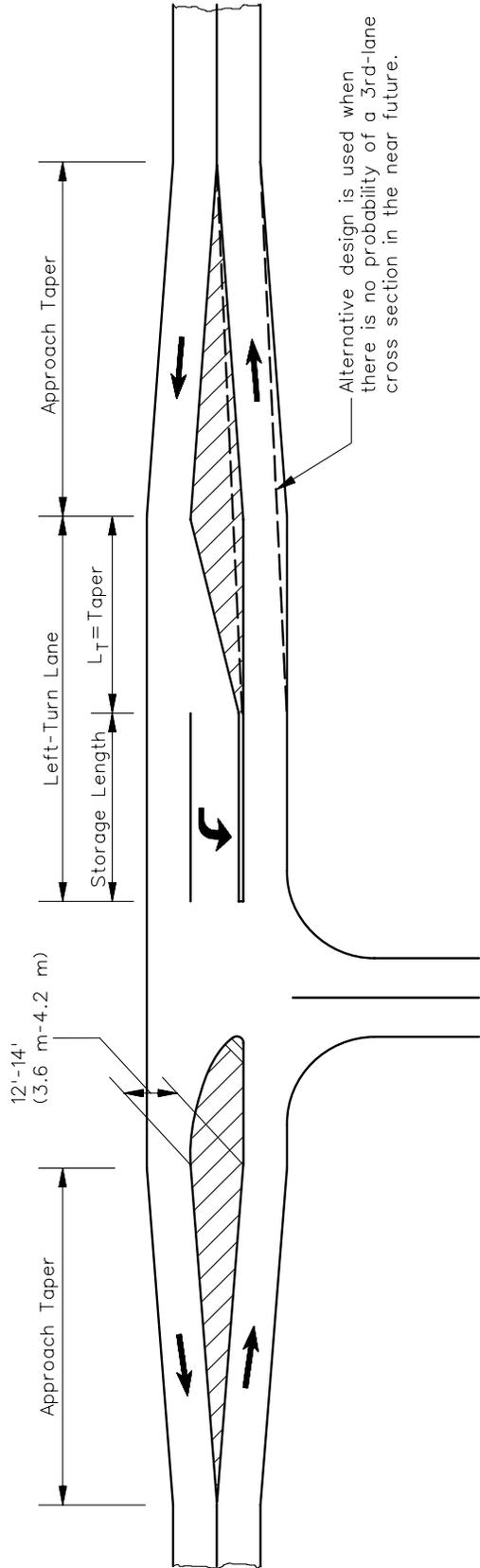


* See Section 34-3.02(b) for storage length criteria or use the following:

US Customary		Metric	
Design Speed (mph)	Storage Length (ft)	Design Speed (km/h)	Storage Length (m)
45	185	70	50
50	215	80	60
55	240	90	70
60	265	100	85

FLUSH CHANNELING ISLAND AT AN ISOLATED, HIGH-SPEED RURAL INTERSECTION
(New Construction/Reconstruction Projects)

Figure 34-3C

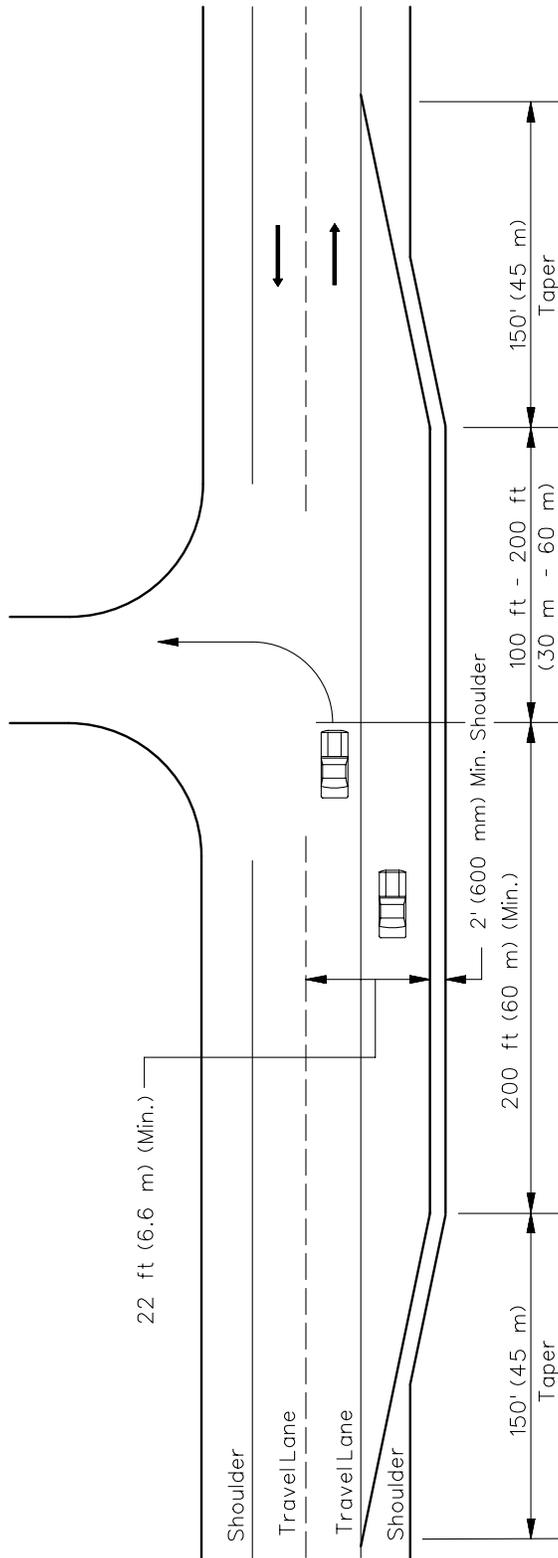


APPROACH TAPER RATES FOR FLUSH CHANNELIZATION						
Present Posted Speed (mph)	Design Speed	Approach Taper Rates			Left-Turn Lane	
		Widening on Both Sides	Widening All on One Side	Taper Rate	Minimum Storage Length*	
≥ 50	50 mph (80 km/h)	50:1	40:1	15:1	115 ft (35 m)	
45	45 mph (70 km/h)	45:1	35:1	13:1	115 ft (35 m)	
40/35	40 mph (60 km/h)	40:1	30:1	11:1	115 ft (35 m)	
≤ 30	30 mph (50 km/h)	35:1	25:1	9:1	115 ft (35 m)	

* Storage lengths may be increased if necessary based on Section 34-3.02(b).

FLUSH CHANNELIZED ISLANDS AT ISOLATED RURAL OR URBAN INTERSECTIONS FOR SAFETY IMPROVEMENTS OR 3R PROJECTS

Figure 34-3D



TYPICAL BY-PASS AREA ON A TWO-LANE HIGHWAY
Figure 34-3E

34-3.04 Dual Turn Lanes

34-3.04(a) Guidelines

At intersections with high-turning volumes, dual left- and/or right-turn lanes may be considered. Dual left- and/or right-turn lanes may be considered where:

- there is insufficient space to provide the necessary length of a single turn lane because of restrictive site conditions (e.g., closely spaced intersections);
- based on a capacity analysis, the necessary time for a protected left-turn phase for a single lane becomes unattainable to meet the level-of-service criteria (average delay per vehicle); and/or
- more than 300 vehicles per hour are projected to be turning.

Dual turn lanes should only be used with signalization providing a separate turning phase.

34-3.04(b) Design

See Section 36-3 of the BDE *Manual* for dual turn lane designs.

34-4 ISLANDS

Several of the treatments described in this Chapter require islands within the intersection area. Some intersections, especially those with oblique angle crossings, result in large paved areas that may cause motorists to wander from natural or expected paths and may cause long pedestrian crossings. These movements may result in conflicts and/or unpredictable operations, but could be enhanced by incorporating channelizing islands in the design of the intersection.

At rural locations where higher speeds are prevalent, channelizing islands are used in conjunction with left-turn lanes and for turning roadways. In urban areas where speeds generally are lower, but where traffic volumes are generally higher, channelizing islands in conjunction with added lanes are used primarily to increase capacity and safety at the intersection.

34-4.01 Island Types

Islands can be grouped into the following classifications. Most island types serve at least two of these functions:

1. Corner/Directional Islands. Directional or corner triangular islands control and direct right-turn movements and guide the driver into the proper direction.
2. Channelizing Islands. Center channelizing islands separate opposing traffic flows, alert the driver to the crossroad ahead, and regulate traffic through an intersection. These islands are often introduced at intersections on undivided highways and are particularly advantageous in controlling left turns at skewed intersections.
3. Refuge Islands. Refuge islands (corner islands or center channelizing islands) may function to aid and protect pedestrians who cross a wide roadway. These islands may be required for pedestrians where complex signal phasing is used and may permit the use of two-stage crossings. This also may increase the signal efficiency by allowing the time allocated for pedestrian movements to be reduced.

34-4.02 Selection of Island Type

Islands may be some combination of flush, traversable, raised-curb, or turf, and could be triangular or elongated in shape. Selection of an appropriate type of channelizing island should be based on:

- traffic characteristics;
- cost considerations;
- urban, suburban, or rural locations;
- degree of access management desired; and

- maintenance considerations.

The following offers guidance where different types of islands are appropriate.

34-4.02(a) Flush or Traversable Islands

Flush islands, which are delineated by pavement markings (e.g., paint, thermoplastic, epoxy), or traversable islands, which are delineated by M-2 (M-5) curbs, are appropriate for the following situations:

- on highways to delineate separate left-turn lanes (flush or traversable);
- in restricted locations where delineation of vehicular path is desirable, but space for larger, raised-curb islands is not available (flush);
- in areas where better long-term visual delineation is needed at night and during inclement weather, but space for raised-curb islands is not available (traversable);
- to separate opposing traffic streams on low-speed urban streets (flush or traversable); and/or
- for temporary channelization during construction (flush).

34-4.02(b) Raised-Curb Islands

Raised-curb islands are at least 4 in (100 mm) high and are appropriate:

- on low-speed highways where the primary function is to provide positive separation for opposing traffic movements;
- at locations requiring positive delineation of vehicular paths (e.g., where a major route turns or at intersections with unusual geometry);
- where the island is intended to prohibit or prevent traffic movements (e.g., wrong-way movements or to manage access within the intersection);
- where a primary or secondary island function is to provide a location for traffic signals, signs, or other fixed objects; and/or
- where a primary function of the island is to provide a pedestrian or bicyclist refuge.

Raised-curb islands should be used at rural intersections having the following characteristics:

- on the crossroad through an interchange to delineate median crossovers and turn lanes, and to prevent wrong-way movements, and
- at unusual or complex intersection configurations where higher visibility would promote greater safety and more efficient traffic operations.

Where curb and gutter is proposed in high-speed rural areas, only use mountable curbs and consider providing supplemental intersection illumination. In addition, provide prismatic reflectors on the top of curbs to enhance delineation of the island and turn lanes at night. Section 31-1.07 provides further guidance on the types of curbing used for islands.

34-4.02(c) Divisional Islands

Figure 34-4A illustrates a typical curbed divisional island and applicable approach treatment. Guidance for standardized designs based on various design speeds, pavement widths, and island widths are provided in the IDOT publication *Transitional Approaches to Channelized Intersections*. This document can be obtained from the district or from BDE. For flush-channelizing islands, see Figures 34-3C and 34-3D.

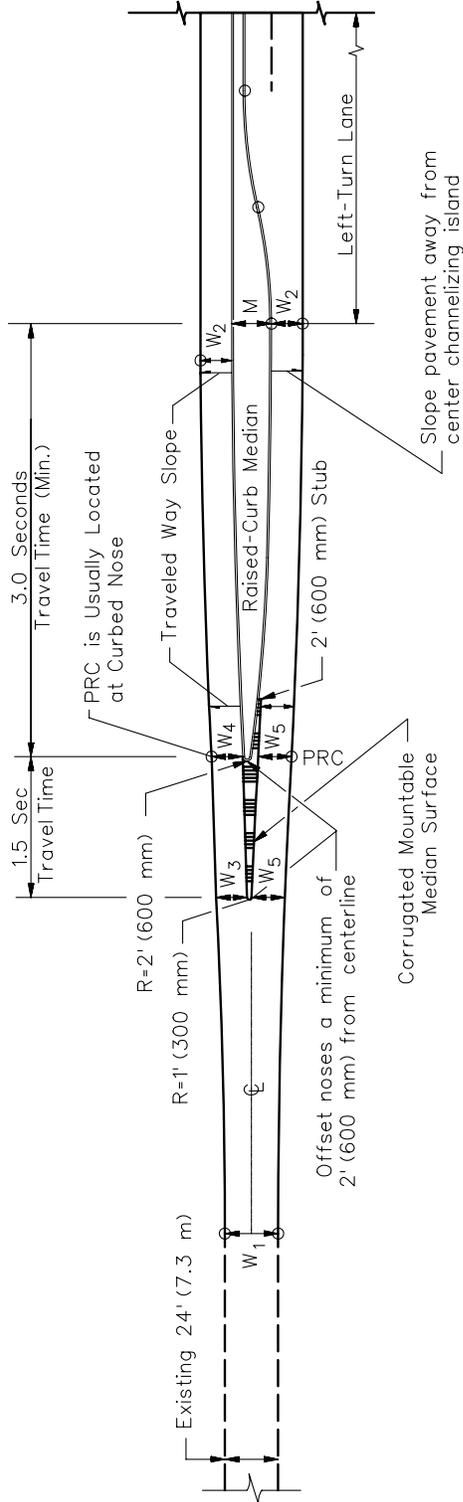
34-4.02(d) Corner Islands

In general, the use of corner islands is discouraged. However, at some intersections, it may be desirable to provide a directional or corner island to direct drivers. This may be especially advantageous where a tractor/semi-trailer is used as the design vehicle and/or at oblique angle crossing intersections. The corner island may also be used for locating traffic control devices.

Corner islands may also function as refuge islands to aid and protect pedestrians who cross a wide roadway. Corner islands may be required for pedestrians where complex signal phasing is used, and they may permit the use of two-stage crossings. This may enhance traffic signal efficiency by allowing a reduction in the time allocated for pedestrian movements. These islands must be large enough to accommodate both the signals and pedestrians.

The type and size of triangular or corner islands will vary according to the angle of intersection, design vehicle, right-turn operation, and available right-of-way. Figure 34-4B illustrates the typical designs for corner islands. Also consider the following:

1. Island Sides. The sides of the island should not be less than 12 ft (3.6 m) and, preferably, 15 ft (4.5 m) after rounding the corners.
2. Island Size. The minimum island size for rural areas is 100 ft² (9.5 m²). For urban islands, the island area typically should be 75 ft² (7.0 m²) but not less than 50 ft² (4.7 m²). The island area includes the concrete median surface and the top of the curb.
3. Flush or Raised-Curb. For proper delineation of corner islands, under all conditions (e.g., nighttime, rain, fog, snow), the raised-curb design is preferable.



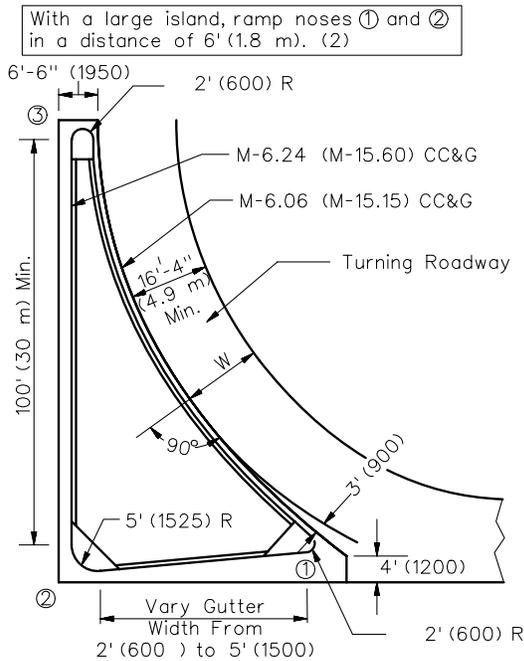
Notes:

1. For additional design details, see the IDOT publication Transitional Approaches to Channelized Intersections.
2. The length and shape of channelizing islands derived from the above sketch also may be used as a guide for determining a flush, center island design.

- M = See Chapter 32 for typical median widths
 W_1 = Undivided approach width
 W_2 = Divided approach width
 $W_3 = \frac{W_1}{2}$ or 14 ft (4.2m), which ever is larger
 $W_4 = \frac{W_3 + W_2}{2}$, desirable
 $W_5 = W_2 + 1 \text{ ft (300 mm)}$

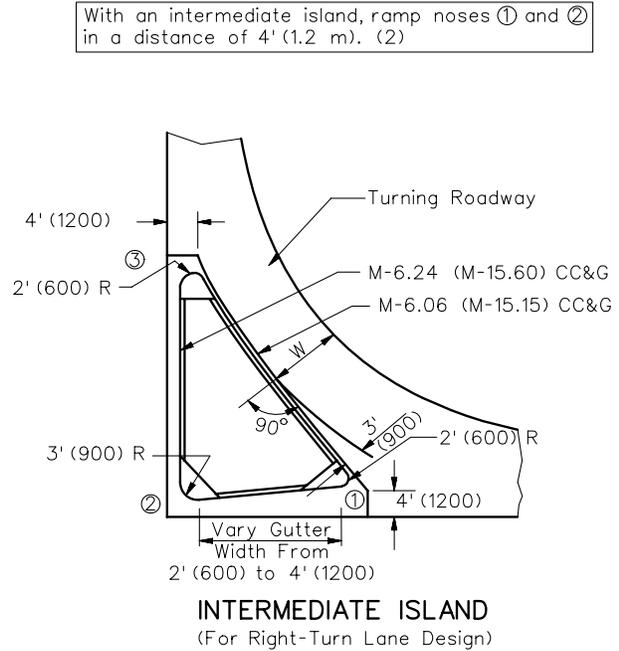
TYPICAL CURBED DIVISIONAL ISLAND

Figure 34-4A

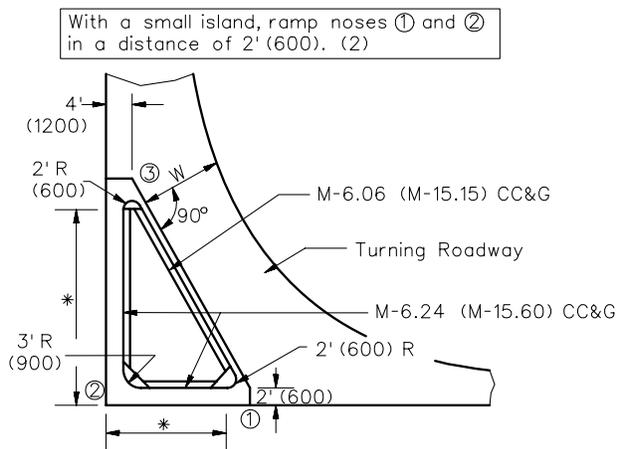


LARGE ISLAND

(For Freeflow Turning Roadway Design)



INTERMEDIATE ISLAND
(For Right-Turn Lane Design)



SMALL ISLAND

(For Typical Design)

Notes:

1. ①, ②, ③ - designates a specific corner of island.
2. Ramp the ① and ② noses of curbed corner islands unless the curb function is for the protection of pedestrians, signals, light standards, or sign truss supports.
3. See the *IDOT Highway Standards* for details of ramping noses.
4. All corner radii are to the face of curb at flowline.
5. * These dimensions are controlled by the minimum area requirements of the island, whereas "W" is a required dimension.
6. Dimensions in parentheses are in mm unless otherwise noted.

DETAILS OF CORNER ISLANDS

Figure 34-4B

4. Curbing. Only use the M-type curb on corner islands. Also consider the following:
 - Use M-6 (M-15) curb on islands that are located adjacent to a highway with speeds of 45 mph (70 km/h) or less.
 - Use M-4 (M-10) curb on islands that are located adjacent to high-speed traffic (i.e., 50 mph (80 km/h) or greater). However, use M-6 (M-15) curb on islands where traffic signal supports, sign truss supports, or any other post with a foundation generally larger than a standard highway sign are present. Note that a stop sign is a standard highway sign.
 - Use M-6.06 (M-15.15) or M-4.06 (M-10.15) CC&G on all sides of islands where the island is offset the shoulder width from the edge of the traveled way.

5. Island Offsets. On streets with outside curb and gutter, offset the corner island from the edge of the traveled way according to Figure 34-4B. In rural areas or for facilities with shoulders, the corner island is offset from the shoulder width, but not greater than 8 ft (2.4 m); see Figure 34-3C. If a right-turn deceleration lane is provided, then offset the corner island at least 8 ft (2.4 m).

6. Location of Stop Signs. The edge of the stop sign should be a minimum of 2 ft (600 mm) from the face of the curb.

34-4.02(e) Curb Ramps

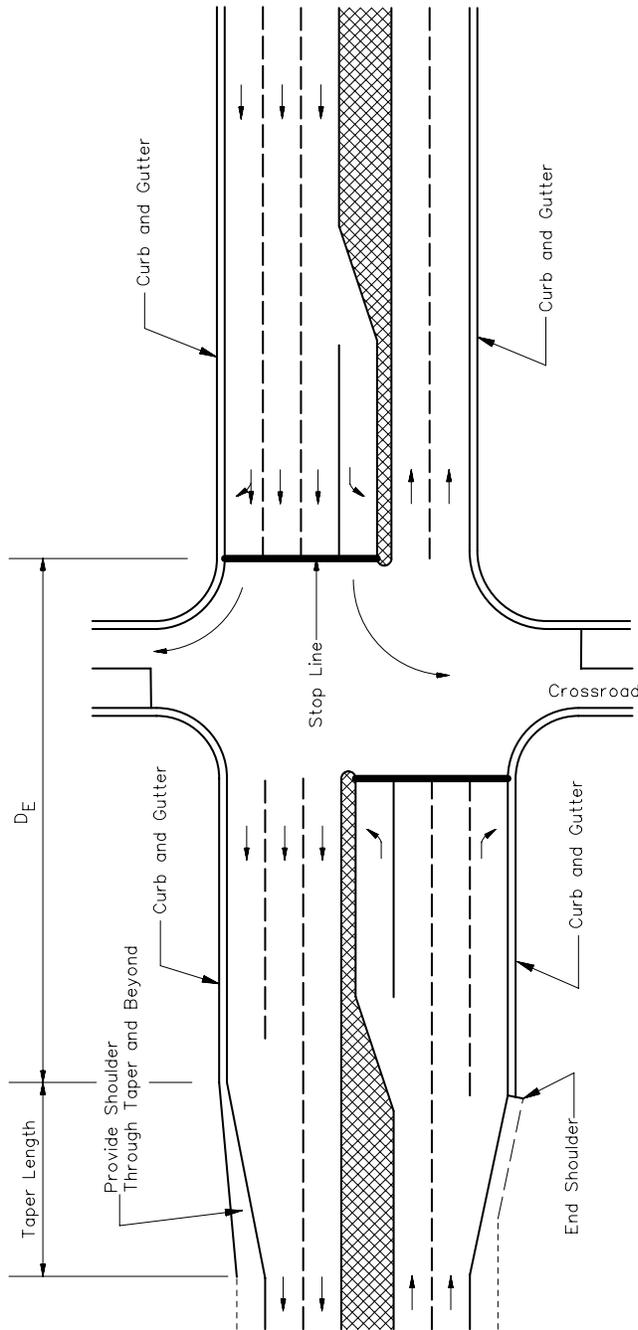
See Section 41-6 for the application of ADA criteria at intersections. If the crosswalk is placed through an island, give special consideration to the treatment of curb ramps within the raised-curb island. In many cases, the crosswalk can be located directly in front of a divisional island nose without special design provisions or, the island can be shortened sufficiently to permit such location without loss of control for turning vehicles. However, where an island does encroach on the location of a crosswalk, it is usually desirable to depress the entire crosswalk through the island, rather than construct ramps. This is particularly true if the island is less than 100 ft² (10 m²) or is less than 16 ft (4.8 m) wide. The remaining portion of raised island on either side of the ramp should be of sufficient size to distinguish it as a raised island and for ease of construction.

34-4.03 Median Openings

For the design of median openings, see Section 36-4 of the *BDE Manual*.

34-5 EXTENSION OF THROUGH LANES BEYOND AN INTERSECTION

At many intersections, traffic volumes drop off considerably after passing a crossroad and, therefore, one lane can be dropped beyond the intersection. However, to fully realize capacity benefits and to provide for a safe merge, the through lanes must be extended beyond the intersection. Figure 34-5A provides preliminary design criteria for determining the distance these lanes should be extended beyond an intersection.



Notes:

1. D_E is that distance required by a vehicle to accelerate from a stop to 5 mph (10 km/h) below the design speed of the highway.

2. The taper distance is calculated using the following equations and assuming a 12 ft (3.6 m) lane width:

$L = WS$ for $S \geq 45$ mph (US Customary)

$L = WS^2/60$ for $S < 45$ mph

$L = 0.6 WS$ for $S \geq 70$ km/h, (Metric)

$L = WS^2/155$ for $S \leq 60$ km/h

US Customary			Metric		
Design Speed (mph)	D_E (ft)	Taper Length (ft)	Design Speed (km/h)	D_E (m)	Taper Length (m)
30	160	180	50	40	54
35	215	245	60	70	74
40	320	320	70	110	96
45	430	540	80	160	162
50	585	600	90	235	180
55	780	660	100	325	198
60	1010	720			

EXTENSION OF THROUGH LANE BEYOND AN INTERSECTION

Figure 34-5A

34-6 INTERSECTION DESIGN NEAR RAILROADS

34-6.01 General Design Considerations

These design guidelines apply to all highway improvement projects where the route is adjacent and parallel to a railroad. Where an at-grade railroad crossing is within 200 ft (60 m) of an intersection, the design should address efforts to keep vehicles from stopping or storing on the tracks. This applies to either signal- or stop-controlled intersections. The following factors should be identified and considered during the planning stages:

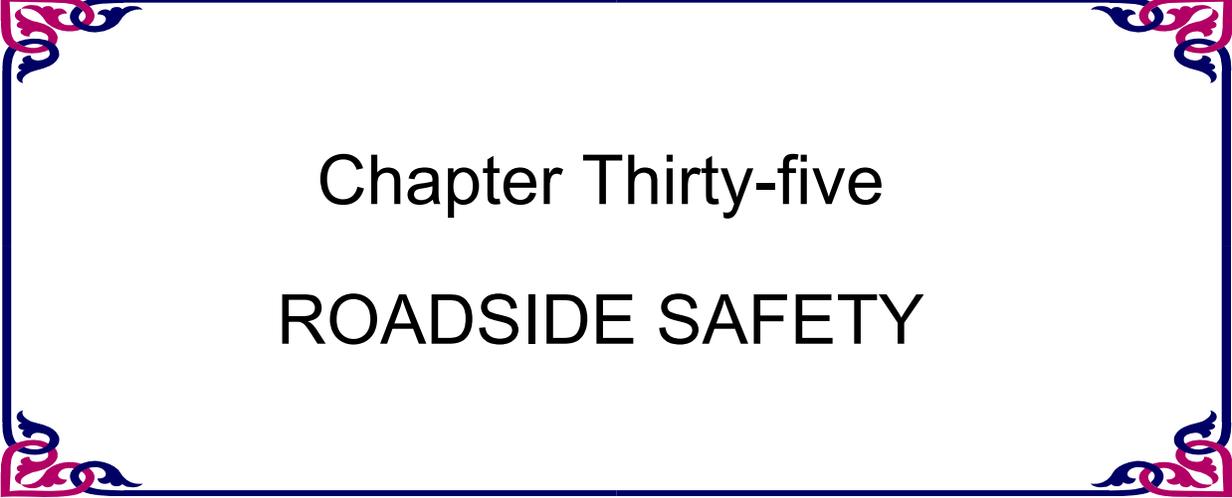
1. Clear Storage Distance. Consider alternative designs that provide a minimum distance of 75 ft (23 m) between the proposed intersection stop line and a point 6 ft (1.8 m) from the closest rail.
2. Space for Vehicular Escape. On the far side of any railroad crossing, consider providing an escape area for vehicles (e.g., shoulder with curb and gutter behind the shoulder, flush medians, flush-corner islands, right-turn acceleration lanes, improved corner radii).
3. Conflicting Commercial Access. Left-turn vehicular movements that may inhibit the clearance of queued traffic on the approaches to railroad tracks should be discouraged. If there are existing entrances on the street approach, consider using design features that would eliminate the problems (e.g., left-turn lane, raised-curb median).
4. Restricted Intersection Capacity. During periods of frequent railroad preemption of traffic signals, consider the effects of reduced traffic flow, lack of progression on the street paralleling the tracks, and traffic backups. Available computer programs should be used to analyze different capacity and operational scenarios and to recommend any countermeasures.
5. Protected Left-Turn Storage. On the street that parallels the tracks, analyze the storage length needed for left-turns into the side street and across the tracks during preemption of the traffic signals. Without the proper storage length available, this could cause backups into the through lanes.
6. Right-Turn Lanes. On the street that runs parallel to the railroad and where an actuated NO RIGHT TURN SIGN is proposed in conjunction with railroad preemption, a right-turn lane should be considered for the right-turn movement across the tracks. The auxiliary lane provides a refuge for right-turning vehicles during railroad preemption and eliminates the problem of traffic temporarily blocking the through lanes.
7. Side Street Left-Turn Lane Capacity. On streets that cross railroad tracks, provide sufficient left-turn storage lengths that will avoid the problem of left turns spilling out onto through lanes and blocking the through lanes.

34-6.02 Interconnection Traffic Signal System Design

See Section 39-4 for additional information on traffic signal design.

34-6.03 Signing

See Chapter 39-2 for additional information on traffic signs.



Chapter Thirty-five
ROADSIDE SAFETY

BUREAU OF LOCAL ROADS AND STREETS MANUAL

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Chapter Thirty-five
ROADSIDE SAFETY

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The ideal roadway would be entirely free of any roadside obstructions or other hazardous conditions. This is rarely practical because of natural, economic, and environmental factors. Chapter 35 presents clear zone distances that are intended to provide an adequate clear recovery area for errant vehicles that run off the road, as well as providing criteria for the selection, layout, and design of roadside barriers for all new construction/ reconstruction projects. Roadside hazards on 3R projects are addressed in Section 33-3.07.

35-1 DEFINITIONS

1. Back Slope. The side slope created by connecting the ditch bottom, shelf, or shoulder at the hinge point, upward and outward, to the natural ground line.
2. Barrier Curb. A longitudinal element placed at the edge of the traveled way to provide delineation, to control drainage, to manage access, and to minimize right-of-way acquisition. Barrier curbs range in height between 6 in and 10 in (150 mm and 250 mm) with a face steeper than 3 vertical to 1 horizontal (3V:1H).
3. Barrier Terminals. End treatments for both roadside barriers and transitions to other types of barriers (e.g., to bridge rails).
4. Barrier Warrant. A criterion that identifies an area of concern that should be shielded by a traffic barrier, if judged to be practical. The warrant may be based on IDOT/AASHTO guidelines, on a "cost-effective" assessment, or on engineering judgment.
5. Critical Parallel Slope. Fill sections with front slopes steeper than 1V:3H that are not considered to be traversable by a run-off-the-road vehicle. Depending on the encroachment conditions, a vehicle on a critical slope may overturn.
6. End Treatments. The terminal devices for roadside barriers, including both the approaching and departing ends.
7. Front Slope. The side slope created by connecting the shoulder or shelf at the hinge point, downward and outward, to the ditch bottom or natural ground line.
8. Impact Angle. For a longitudinal barrier, the angle between a tangent to the face of the barrier and a tangent to the vehicular path at impact.
9. Length of Need. Total length of a longitudinal barrier, measured with respect to the centerline of roadway, needed to shield an area of concern. The length of need is measured to the last point of full-strength rail.

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10. Mountable Curb. A longitudinal element placed at the edge of traveled way to provide delineation, to control drainage, to manage access, and to outline corner islands. Mountable curbs have a height of 6 in (150 mm) or less with a sloping face of approximately 45°.
11. Non-Recoverable Parallel Slope. Slopes that can be safely traversed, but upon which an errant vehicle is unlikely to recover before reaching the bottom of the slope. The run-off-the-road vehicle will likely continue down to the toe of the slope. For most embankment heights, if a front slope is between 1V:3H (inclusive) and 1V:4H (exclusive), it is considered a non-recoverable parallel slope.
12. Parallel Slopes. Front and back slopes for which the toe runs approximately parallel to the roadway.
13. Recoverable Parallel Slope. Slopes that can be safely traversed and upon which a motorist has a reasonable opportunity to regain control of the vehicle. Front slopes 1V:4H and flatter are considered recoverable.
14. Roadside Barrier. A longitudinal barrier (e.g., guardrail, concrete barrier) used to shield roadside hazards.
15. Roadside Clear Zone. The distance beyond the edge of traveled way that should be clear of any non-traversable hazards or fixed objects.
16. Roadside Hazards. A general term to describe roadside features that cannot be safely impacted by a run-off-the-road vehicle. Roadside hazards include both fixed objects and non-traversable roadside features (e.g., rivers).
17. Shy Distance. The distance from the edge of traveled way beyond which a roadside object will not be perceived as an immediate hazard by the typical driver, to the extent that the driver will change vehicular placement or speed.
18. Side Slope. A ratio used to express the steepness of a slope adjacent to the roadway. The ratio is expressed as vertical to horizontal (V:H).
19. Toe of Slope. The intersection of the front slope with the natural ground line or ditch bottom or the back slope with the edge of roadway or ditch bottom, before any rounding is applied.
20. Top of Slope. The intersection of the back slope with the natural ground line, before any rounding is applied.
21. Transverse Slope. Front and back slopes for which the toe runs approximately perpendicular to the flow of traffic on the major roadway. Transverse slopes are typically formed by intersections between the mainline and entrances, median crossovers, or side roads.

35-2 ROADSIDE CLEAR ZONES

35-2.01 Background

When using the recommended clear zone distances, the designer should consider the following:

1. Project Scope of Work. The clear zone distances in Section 35-2 apply to all new construction/reconstruction projects. Chapter 33 presents the clear zone criteria for 3R projects.
2. Context. The clear zone widths presented in this *Manual* are based on limited empirical data which has been extrapolated to a wide range of conditions. Therefore, the distances imply a degree of accuracy that does not exist. They do, however, provide a basis for making decisions on providing a safe roadside area for new construction/reconstruction projects. The use of an appropriate clear zone distance is a compromise between providing maximum safety and minimizing construction costs. Each application of the clear zone distance must be evaluated individually, and the designer must exercise good judgment.
3. Boundaries. The designer should not use the clear zone distances as boundaries for introducing roadside objects (e.g., bridge piers, non-breakaway sign supports, utility poles, landscaping features). These should be placed as far from the traveled way as practical. If an obstacle lies just beyond the clear zone, it may be appropriate to remove or shield the obstacle if costs are reasonable. Conversely, the clear zone should not be achieved at all costs.
4. Right-of-Way. Even for new construction/reconstruction projects, the availability of right-of-way may be a serious project issue. The acquisition of additional right-of-way solely to provide the clear zone distance is not required. If, on the other hand, the right-of-way width exceeds the design clear zone, this offers an opportunity to increase safety by removing all hazards within the right-of-way. Specifically for reconstruction projects, BLRS policy is that the clear zone will be the values from Section 35-2 or the right-of-way line, whichever is less.
5. Level of Protection. A 30 ft clear zone is predicated on achieving a clear recovery area that will provide approximately 80% to 85% of all run-off-the-road vehicles the opportunity to recover where the design speed is 60 mph (100 km/h). For lower design speeds (but traffic volumes of over 6000 ADT), the clear zones are reduced but still provide a (theoretical) 80% to 85% level of protection. However, on facilities with ADTs less than 6000, Figure 35-2A and the AASHTO *Roadside Design Guide* present reduced clear zone values that provide a lower level of protection based on subjective cost-effective considerations. For example, with a design speed of 50 mph (80 km/h) and a flat side slope, an 18 ft (6 m) clear zone will provide the approximate 80% to 85% level of protection. A 12 ft (4 m) clear zone (as recommended for ADTs of 750-1500) will provide approximately a 65% level of protection. Therefore, the AASHTO clear zone values, which have been adopted by BLRS for use on non-State highway facilities for

new construction/reconstruction projects, inherently provide reduced protection for facilities with ADTs less than 6000.

35-2.02 Clear Zone Values

Figure 35-2A presents clear zone distances for recoverable front slopes (1V:4H or flatter) and for back slopes 1V:3H or flatter to be used in the design of new construction/reconstruction projects. The following discusses the use of the figure to determine the applicable clear zone.

35-2.02(a) Speed

The designer will use the design speed for the project determined from Chapter 32 to determine the applicable clear zone.

35-2.02(b) Traffic Volumes

For all new construction/reconstruction projects, the design traffic volume will typically be the projected traffic volume 20 years from the anticipated date of construction. For low-volume roadways with ADTs of 400 or less, current traffic volumes may be used.

Figure 35-2A is divided into ranges of traffic volumes for different design speeds. As indicated in the figure, ADT influences the clear zone value. In general, the wider clear zones apply to the higher traffic volumes.

35-2.02(c) Side Slopes

The roadway side slope will influence the recommended clear zone distance. Figure 35-2B presents a schematic of the general side slope configurations, which may include:

- a straight front slope,
- a section with a roadside ditch, or
- a section where the toe of the back slope is adjacent to the edge of shoulder.

Note: The values in Figure 35-2A for “back slopes” only apply to a section as illustrated in Figure 35-2B; they do not apply where a roadside ditch is present.

Many variables influence the selection of a clear zone distance for the various side slope configurations. Sections 35-2.03 to 35-2.05 discuss side slopes in detail.

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Design Speed	Design Year ADT ⁽¹⁾	Front Slopes ⁽²⁾		Back Slopes ⁽³⁾		
		1V:6H or Flatter	1V:5H to 1V:4H	1V:3H	1V:5H to 1V:4H	1V:6H or Flatter
40 mph or less	Under 750	7 ⁽⁷⁾	7 ⁽⁷⁾	7 ⁽⁷⁾	7 ⁽⁷⁾	7 ⁽⁷⁾
	750 or Over	10	10	10	10	10
45 – 50 mph	Under 750	10 ⁽⁷⁾	12 ⁽⁷⁾	10 ⁽⁷⁾	10 ⁽⁷⁾	10 ⁽⁷⁾
	750 – 1500	12	16	10	12	14
	1500 – 6000	16	20	12	14	16
	Over 6000	18	24	14	18	20
55 mph	Under 750	12 ⁽⁷⁾	14 ⁽⁷⁾	10 ⁽⁷⁾	10 ⁽⁷⁾	10 ⁽⁷⁾
	750 – 1500	16	20	10	14	16
	1500 – 6000	20	24	14	16	20
	Over 6000	22	26	16	20	22
60 mph	Under 750	16 ⁽⁷⁾	20 ⁽⁷⁾	10 ⁽⁷⁾	12 ⁽⁷⁾	14 ⁽⁷⁾
	750 – 1500	20	26	12	16	20
	1500 – 6000	26	30	14	18	24
	Over 6000	30	30	20	24	26

- Notes:**
1. The "Design Year ADT" will be the total ADT for both directions of travel for the design year. Traffic volumes will normally be based on a 20-year projection from the anticipated date of construction unless current ADT < 400. This applies to both divided and undivided facilities.
 2. For 1V:3H and 1V:2H front slopes, see Sections 35-2.03(b) and 35-2.03(c). For roads functionally classified as local with an ADT ≤ 400, see Section 35-2.02(d).
 3. The values for "back slopes" only apply to a section where the toe of the back slope is adjacent to the shoulder (see Figure 35-2B(c)). For sections with roadside ditches, see Section 35-2.05.
 4. All distances are measured from the edge of the traveled way.
 5. The values in the figure apply to tangent sections of highway. See the discussion in Section 35-2.02(e) for possible adjustments on horizontal curves.
 6. The values in the figure apply to all uncurbed sections and to curbed sections in rural areas. See Section 35-2.02(f) for curbed sections in urban areas.
 7. For roads functionally classified as local with an ADT ≤ 400, see Section 35-2.02(d).

MINIMUM CLEAR ZONE DISTANCES (ft)
(New Construction/Reconstruction)

Figure 35-2A (US Customary)

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35-2(4)

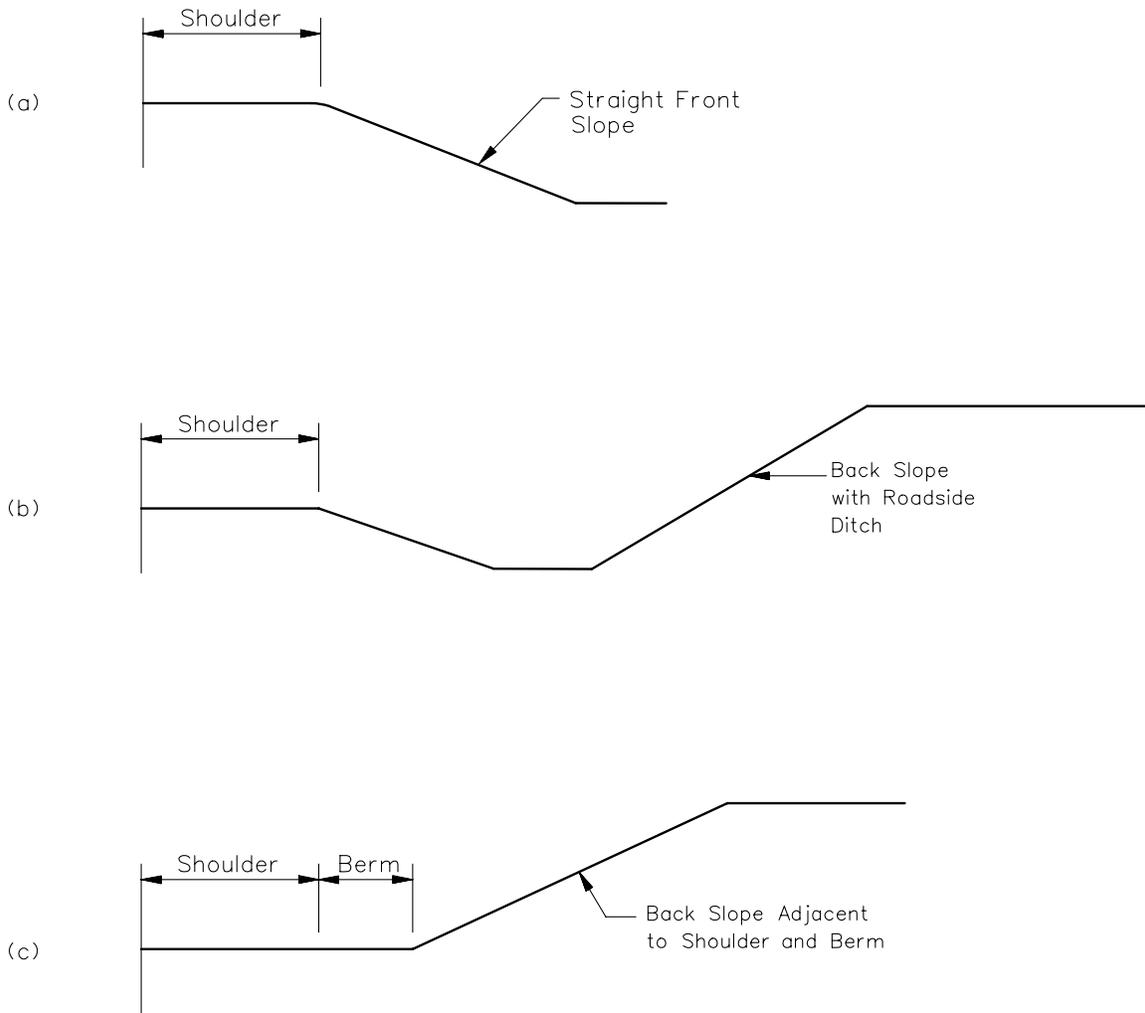
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Design Speed	Design Year ADT ⁽¹⁾	Front Slopes ⁽²⁾		Back Slopes ⁽³⁾		
		1V:6H or Flatter	1V:5H to 1V:4H	1V:3H	1V:5H to 1V:4H	1V:6H or Flatter
60 km/h or less	Under 750	2.0	2.0	2.0	2.0	2.0
	750 or Over	3.0	3.0	3.0	3.0	3.0
70-80 km/h	Under 750	3.0 ⁽⁷⁾	3.5 ⁽⁷⁾	3.0 ⁽⁷⁾	3.0 ⁽⁷⁾	3.0 ⁽⁷⁾
	750-1500	4.5	5.0	3.0	3.5	4.5
	1500-6000	5.0	6.0	3.5	4.5	5.0
	Over 6000	6.0	7.5	4.5	5.5	6.0
90 km/h	Under 750	3.5 ⁽⁷⁾	4.5 ⁽⁷⁾	3.0 ⁽⁷⁾	3.0 ⁽⁷⁾	3.0 ⁽⁷⁾
	750-1500	5.0	6.0	3.0	4.5	5.0
	1500-6000	6.0	7.5	4.5	5.0	6.0
	Over 6000	6.5	8.0	5.0	6.0	6.5
100 km/h	Under 750	5.0 ⁽⁷⁾	6.0 ⁽⁷⁾	3.0 ⁽⁷⁾	3.5 ⁽⁷⁾	4.5 ⁽⁷⁾
	750-1500	6.0	8.0	3.5	5.0	6.0
	1500-6000	8.0	9.0	4.5	5.5	7.5
	Over 6000	9.0	9.0	6.0	7.5	8.0

- Notes:
1. The "Design Year ADT" will be the total ADT for both directions of travel for the design year. Traffic volumes will normally be based on a 20-year projection from the anticipated date of construction unless current ADT < 400. This applies to both divided and undivided facilities.
 2. For 1V:3H and 1V:2H front slopes, see Sections 35-2.03(b) and 35-2.03(c). For roads functionally classified as local with an ADT ≤ 400, see Section 35-2.02(d).
 3. The values for "back slopes" only apply to a section where the toe of the back slope is adjacent to the shoulder (see Figure 35-2B(c)). For sections with roadside ditches, see Section 35-2.05.
 4. All distances are measured from the edge of the traveled way.
 5. The values in the figure apply to tangent sections of highway. See the discussion in Section 35-2.02(e) for possible adjustments on horizontal curves.
 6. The values in the figure apply to all uncurbed sections and to curbed sections in rural areas. See Section 35-2.02(f) for curbed sections in urban areas.
 7. For roads functionally classified as local with an ADT ≤ 400, see Section 35-2.02(d).

**RECOMMENDED CLEAR ZONE DISTANCES (m)
(New Construction/Reconstruction)
Figure 35-2A (Metric)**

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SIDE SLOPE CONFIGURATIONS

Figure 35-2B

35-2.02(d) Low-Volume Local Roads

The clear zone for uncurbed roads functionally classified as local with an ADT \leq 400 may be reduced to 6 ft (1.8 m).

35-2.02(e) Horizontal Curve Adjustment

The clear zone values in Figure 35-2A assume a tangent alignment. Horizontal curves may increase the angle of departure from the roadway and thus increase the distance the vehicle will need to recover. The designer should consider adjusting the tangent values to provide wider clear zones on the outside of horizontal curves on high speed roadways with significant traffic volumes where there is a significant crash potential, and the increased clear zones are cost effective and do not require additional right-of-way. Where the Horizontal Curve Adjustment is considered, see Section 38-3 of the *BDE Manual* for the adjustment factor to be used.

35-2.02(f) Curbed Sections

The values in Figure 35-2A apply to uncurbed sections of highway. Where curbs are present, the following will apply:

1. Urban/Suburban Facilities. A minimum horizontal, obstruction-free clearance of 1.5 ft (450 mm) should be provided as measured from the gutter line of the curb. This applies to both barrier and mountable curbs, except that M2 (M5) curb will be treated as an uncurbed section. Because curbs are not considered to have re-directional capabilities, it is desirable to provide obstruction-free clearances beyond the curb for a distance of at least 1.5 ft (450 mm). Hazards behind curbs preferably should be located outside of the clear zone shown for uncurbed roadways (see Figure 35-2A).

As further discussed in Section 35-3, general IDOT policy is that roadside barriers are typically not warranted to shield hazards outside of the minimum required clear zone. This also applies to hazards outside of the obstruction-free area behind curbs. However, special conditions may indicate the need for a barrier where obstacles are present outside of the obstruction-free zone.

2. Rural Facilities. For specific field conditions, it may be acceptable to use mountable curbs on rural facilities; see Chapter 31. However, the clear zone will be determined assuming that the facility is uncurbed (i.e., the clear zone criteria presented in this Chapter will apply to all rural facilities whether curbed or uncurbed).

35-2.02(g) Auxiliary Lanes

Auxiliary lanes are defined as any lanes beyond the basic through travel lanes that are intended for use by vehicular traffic for specific functions. These include turn lanes at intersections, truck-climbing lanes, etc. The clear zone for auxiliary lanes will be determined as follows:

1. Turn Lanes at Intersections. Where the intersection is uncurbed, clear zones will be measured from the edge of the through lane based on the design speed and traffic volumes associated with the through travel lanes (i.e., the presence of the turn lane is ignored when determining clear zones). Where the intersection is curbed, the criteria in Section 35-2.02(f) will apply (i.e., the minimum obstruction-free zone is 1.5 ft (450 mm) from the gutter line).
2. Auxiliary Lanes Adjacent to Mainline. Two independent clear zone determinations are necessary. First, the designer calculates the clear zone from the edge of the through traveled way based on the total traffic volume, including the auxiliary lane volume. Second, the designer calculates the clear zone from the edge of the auxiliary lane based on the traffic volume in the auxiliary lane. The clear zone distance that extends farther will apply.

35-2.03 Front Slopes

Figure 35-2B illustrates the basic configurations for front slopes. Section 35-1 presents definitions of parallel front slopes that apply to clear zone determinations. Figure 35-2C presents schematics for these definitions, and the following discusses the clear zone application in conjunction with Figure 35-2A.

35-2.03(a) Recoverable Front Slopes

For parallel front slopes 1V:4H and flatter (Figure 35-2C(a)), the recommended clear zone distance can be determined directly from Figure 35-2A.

* * * * *

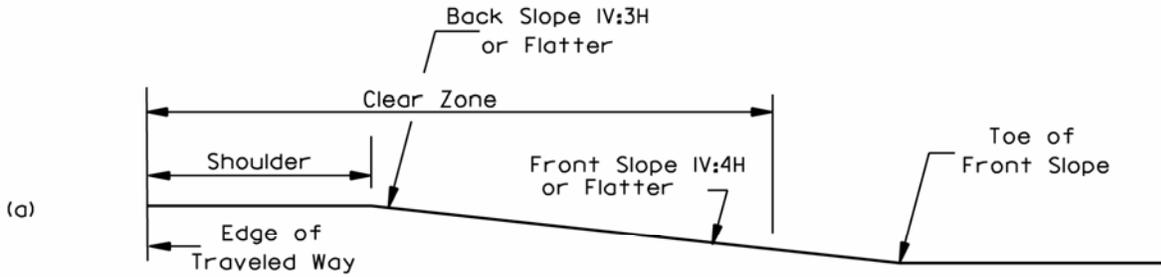
Example 35-2.03(1) (Recoverable Front Slope)

Given: Front Slope = 1V:4H
Design Speed = 50 mph
Design ADT = 3000

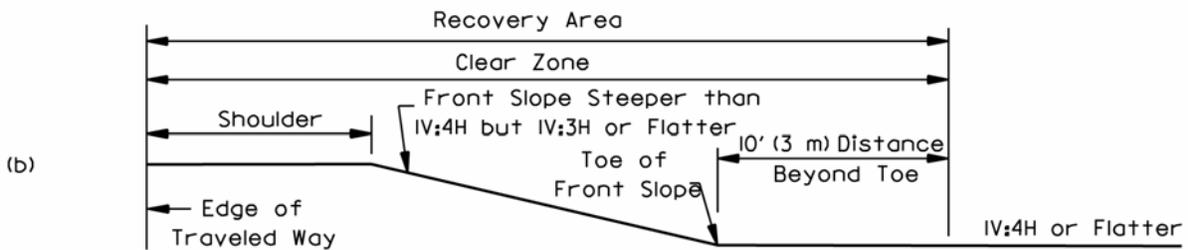
Problem: Determine the recommended clear zone distance.

Solution: From Figure 35-2A, the clear zone distance should be 20 ft.

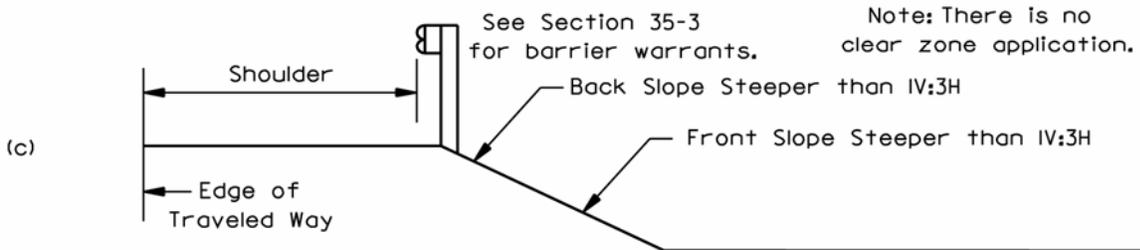
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RECOVERABLE PARALLEL SLOPE



NON-RECOVERABLE PARALLEL SLOPE



CRITICAL PARALLEL SLOPE

**CLEAR ZONE APPLICATION FOR SLOPES
(Uncurbed)**

Figure 35-2C

35-2.03(b) Non-Recoverable Front Slopes

For parallel front slopes steeper than 1V:4H but 1V:3H or flatter (Figure 35-2C(b)), the recommended clear zone includes a distance beyond the toe of the slope. Use the following procedure to determine the clear zone:

1. Determine the clear zone for a 1V:6H or flatter slope from Figure 35-2A for the applicable design speed and traffic volume.
2. If the clear zone extends beyond the break for the 1V:3H slope, provide a 10 ft (3 m) clear recovery area beyond the toe of the slope if sufficient right-of-way exists. It is not necessary to acquire additional right-of-way to provide the 10 ft (3 m) recovery area.

* * * * *

Example 35-2.03(2) (Non-Recoverable Front Slope)

Given: Front Slope = 1V:3H
Shoulder Width = 6 ft
Break in slope is at the edge of shoulder
Design Speed = 50 mph
Design ADT = 3000

Problem: Determine the recommended clear zone distance.

Solution: The procedure in Section 35-2.03(b) for non-recoverable front slopes is used as follows:

1. From Figure 35-2A, the clear zone for a front slope 1V:6H or flatter is 16 ft.
2. Because the clear zone (16 ft) exceeds the shoulder width (6 ft), the recommended clear zone distance beyond the toe of the non-recoverable slope (1V:3H) is 10 ft.

* * * * *

35-2.03(c) Critical Front Slope

A critical front slope is one on which a vehicle is likely to overturn. Front slopes steeper than 1V:3H are critical (Figure 35-2C(c)). If a front slope steeper than 1V:3H begins closer to the through traveled way than the suggested clear-zone distance for that specific roadway, a barrier might be warranted if the slope cannot readily be flattened. See Section 35-3.

35-2.04 Back Slopes

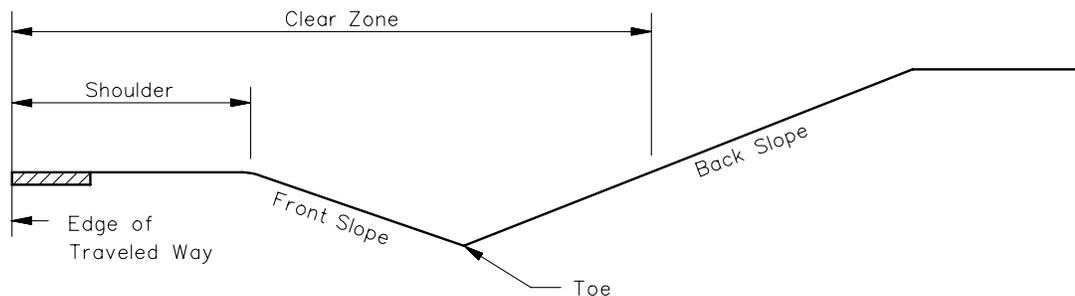
For back slopes without the presence of a roadside ditch (Figure 35-2C), the recommended clear zone distance for back slopes 1V:3H or flatter can be determined directly from Figure 35-2A. Back slopes steeper than 1V:3H are critical and Section 35-2.03(c) should be used.

Example 35-2.03(1) (Back Slopes)

Given: Back Slope = 1V:3H
No Roadside Ditch
Design Speed = 50 mph
Design ADT = 3000

Problem: Determine the recommended clear zone distance.

Solution: From Figure 35-2A, the clear zone distance should be 12 ft.



CLEAR ZONE APPLICATION FOR ROADSIDE DITCHES

Figure 35-2D

35-2.05 Roadside Ditches

Ditch sections as illustrated in Figure 35-2D are typically constructed in roadside cut sections without curbs. The applicable clear zone across a ditch section will depend upon the front slope, the type of ditch, the horizontal location of the toe of the back slope, and various highway factors. The designer will use the following procedure to determine the recommended clear zone distance:

1. Check Front Slope. Use Figure 35-2A to determine the clear zone based on the front slope if the front slope is 1V:4H or flatter. For slopes steeper than 1V:4H but 1V:3H or flatter, the clear zone is beyond the toe of the front slope.
2. Check Location of the Toe of Back Slope. Based on the distance from Step 1, determine if the toe of the back slope is within the clear zone. The toe of back slope is defined as the point at which the ditch ends and the (uniform) back slope begins. If the toe is at or beyond the clear zone, then the designer usually need only consider roadside hazards within the clear zone. If the toe is within the clear zone, Step 3 will apply to ditch sections in earth cuts.
3. Determine Clear Zone on Back Slope (Earth Cuts). If the toe of the back slope is within the clear zone distance from Step 1 above, a clear zone should be provided on the back slope. This clear zone will be the lesser of the following distances beyond the toe of the backslope:
 - 5 ft (1.5 m) beyond the toe of the back slope, or
 - the clear zone distance from Figure 35-2A measured from the edge of the traveled lane.
4. Clear Zones (Rock Cuts). In rock cuts with steep back slopes, no clear zone is required beyond the toe of back slope. However, the rock cut should be relatively smooth to minimize the hazards of vehicular snagging. If the face of the rock is rough or rock debris is present, a barrier may be warranted.

* * * * *

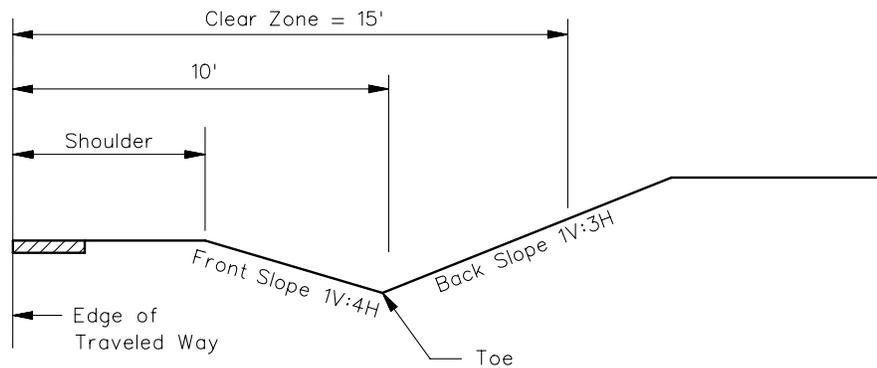
Example 35-2.05(1) (Ditch Section)

Given: Design ADT = 3000
V = 50 mph
Front Slope = 1V:4H
Ditch Width = 0 ft
Back Slope = 1V:3H
Toe of back slope is 10 ft from edge of traveled way.
See Figure 35-2E.

Problem: Determine the clear zone application across the ditch section.

Solution: Using the procedure in Section 35-2.05:

1. Check Front Slope. Figure 35-2A yields a clear zone of 20 ft for a 1V:4H front slope.
2. Check Location of the Toe of Back Slope. The toe of back slope is within the clear zone. Therefore, Step 3 applies.



**CLEAR ZONE AT DITCH SECTIONS
(Example 35-2.05(1))**

Figure 35-2E

3. Determine Clear Zone on Back Slope (Earth Cuts). Providing a clear zone for a distance 5 ft up the 1V:3H back slope yields a clear zone 15 ft from the edge of the traveled way. This is less than the 20 ft clear zone required for the front slope. Therefore, the 15 ft clear zone applies.

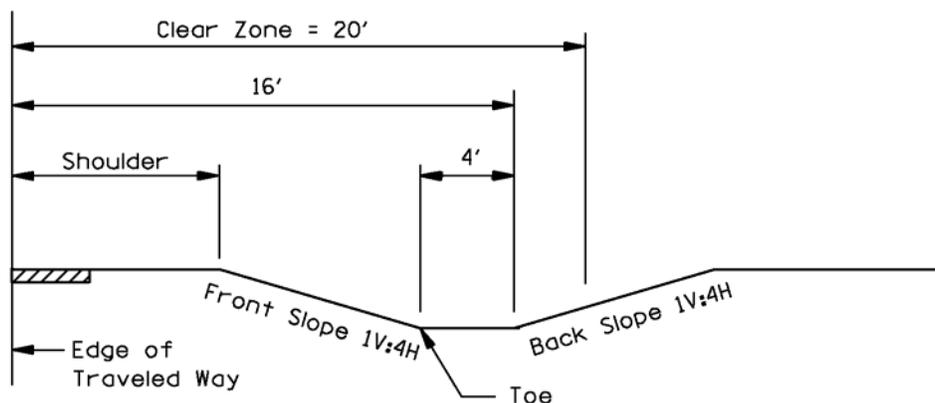
Example 35-2.05(2) (Ditch Section)

Given: Design ADT = 3000
V = 50 mph
Front Slope = 1V:4H
Ditch Width = 4 ft
Back Slope = 1V:4H
Toe of back slope is 16 ft from edge of traveled way.
See Figure 35-2F.

Problem: Determine the clear zone application across the ditch section.

Solution: Using the procedure in Section 35-2.05:

1. Check Front Slope. Figure 35-2A yields a clear zone of 20 ft for a 1V:4H front slope.



**CLEAR ZONE AT DITCH SECTIONS
(Example 35-2.05(2))**

Figure 35-2F

2. Check Location of the Toe of Back Slope. The toe of back slope is within the clear zone. Therefore, step #3 applies.
3. Determine Clear Zone on Back Slope (Earth Cuts). Providing a clear zone for a distance 5 ft up the 1V:4H back slope yields a clear zone of 21 ft from the edge of the travel way. This is more than the 20 ft clear zone required for the front slope. Therefore, the 20 ft clear zone applies.

BUREAU OF LOCAL ROADS & STREETS
ROADSIDE SAFETY

| 35-2(14)

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35-3 TREATMENT OF ROADSIDE HAZARDS

35-3.01 Examples of Roadside Hazards

Examples of roadside hazards include:

- non-breakaway sign supports, non-breakaway luminaire supports, traffic signal poles, and railroad signal poles;
- concrete footings, etc., extending more than 4 in (100 mm) above the ground;
- bridge piers and abutments at underpasses and bridge parapet ends;
- culverts and headwalls;
- trees with diameters greater than 4 in (100 mm) (at maturity);
- rough rock cuts;
- large boulders;
- critical parallel slopes (i.e., embankments);
- streams or permanent bodies of water (where the normal depth of water \geq 2 ft (600 mm));
- non-traversable ditches;
- utility poles or towers;
- drainage appurtenances; and
- steep transverse slopes.

35-3.02 Range of Treatments

If a roadside hazard is within the clear zone, the designer should select the treatment which is judged to be the most practical and cost-effective for the site conditions. The range of treatments include:

- eliminate the hazard (flatten embankment, etc.);
- relocate the hazard;
- where applicable, make the hazard breakaway (e.g., sign posts, luminaire supports);
- shield the hazard with a roadside barrier;
- delineate the hazard; or
- do nothing.

35-3.03 Methodologies

35-3.03(a) General

The goal of any roadway project should be to eliminate all roadside hazards within the clear zone. When the hazard cannot be eliminated, efforts should be made to provide a treatment to minimize the impact of the hazard to the motorist or to provide a barrier to protect the motorist from the hazard. Whether objectively or subjectively, the decision will be based upon the traffic volumes, roadway geometry, proximity of the hazard to the traveled way, nature of the hazard, installation costs and, where applicable, crash experience. The following briefly discusses the decision-making methods for the treatment of roadside hazards.

35-3.03(b) BLRS Policy

For specific applications, the BLRS has adopted policies on the treatment of roadside hazards including the placement of roadside barriers or, in some cases, elimination of the requirement for a barrier.

For roads functionally classified as local with design ADT ≤ 400 , it is not necessary to install a roadside barrier even if it is not practical or cost effective to remove a roadside hazard from the clear zone. However, all hazards must be removed from the shoulder and protection must be provided at bridge rails in accordance with Section 35-3.08.

Roadside barriers also do not need to be provided on urban streets functionally classified as local. However, roadside hazards need to be removed from the shoulder or for a distance of 1.5 ft (450 mm) from the gutter line of the curb where provided at the edge of pavement.

35-3.03(c) Cost-Effective Method

Where practical, the designer should use an approved cost-effective methodology to analyze site-specific alternative safety treatments of a roadside hazard. This will provide an objective means to analyze the many factors that impact roadside safety, and will in theory allow the local agency to allocate its resources to maximize the safety benefit to the traveling public. It will also promote uniformity of decision-making for roadside safety throughout the local agency. IDOT generally uses the cost-effective methodology Roadside Safety Analysis Program (RSAP) presented in Appendix A of the AASHTO *Roadside Design Guide*.

35-3.03(d) Engineering Judgment Method

Based on engineering judgment, the designer should analyze the site to determine if the hazard can be eliminated or properly treated. By a "relative severity" assessment, the designer decides which is the greater hazard, the roadside barrier or the roadside hazard. Next, the designer subjectively evaluates the site-specific parameters (e.g., traffic volumes, design speed, location

of hazard, barrier installation costs) to determine if a barrier installation is a reasonable and practical solution. If yes, a barrier should be installed; if not, the do-nothing alternative is selected. For example, it would probably not be practical to install a barrier to shield an isolated point obstacle (e.g., a large power pole) located near the edge of the clear zone. The designer must realize that a barrier is also a hazard and, if a clear decision cannot be reached, the general rule of “when in doubt, leave it out” should apply.

It is acceptable to use engineering judgment to determine if a roadside barrier should be installed under one of the following conditions:

1. If the decision is obvious for a specific site, the designer may forego the use of a cost-effectiveness method and use the designer’s judgment to install or not install a roadside barrier.
2. If extenuating circumstances exist, the designer may override BLRS policies for barrier installation or the results of a cost-effective method and not install a roadside barrier. In this case, designers must document the reasons for their decision. This documentation should include crash histories for the section of roadway, traffic volumes, posted speed, and roadway geometry, if available. Send a copy of the documentation to the district for their concurrence in the decision not to provide a barrier.

35-3.04 Embankments

A roadside barrier is not required when the roadway embankment has a parallel front slope of 1V:3H or flatter. A barrier is also not required if the ADT is under 400. However, a roadside barrier may be needed because of other hazards located on the slope. A barrier will be provided when the fill heights exceed the values in Figure 35-3A for slopes steeper than 1V:3H.

Embankment Slope	Design ADT 400-1500	Design ADT Over 1500
1V:2H	10 ft (3 m)	6 ft (1.8 m)
1V:2.5H	20 ft (6 m)	9 ft (2.7 m)

EMBANKMENT FILL HEIGHTS REQUIRING ROADSIDE BARRIERS

Figure 35-3A

35-3.05 Roadside Ditches

Roadside barriers are not required solely to shield roadside ditches. However, barriers may be warranted to shield other hazards within the clear zone.

35-3.06 Transverse Slopes

Where a road or street intersects a side road or an entrance, a slope transverse to the road will be present. See Figure 35-3B. In general, transverse slopes should be as flat as practical. Figure 35-3C presents BLRS criteria for transverse slopes within the clear zone based on the type of facility and design speed. Figure 35-3C presents both desirable (i.e., flatter) and acceptable (i.e., steeper) transverse slopes. The application at a specific site will depend upon an evaluation of many factors, including:

- height of transverse embankment,
- traffic volumes,
- design speed,
- presence of culverts and practicality of treating the culvert end (see Section 35-3.07),
- construction costs, and
- right-of-way and environmental impacts.

Although the 1V:10H or 1V:6H transverse slopes may be desirable, its practicality may be limited because of drainage structures, width restrictions, and maintenance problems associated with the long tapered ends of pipes or culverts.

If the “acceptable” criteria in Figure 35-3C cannot be met, the designer should consider the installation of a roadside barrier.

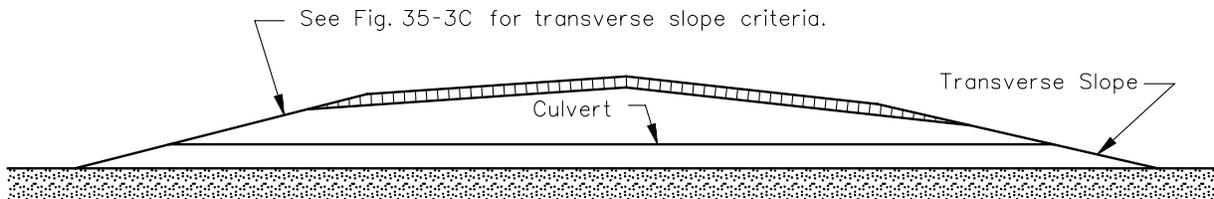
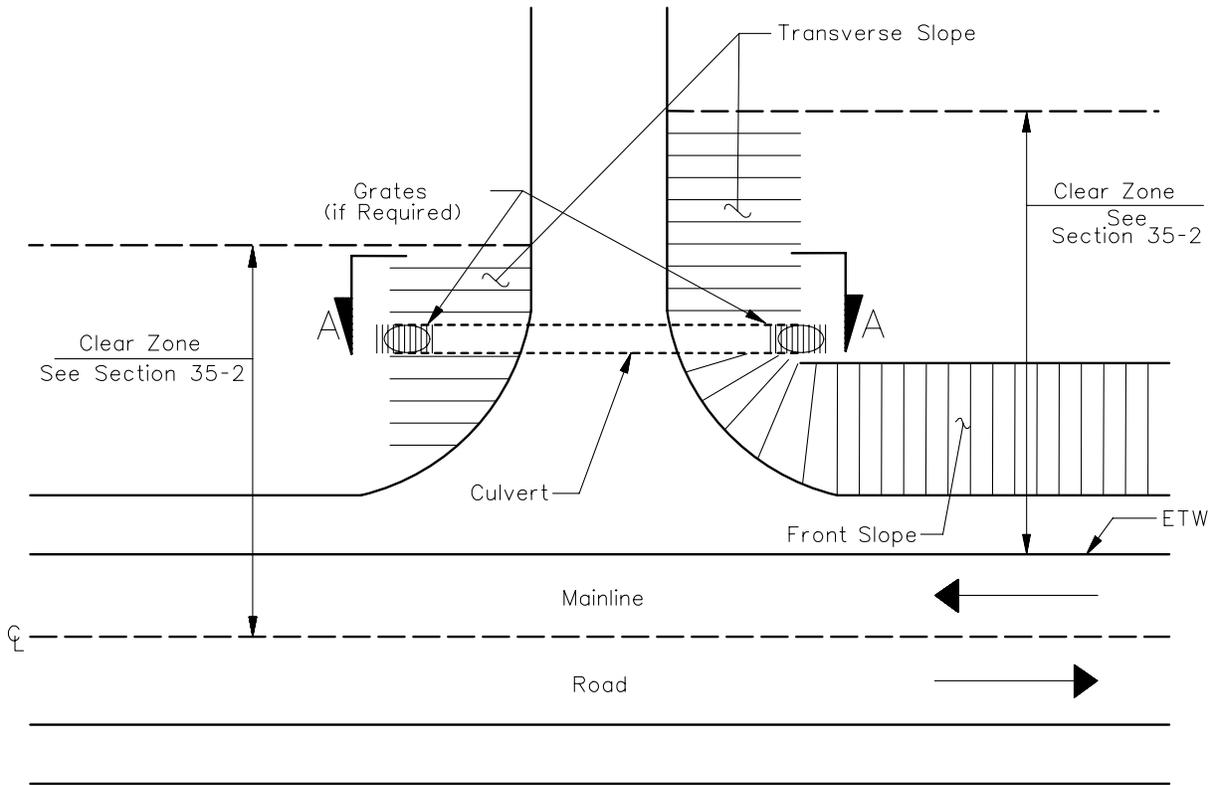
35-3.07 Roadside Drainage Features

Effective drainage is one of the most critical elements in the design of a highway or street. However, drainage features should be designed and constructed considering their consequences to run-off-the-road vehicles. Ditches, curbs, culverts, and drop inlets are common drainage system elements that should be designed, constructed, and maintained considering both hydraulic efficiency and roadside safety.

In general, the following options, listed in order of preference, are applicable to all drainage features:

1. Design or modify drainage structures so that they are traversable or present a minimal hazard to an errant vehicle.
2. If a major drainage feature cannot effectively be redesigned or relocated, shielding by a roadside barrier should be considered.

The *Illinois Drainage Manual* discusses IDOT’s practices for hydrology and hydraulics and for the physical design of roadside drainage structures. Sections 35-3.07(b) and (c) discuss the safety design of these structures.



SECTION A-A

TRANSVERSE SLOPES ON A TWO-LANE, TWO-WAY ROADWAY

Figure 35-3B

Type of Facility	Desirable (V:H)	Acceptable (V:H)
Rural Facilities ($V \geq 50$ mph (80 km/h))	1:10	1:4
Urban Facilities ($V \geq 50$ mph (80 km/h))	1:6	1:4
Urban and Rural Low-Speed Facilities ($V \leq 45$ mph (70 km/h))	1:4	See Note

Note: A specific maximum acceptable transverse slope has not been included for low-speed facilities. This will be determined on a case-by-case basis based on the factors listed in Section 35-3.06.

RECOMMENDED TRANSVERSE SLOPES

Figure 35-3C

35-3.07(a) Curbs

Curbs are typically used to control drainage or to protect erodible soils. Chapter 31 and the *IDOT Highway Standards* provide detailed information on the warrants and types of curbs used by IDOT. Curbs may pose a roadside hazard because of their potential to adversely affect a run-off-the-road vehicle. When evaluating curbs relative to roadside safety, the designer should consider the following:

1. Design Speed. Facilities with a design speed greater than 45 mph (70 km/h) should be designed without curbs. However, if necessary, a mountable curb may be used at the edge of the shoulder. Facilities with a design speed of 45 mph (70 km/h) or less may use either a mountable or barrier curb.
2. Roadside Barriers. The use of curbs with a roadside barrier is discouraged and, specifically, curbs higher than 6 in (150 mm) should not be used with a barrier. It is acceptable to use the 2 in (50 mm) high M2 (M5) curb in conjunction with a roadside barrier. See Section 35-4.04.
3. Redirection. Curbs offer no safety benefits on high-speed roadways and should not be used to redirect errant vehicles.

35-3.07(b) Cross Drainage Structures

Cross drainage structures convey water beneath the roadway. However, if not properly designed, they may present a hazard to run-off-the-road vehicles. The available roadside safety treatments for cross culverts are:

- extend the culvert opening beyond the clear zone,
- provide a traversable end section,
- shield the culvert with a roadside barrier, or
- do nothing.

The following summarizes BLRS practices on the roadside safety treatment of cross drainage structures within the clear zone that are not shielded with a roadside barrier:

1. Pipe Diameter \leq 36 in (915 mm). For these pipe sizes, provide a pipe end treatment that matches the parallel slope.
2. Pipe Diameter $>$ 36 in (915 mm) to \leq 54 in (1400 mm). For these pipe sizes, provide a precast pipe end section with grate.
3. Pipe Diameter $>$ 54 in (1400 mm). For these pipe sizes, provide a special end section with a grate designed in accordance with the *AASHTO Roadside Design Guide*, or provide a roadside barrier.

For pipe arches and elliptical pipes, the pipe rise should be used, rather than the equivalent round diameter, to determine the safety treatment. For box culverts, special designs for the end treatment will be required depending on the rise and span of the culvert. The type of treatment should be similar to that discussed above for pipe culverts.

When it is not feasible to provide grates for a culvert terminating within the clear zone, consider extending the culvert beyond the clear zone. It may be possible to flatten the front slopes for a distance through the culvert area to decrease the required clear zone. In any case, the culvert must be extended as much as feasible within right-of-way and drainage constraints, or a roadside barrier must be provided. The end of any culvert terminating within the clear zone should be delineated. Each culvert location should be analyzed individually, and the treatment selected should be based on cost effectiveness, as well as right-of-way and environmental constraints and maintenance issues.

35-3.07(c) Parallel Drainage Structures

Parallel drainage culverts are those that are oriented parallel to the main flow of traffic. They are typically used under intersecting side roads, driveways, and field entrances. Because an errant vehicle will impact the structure at approximately 90°, parallel drainage structures represent a potential hazard. Therefore, the designer must coordinate their design with that of the surrounding transverse slope (Section 35-3.06) to minimize the hazard.

The following summarizes BLRS practices on the roadside safety treatment of parallel drainage structures within the clear zone that are not shielded with a roadside barrier:

1. Pipe Diameter \leq 24 in (450 mm). For these pipe sizes, a projecting end is acceptable.
2. Pipe Diameter $>$ 24 in (600 mm). For these pipe sizes, the safety treatment will depend upon the ADT and pipe diameter. See Figure 35-3D for general guidelines; the final treatment will be based on the site-specific conditions. Figure 35-3E presents a schematic of a design for grate protection of a parallel drainage structure. The bottom bar or pipe of the grate should be 4 to 8 inches (100 mm to 200 mm) above the culvert invert. This will reduce wheel snagging if an errant vehicle impacts the pipe end. Grates are only required on the approach end to the nearest lane of traffic. Grates are desirable on the departure end and near or within curves.
3. Pipe Arches and Elliptical Pipes. The pipe rise should be used rather than the equivalent round diameter to determine the appropriate end treatment in accordance with the above practices.
4. Box Culverts. The distance from the flow line of the culvert to the top of the headwall will be used in place of the pipe diameter to determine the appropriate treatment from Figure 35-3D. If the span of the box culvert is $>$ 5 ft (1.5 m), a special end treatment must be developed regardless of the height.

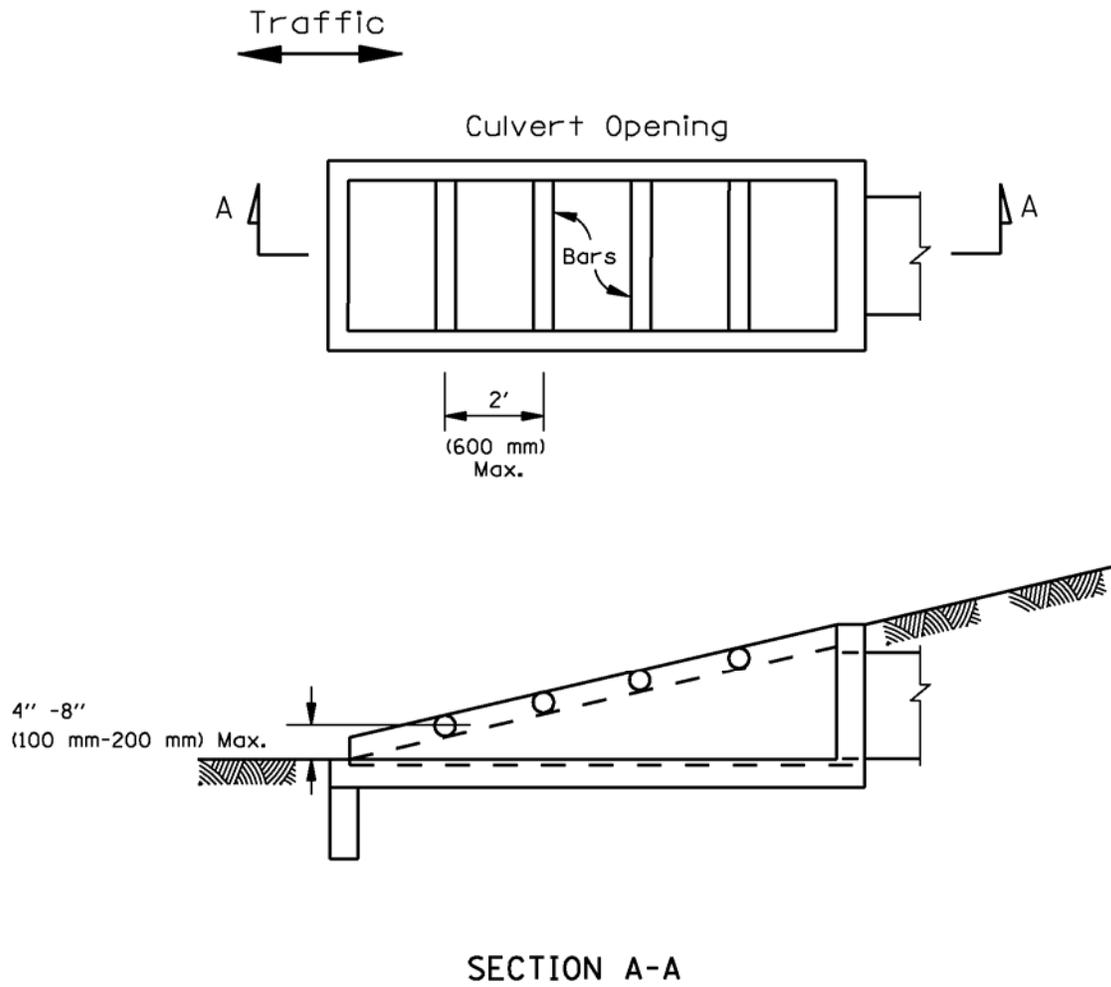
ADT	Pipe Size	Treatment
ADT \leq 1000	$>$ 24 in (600 mm)	End of pipe should match surrounding transverse slope; pipe opening can remain.
1000 $<$ ADT \leq 13,000	30 in (750 mm)	End of pipe should match surrounding transverse slope; pipe opening can remain.
	\geq 36 in (915 mm)	End of pipe should match surrounding transverse slope; provide end section with grates. See Note (1)
ADT $>$ 13,000	\geq 30 in (750 mm)	End of pipe should match surrounding transverse slope; provide end section with grates.

Notes:

- (1) Grates may be omitted on tangent sections in locations where debris clogging requires substantial maintenance attention to retain the required waterway opening. Justification shall be documented and retained in the project file.

SAFETY TREATMENT FOR PARALLEL DRAINAGE STRUCTURES

Figure 35-3D



GRATE PROTECTION FOR PARALLEL DRAINAGE STRUCTURES

Figure 35-3E

5. Eliminate Exposed Ends. Parallel drainage structures may be closely spaced because of frequent driveways and intersecting roads. In these locations, it may be practical to convert the open ditch into a closed drainage system and backfill the areas between adjacent driveways. This treatment will eliminate the ditch section and the transverse embankments with pipe inlets and outlets. However, care must be used to avoid creation of open frontage that would allow uncontrolled access.
6. Barrier. When the structure is too large to be safety treated effectively, it may be necessary to shield the obstacle with a traffic barrier.

35-3.08 Bridge Rails

An approaching roadside barrier (or approved terminal section) is required for all bridge rail ends closest to the flow of traffic, unless at least one of the following applies:

- The posted speed limit is less than 25 mph on an urban curbed section.
- The ADT is less than 150; the bridge is approach roadway width; and the bridge is on tangent alignment.
- A township or road district bridge is wider than the approaching roadway and the bridge is on tangent alignment.

The above exceptions do not apply if a design speed is chosen which exceeds the design speed shown in Figures 32.2A, 32-2A, 33-3A, or 33-3B.

For bridge rail ends on the opposite side (i.e., departure ends of two-way roadways), the need for shielding the end of the bridge will be determined by whether or not the bridge end is within the clear zone (as measured from the centerline of the traveled way) for the opposing flow of traffic.

35-3.09 Other Hazards

35-3.09(a) Roadside Sign Supports

Roadside sign supports located within the clear zone should be made breakaway. See Chapter 39 for more information.

35-3.09(b) Mailbox Supports

Mailbox supports are discussed in Chapter 41.

35-3.09(c) Utility Poles

Every effort should be made to eliminate or relocate all utility poles within the clear zone. When poles cannot be moved outside of the clear zone, consider shielding selected poles.

35-3.09(d) Trees

Trees with an expected mature size greater than 4 in (100 mm) are considered fixed objects. Consider the removal of an individual tree where it is determined that the tree is both an obstruction and to be in a location where they are likely to be hit. Because tree removal can be expensive and often has adverse environmental impacts, it is important that this countermeasure be used only when it is an effective solution. When a tree is in a vulnerable location and cannot be moved, consider a traffic barrier to shield the tree. However, a roadside barrier should only be used when the severity of impacting the tree is greater than impacting the barrier.

35-4 ROADSIDE BARRIERS

35-4.01 Types

The following Sections briefly describe allowable types and usages of roadside barriers commonly used on local agency projects. Barrier terminal and end sections used in conjunction with these barriers are also described. The *IDOT Highway Standards* presents the details on each system. Chapter 35 does not discuss median barriers and impact attenuators because of their infrequent use on local agency projects. They are discussed in Chapter 38 of the *BDE Manual*.

35-4.01(a) **Steel Plate Beam Guardrail**

The steel plate beam guardrail, commonly known as the “W”-beam system, will normally be used by a local agency for a roadside barrier. The steel plate beam guardrail with strong posts is a semi-rigid system. A major objective of the strong post system is to prevent a vehicle from “snagging” on the posts. This is achieved by using blockouts to offset the posts from the longitudinal beam and by establishing 6’-3” (1905 mm) as the maximum allowable post spacing.

IDOT has developed several variations of the steel plate beam guardrail for various applications:

1. Type A. The Type A guardrail uses the typical 6’-3” (1905 mm) post spacing, and is the most commonly used barrier system in Illinois. Type A guardrail has a deflection distance of 3 ft (920 mm).
2. Type B. The Type B guardrail uses a post spacing of 3’-1½” (953 mm) and has a deflection distance of 2 ft (600 mm). It is used where the deflection distance for the Type A system is unavailable. Type B guardrail may be installed when the distance from the back of guardrail posts to the embankment hinge point is 0 to 2 ft (0 to 0.6 m). The reduction in support from the embankment will increase the potential deflection of the system, and allowance for 3 ft (920 mm) deflection should be made when this design is used.
3. Type C. The Type C guardrail is a single rail that is attached directly to rigid objects where a 2 ft (600 mm) deflection distance cannot be provided and where it is necessary or desirable to carry the guardrail across the face of a structure. Limited applications of this type are expected. Normally, guardrail will be attached to concrete structures (e.g., piers) in a manner similar to that described in Section 35-4.02(b) for attachments at bridges.
4. Attached to Headwalls. IDOT has developed an adaptation of the steel plate beam guardrail specifically for attachment to concrete headwalls near the edge of the shoulder.

The height of all guardrail should be 27 in (685 mm) from the finished ground line to the top of the guardrail.

35-4.01(b) Cable Road Guard

Cable road guard is only used where the designer needs to inhibit unwanted vehicular encroachments. It should not be used as a roadside barrier.

35-4.01(c) Other Systems

Many other roadside barrier systems are available that may have application at specific sites (e.g., the thrie beam). The designer should reference the *AASHTO Roadside Design Guide* for information on these systems. IDOT must approve the use of any system not included in the *IDOT Highway Standards*.

35-4.02 Barrier Terminal Treatments

Barrier terminal sections present a potential roadside hazard for run-off-the-road vehicles; however, they are also critical to the proper structural performance of the barrier system. Therefore, the designer must carefully consider the selection and placement of the terminal end.

On NHS routes, existing safety features should at a minimum meet NCHRP 230 standards. However, it is desirable that the bridge railings, transitions, approach guardrail, and guardrail terminals meet NCHRP Report 350 criteria. Unique designs should be compared to accepted designs and will be approved on a case-by-case basis. For acceptable bridge railings and barriers, see the FHWA safety hardware website at www.fhwa.dot.gov/bridge/bridgerail/index.cfm under Bridge Railings or under Longitudinal Barriers (keyword: bridge railings). New designs shall meet NCHRP Report 350 criteria.

Transitions may be considered acceptable if the approach rail is nested (double rail element at the connection), the post spacing is reduced, and a rubrail or curb is present to minimize wheel snagging. Acceptable Report 230 transitions are identified in two FHWA Technical Advisories (1986 and 1993), and Report 350 transitions are on the FHWA website at www.fhwa.dot.gov/bridge/bridgerail/index.cfm under Longitudinal Barriers (keyword: bridge rail transitions). Unacceptable guardrail terminals on the NHS are blunt ends, turned-down ends and breakaway cable terminals (BCTs). Others meeting NCHRP Report 230 or 350 criteria should be acceptable.

For non - NHS routes, at a minimum bridge rail should be crashworthy, the approach rail should be adequately connected to the bridge rail, and the rail post spacing should be reduced to limit deflection. Nested railing is preferred, but not required. Terminals should be crashworthy with no blunt ends. Crashworthy terminals are preferred, and existing turn-downed ends and BCTs should be eliminated when practical. However, cost-effectiveness of replacement should be considered on low volume, low speed roads.

The *IDOT Highway Standards* present the design details for several end treatments allowed by the Central BLRS. Other proprietary terminal treatments are allowed under various specifications. The following Sections briefly describe each system and, where applicable, discuss typical uses of the system.

35-4.02(a) Guardrail Ends

The following terminals are applicable to the steel plate beam guardrail:

1. Type 1. This terminal section may be used on local agency highways, except locations on the National Highway System or locations where the traffic volumes exceed 6000 ADT and design speeds are in excess of 50 mph (80 km/h). The approach end of the terminal has a 4 ft (1.2 m) flare. The shoulder in the area of the terminal must be widened. See Standard BLR 23 for details.
2. Type 1, Special (Flared). This terminal section is intended for use with steel plate beam guardrail. All approved terminals meet NCHRP 350 criteria. The designer should choose a flared terminal where practical, if no additional right-of-way must be purchased for installation. The leading portion of the terminal is normally a gating design. Because of the gating function, the area behind and beyond the terminal should be relatively free of significant fixed objects. See the *IDOT Highway Standards* for a detail of the shoulder widening at the terminal.
3. Type 1, Special (Tangent). This is a terminal section intended for use with steel plate beam guardrail. All approved terminals meet NCHRP 350 criteria. Tangent terminals should be chosen in areas where the cross section or drainage structure would require additional right-of-way to accommodate the Type 1 Special (Flared) terminal. The leading portion of the terminal is normally a gating design. Because of the gating function, the area behind and beyond the terminal should be relatively free of significant fixed objects. See the *IDOT Highway Standards* for a detail of the shoulder widening at the terminal.
4. Type 1B. This terminal should be used at the approaching or departing (where practical) end of roadside barriers where appropriate cut or artificial mound conditions exist or can reasonably be constructed.
5. Type 2. This is an unflared terminal with a cable anchor. The Type 2 terminal should be used on the departing end of steel plate beam guardrail where end-on impacts are not a consideration.

35-4.02(b) Bridge Rail Connections

Roadside barriers are often terminated with a transition into a bridge rail. The connector terminal sections should be compatible with the bridge rail. Railing for locations on NHS routes

must meet the requirements of NCHRP 230 or 350 as discussed in Section 35-4.02. For other locations, selection should be based on consideration of cost and safety. Reference information on bridge railing is contained in the IDOT Bridge Manual, Section 3.2.14. The following terminals are used as bridge rail connections, and do not comply with NCHRP 350 unless noted herein:

1. Type 5. This connector terminal should be used to connect steel plate beam guardrail to the concrete bridge parapet or end post at the departing end of a new bridge, where this end is not within the clear zone of the opposing traffic.
2. Type 5A. This connector terminal is used to connect steel plate beam guardrail to a steel bridge rail at either the approach end or departing end of the bridge. For applications where compliance with NCHRP 350 is required, use Type 6A.
3. Type 5R. This connector terminal should only be used to connect steel plate beam guardrail to the concrete bridge parapet or end post at either the approach end or departing end of an existing bridge where the clear width of the bridge cannot be reduced.
4. Type 6. This connector terminal includes a transition section, special posts, blockouts, and an end shoe. It also requires the use of a curb on the approach. Use Type 6 to attach steel plate beam guardrail to the end(s) of bridges with concrete parapet. It may also be used to connect the steel plate beam guardrail to the face of the other concrete structures where the curb can be installed. Recent modifications to the design of this terminal have achieved compliance with NCHRP 350.
5. Type 6A. This connector terminal is similar to the Type 6, except it is used for attachment of steel plate beam guardrail to either curb-mounted steel bridge rail or to side-mounted steel bridge rail (two element rail systems approved under NCHRP 350). When used with a bridge rail system that includes a curb, a curb must be used with the Type 6A, similar to the Type 6. If there is no curb used on the bridge, do not use a curb with the Type 6A.
6. Type 6B. This connector terminal is used when connecting steel plate beam guardrail to the face of a concrete structure (e.g., a pier) and where the installation of a curb is either not possible or desirable. It requires blocking out the thrie beam rail of the transition by 8 in (200 mm) at the connection point. The designer must carefully weigh the relative merits of this potential loss of horizontal clearance against the complications of adding a curb when selecting between the Type 6B terminal and the Type 6 for attachment to a structure.
7. Type 8. This connector terminal includes a transition section, special posts, blockouts, and a turned-down connection to the top of the safety curb. Only use Type 8 on existing installations.

8. Type 10. This connector terminal should be used to connect steel plate beam guardrail to the departing end of existing bridges where this end is not within the clear zone of the opposing traffic.

35-4.03 Lateral Placement

Roadside barriers should be placed as far as practical from the edge of traveled way. This placement provides an errant motorist the best chance of regaining control of the vehicle without impacting the barrier. It also provides better sight distance, particularly at nearby intersections. The following factors should be considered when determining barrier lateral placement:

1. Shoulder. Typically, the roadside barrier is located at the edge of the shoulder such that the face of the barrier is flush with the shoulder hinge point.
2. Deflection. The dynamic deflection distance of the barrier, as measured from the back of the post, should not be violated. Section 35-4.01(a) provides the deflection distances for the types of roadside barriers typically used.
3. Shoulder Stabilization. Where a barrier is placed on high fills or highly erodible soils, it may be desirable to provide shoulder stabilization in accordance with the *IDOT Highway Standards*. IDOT's District Geotechnical Engineer should be consulted for guidance.
4. Slopes. Where a barrier is placed in front of slopes, the design should provide a minimum 2 ft (600 mm) width behind the guardrail to the slope break. This provides for post support, reduces erosion, and reduces maintenance needs. If a minimum 2 ft (600 mm) width cannot be provided, Type B guardrail may be used. See Section 35-4.01(a).
5. Shy Distance. Drivers tend to "shy" away from continuous longitudinal obstacles along the roadside (e.g., guardrail). Therefore, the lateral barrier offset should desirably be based on the criteria in Figure 35-4A.

US Customary		Metric	
Design Speed (mph)	Shy Line Offset (ft)	Design Speed (km/h)	Shy Line Offset (m)
60	7.9	100	2.4
55	7.2	90	2.2
50	6.6	80	2.0
45	5.6	70	1.7
40	4.6	60	1.4
35	4.1	50	1.1
30	3.6		

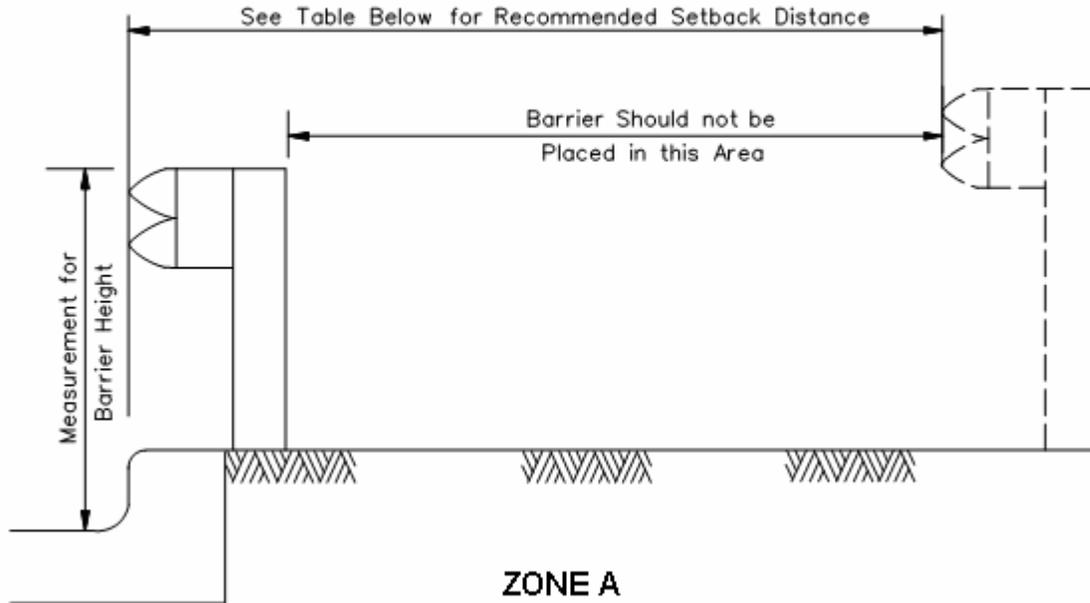
SUGGESTED SHY LINE OFFSET

Figure 35-4A

35-4.04 Placement Behind Curbs

If practical, roadside barriers should not be placed in conjunction with either barrier or mountable curbs. Where this is necessary, the following will apply (see Figure 35-4B):

1. Roadside Barrier/Curb Orientation. Ideally, the face of the barrier should be in line with the face of the curb (i.e., at the gutter line). However, this is not always practical. At a maximum, the barrier face should be no more than 1 ft (300 mm) from the face of curb. The height of the guardrail must be measured from the pavement or paved shoulder surface. In addition, the designer should consider reducing the curb height to 4 in (100 mm) and stiffening the rail to reduce vaulting potential. Rail stiffening may be accomplished by using Type B guardrail, by using a double nested Type A rail, or by bolting a W-beam to the back of the posts.
2. Lateral Placement. Figure 35-4B presents criteria to determine proper barrier placement behind curbs. If a barrier must be located in the zone not recommended, the designer must use the M2 (M5) mountable curb for design speeds greater than 30 mph (50 km/h). The 2 in (50 mm) height will introduce little or no vehicular vaulting, and therefore will not interfere with the proper vehicular/barrier interaction. The M2 (M5) curb will extend upstream from the end of the roadside barrier by a distance determined as indicated in Figure 35-4C.



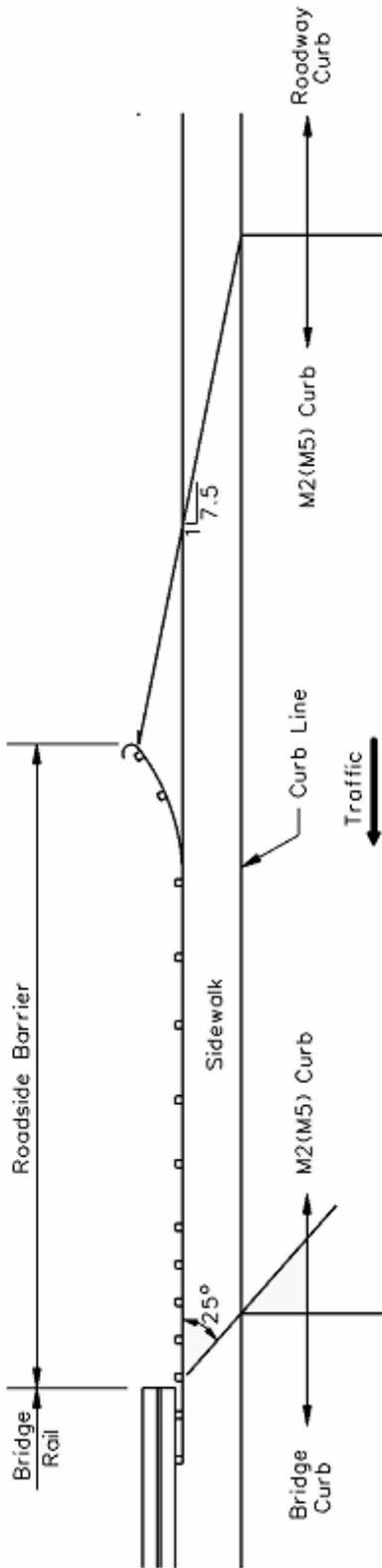
US Customary		Metric	
Design Speed (mph)	Curb-to-Barrier (Zone A) Distance* (ft)	Design Speed (km/h)	Curb-to-Barrier (Zone A) Distance* (m)
≤ 30	NA	≤ 50	NA
35 – 40	8	60	2.5
45	10	70	3.0
≥ 50	See Note (1)	≥ 80	See Note (1)

*Values in table represent distance beyond which it is acceptable to place a barrier.

- Notes:
1. For design speeds ≥ 50 mph (80 km/h), curbs should not be used with a barrier.
 2. Barrier should be flush with curb as shown. At a maximum, the barrier face may be placed up to 1 ft (300 mm) behind curb. When placed behind the face of the curb, reductions in curb height and rail stiffening should be considered.
 3. If barrier must be placed in Zone A above, use the M2 (M5) curb. See Figure 35-4K.

PLACEMENT OF BARRIER RELATIVE TO CURBS

Figure 35-4B



USE OF ROADSIDE BARRIER WITH M2 (M5) CURB

Figure 35-4C

35-4.05 Placement on Slopes

Slopes in front of a barrier should be 1V:10H or flatter. This also applies to the areas in front of the flared section of guardrail and to the area approaching the terminal ends.

35-4.06 Barrier Flare

Flaring a roadside barrier away from the roadway has two benefits:

- the necessary length of need is reduced, and
- the barrier is less likely to be impacted.

The disadvantage is that a flare will increase the vehicular angle of impact. Figure 35-4D presents suggested flare rates for roadside barriers, which are intended to balance the advantages and disadvantages of flares.

Design Speed		Flare Rate for Barrier Inside Shy Line*	Flare Rate for Barrier Beyond Shy Line*	
(mph)	(km/h)		Rigid (Concrete)	Semi-Rigid (GR)
60	100	1:26	1:18	1:14
55	90	1:24	1:16	1:12
50	80	1:21	1:14	1:11
45	70	1:18	1:12	1:10
40	60	1:16	1:10	1:8
30	50	1:13	1:8	1:7

*See Figure 35-4A for shy line distances.

SUGGESTED FLARE RATES FOR BARRIER DESIGN

Figure 35-4D

35-4.07 Length of Need

A roadside barrier must be extended a sufficient distance upstream and/or downstream from the hazard to safely protect a run-off-the-road vehicle. Otherwise, the vehicle could travel behind the barrier and impact the hazard.

Many factors combine to determine the appropriate length of need for a given roadside condition. These include:

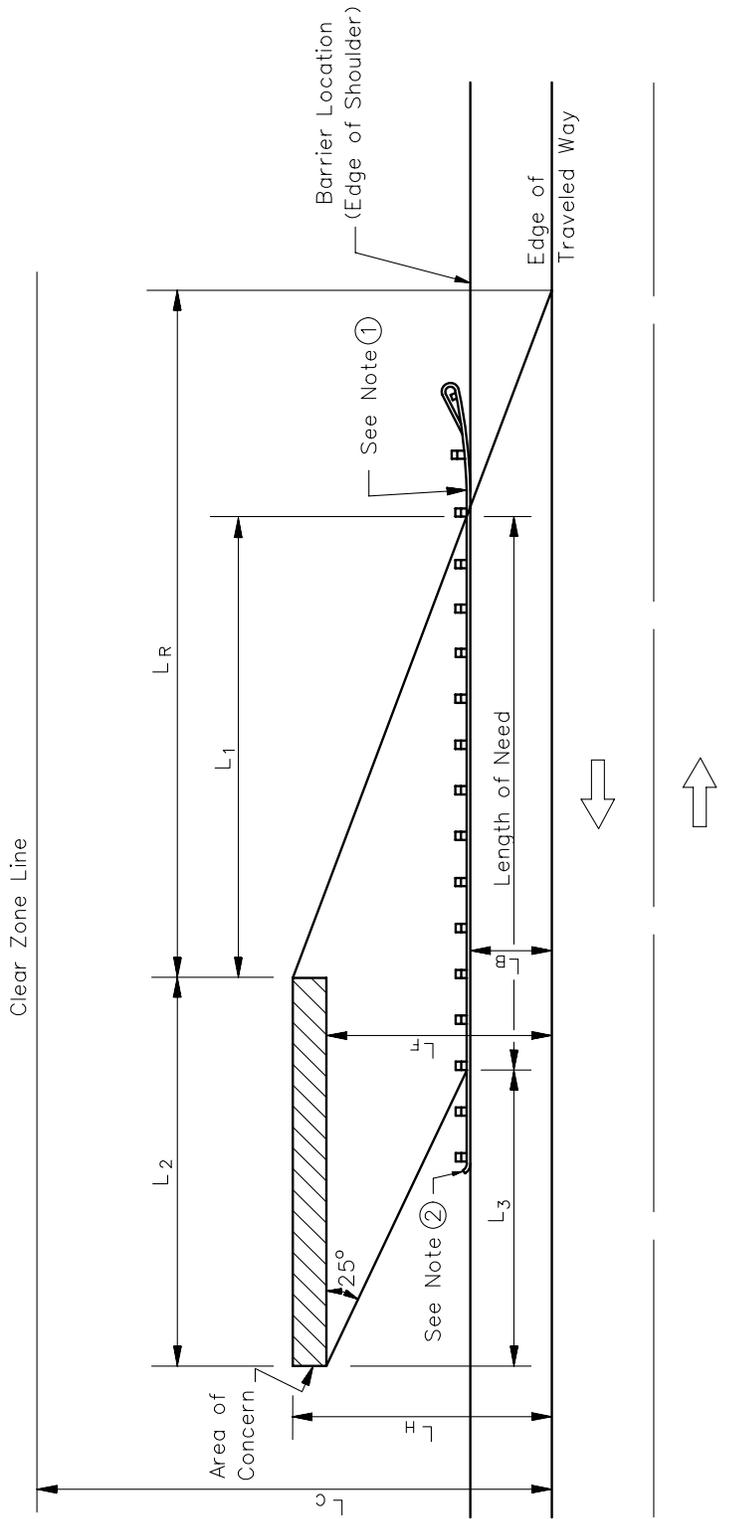
- the distance to the outside limit of the hazard (L_H) or the clear zone (L_C), whichever is less;

- the distance between the edge of traveled way and the barrier (L_B);
- the runout length (L_R), which is based on the design speed (V) and the traffic volume on the facility;
- the length of hazard (L_2), as measured parallel to the roadway;
- whether or not the barrier is on a flare (see Figure 35-4D); and
- on two-way facilities, whether or not the barrier needs to be extended to provide protection for the traffic in the opposing direction.

Figures 35-4E and 35-4F illustrate the variables that will determine the barrier length of need. Figure 35-4E applies to a two-way roadway where the hazard is not within the clear zone of the opposing direction of travel. Figure 35-4F applies to a two-way facility where the roadside hazard is within the clear zone of the opposing direction of traffic.

To determine the length of need, use the nomograph in Figure 35-4H and the following procedure:

1. Construct a horizontal line at L_B on the y-axis (the lateral distance of the barrier from the edge of traveled way). This assumes that the barrier is not flared (i.e., it is parallel to the roadway).
2. Locate L_H or L_C , whichever is less, on the y-axis.
3. Determine L_R from Figure 35-4G and locate L_R on the x-axis. If barrier protection is needed for only the approaching traffic, only use the scale marked "Edge of Traveled Way Scale." If needed for both directions of travel, locate L_R on both scales marked "Edge of Traveled Way Scale" and "Centerline Scale." See Step 7 to determine the downstream end of the barrier where the hazard does not require shielding for the opposing traffic.
4. Connect the points in Steps 2 and 3 with a straight line or two straight lines.
5. Locate the intersection(s) of the lines in Steps 1 and 4. From this point(s), draw a line vertically to the L_R Scale(s).
6. Read L_1 from the L_R Scale(s). As illustrated on Figures 35-4E and 35-4F, L_1 is measured from the lateral edge of hazard to the beginning of the end terminal (i.e., it does not include the terminal).
7. If barrier protection is only warranted for one direction of travel (Figure 35-4E), use the following procedure to determine the downstream end of the length of need:
 - a. Locate the distance (L_F) from the front of the hazard to the edge of traveled way on the y-axis.



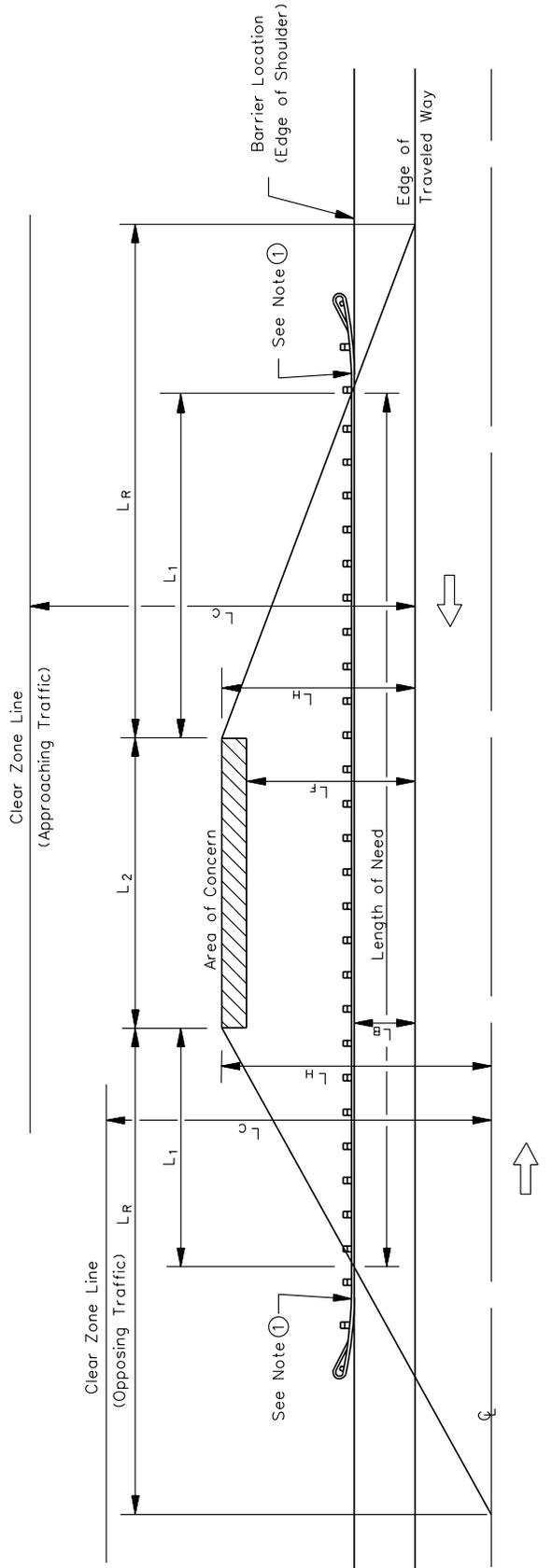
- L_B = Distance to barrier
- L_C = Clear zone
- L_H = Distance to back of hazard
- L_F = Distance to front of hazard
- L_R = Runout length (see Figure 35-4G)
- L₁ = Length needed for approach end
- L₂ = Length of hazard
- L₃ = Length to be omitted from length of need

Notes:

- ① Use appropriate crashworthy terminal; see Section 35-4.02.
- ② Use acceptable anchorage terminal; see Section 35-4.02.

BARRIER LENGTH OF NEED LAYOUT
(Hazard Not Within Clear Zone of Opposing Traffic)

Figure 35-4E



- L_B = Distance to barrier
- L_C = Clear zone
- L_H = Distance to back of hazard
- L_F = Distance to front of hazard
- L_R = Runout length (see Figure 35-4G)
- L_1 = Length needed for approach end
- L_2 = Length of hazard

Note:

- ① Use appropriate crashworthy terminal. See Section 35-4.02.

BARRIER LENGTH OF NEED LAYOUT
(Hazard Within Clear Zone of Opposing Traffic)

Figure 35-4F

Design Speed		Traffic Volume (ADT)*			
		Over 6000	2000-6000	800-2000	Under 800
		Runout Length L_R ft (m)	Runout Length L_R ft (m)	Runout Length L_R ft (m)	Runout Length L_R ft (m)
Mph	(km/h)				
60	(100)	425 (130)	400 (120)	345 (105)	330 (100)
55	(90)	360 (110)	345 (105)	315 (95)	280 (85)
50	(80)	330 (100)	300 (90)	260 (80)	245 (75)
45	(70)	260 (80)	245 (75)	215 (65)	200 (60)
40	(60)	230 (70)	200 (60)	180 (55)	165 (50)
35		200	185	165	150
30	(50)	165 (50)	165 (50)	150 (45)	130 (40)

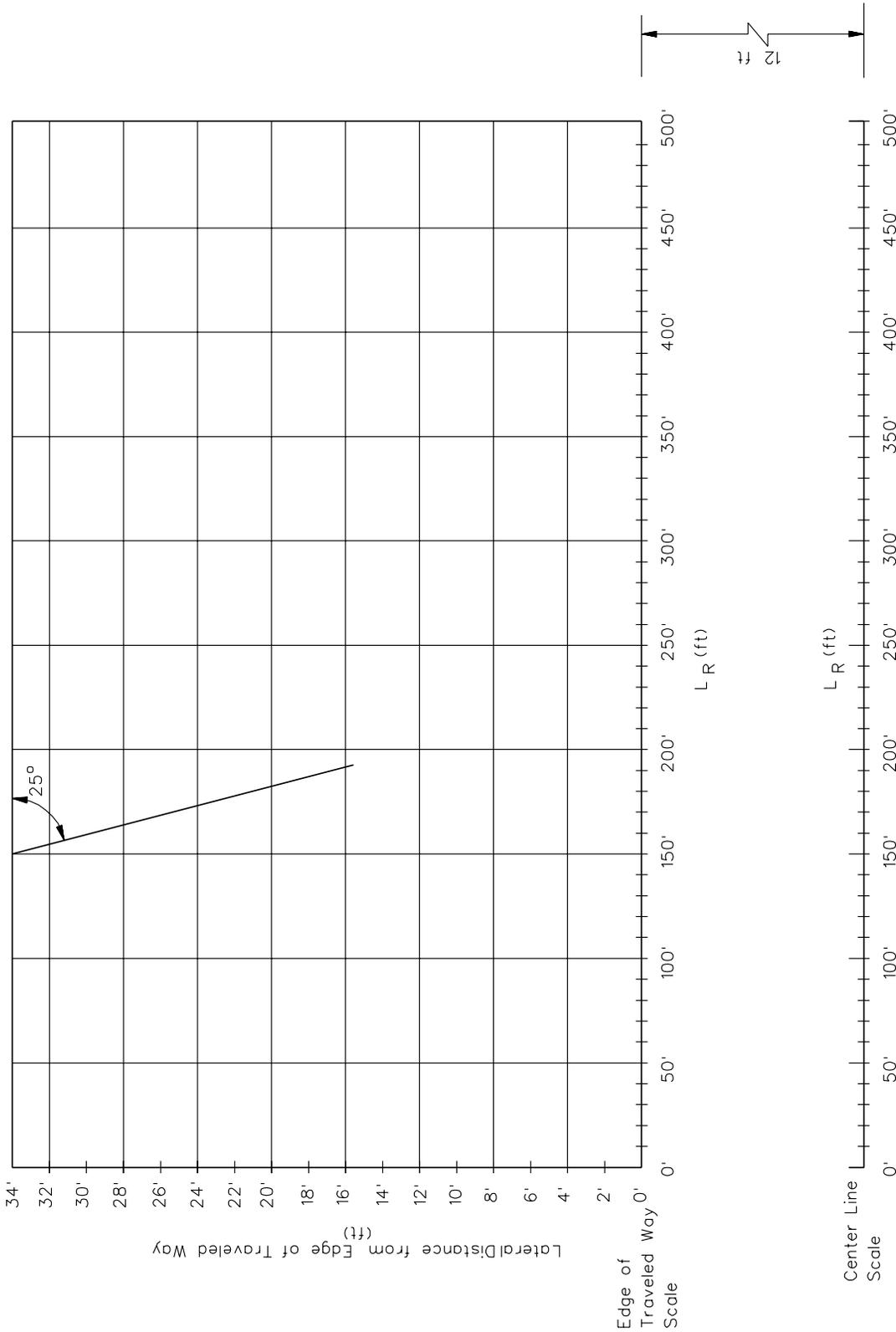
**Based on a 10 year projection from the anticipated date of construction.*

RUNOUT LENGTHS FOR BARRIER DESIGN

Figure 35-4G

- b. From this point, draw a line parallel to the 25° line in Figure 35-4H until it intersects the L_B line (Step 1).
 - c. Move down vertically to the L_R “Edge of Traveled Way Scale” and read L_3 .
 - d. As illustrated on Figure 35-4E, the L_3 distance is omitted from the length of need.
8. A barrier flare may be used to reduce the barrier length of need. Example 35-4.07(3) illustrates how to use Figure 35-4B to determine L_1 when the barrier is flared.
9. The length of need determined in the above steps must be adjusted to provide full 12'-6" (3.81 m) panels of guardrail. The length of guardrail required in advance of the hazard as determined in Steps 1 through 6 is always rounded up. The length to be omitted as determined in Step 7 is always rounded down.

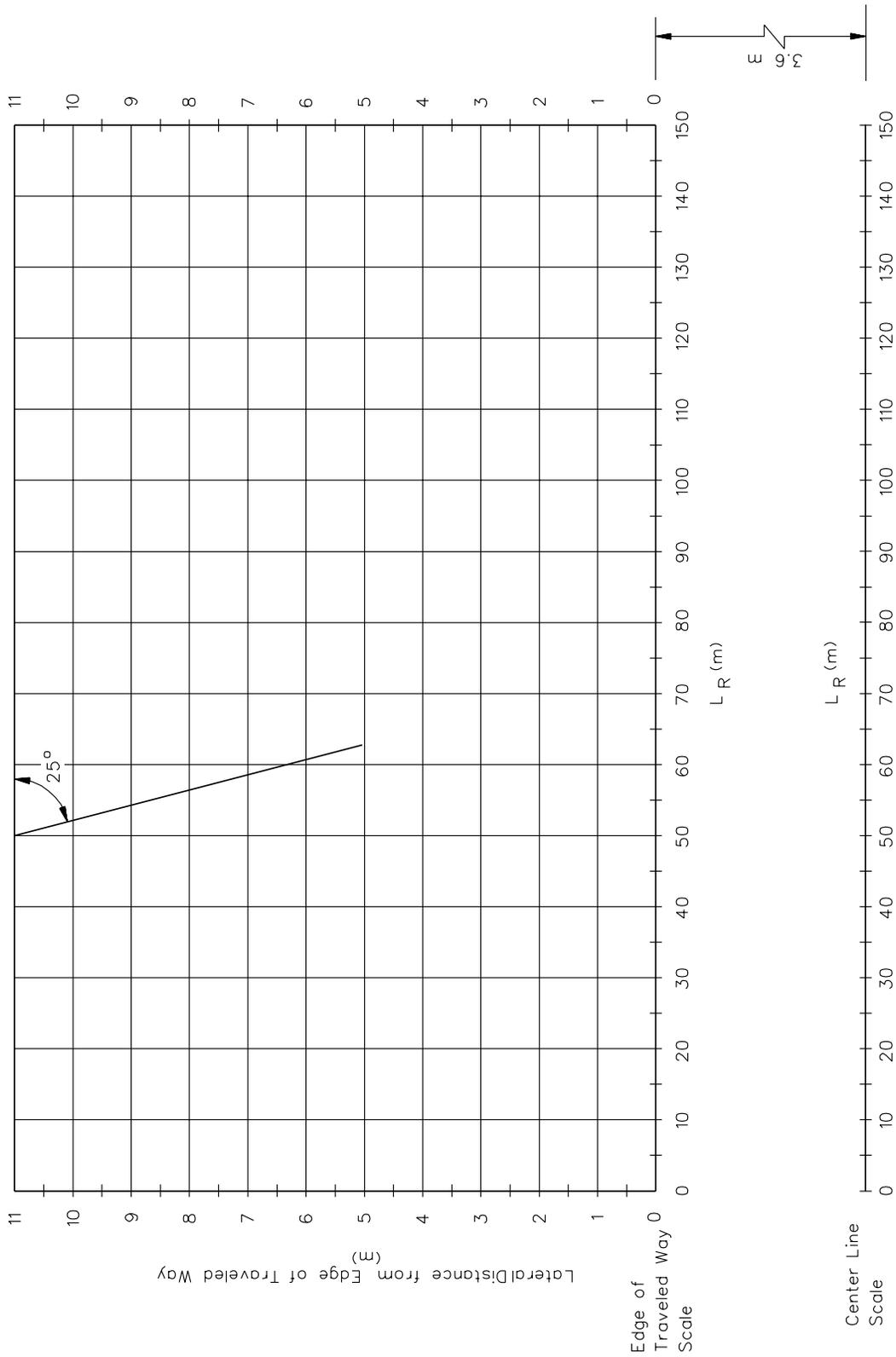
The various traffic terminal end treatments may allow a portion of the terminal to be included in the length of need. Include any applicable portion when determining the location of the terminal.



Note: Centerline scale assumes a 12 ft lane width. For other lane widths, appropriate adjustments must be made.

**BARRIER LENGTH OF NEED CALCULATION
(US Customary)**

Figure 35-4H



Note: Centerline scale assumes a 3.6 m lane width. For other lane widths, appropriate adjustments must be made.

**BARRIER LENGTH OF NEED CALCULATION
(Metric)**

Figure 35-4H

Example 35-4.07(1) (Approach Rail Only)

Given: Design ADT = 7000
V = 60 mph
Slope = 1V:4H front slope
Tangent roadway
Shoulder width = 8 ft = L_B
 L_H = 25 ft
Two-way roadway
 L_F = 15 ft
Unflared barrier (steel plate beam guardrail, Type A) located at edge of shoulder

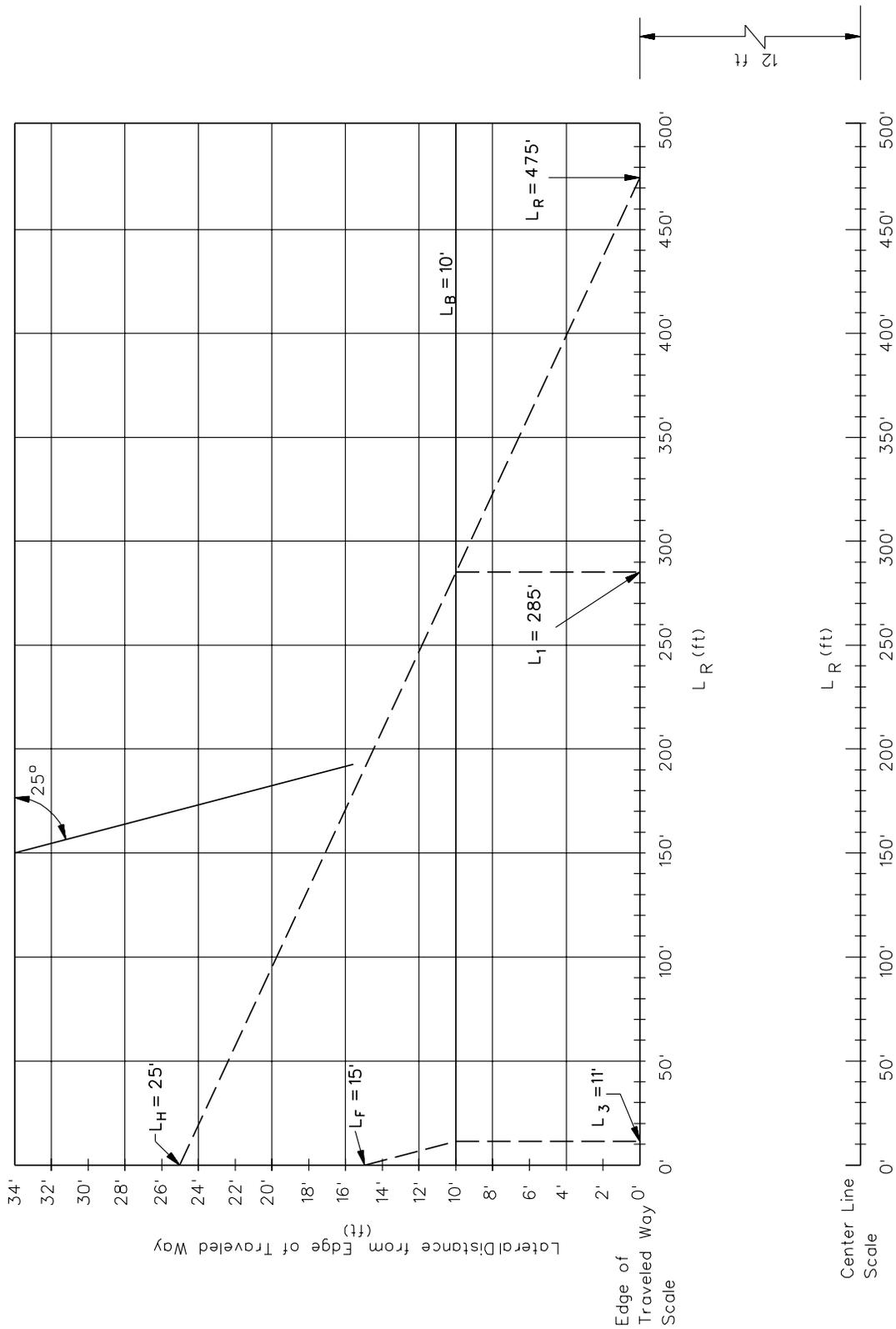
Problem: Determine the barrier length of need.

Solution: Using the procedure in Section 35-4.07, the following steps apply (see solution in Figure 35-4I):

1. L_B = 8 ft. Figure 35-4I illustrates the horizontal line.
2. From Figure 35-2A, L_C = 30 ft. Therefore, because $L_H < L_C$, locate L_H = 25 ft on the y-axis.
3. From Figure 35-4G, L_R = 425 ft. Locate point on "Edge of Traveled Way Scale."
4. Connect the points in Steps 2 and 3.
5. Draw the vertical line down to the L_R scale.
6. Read L_1 = 285 ft.
7. Use the procedure to locate the downstream end of the barrier length of need:
 - a. Locate L_F = 15 ft on the y-axis.
 - b. Draw a line parallel to the 25° line (see Figure 35-4I).
 - c. Draw a vertical line down to the L_R scale. Read L_3 = 18 ft.
8. Not applicable (i.e., no flare).
9. Round L_1 and L_3 as discussed to ensure only full-length panels of guardrail are used.

Example 35-4.07(2) (Approach and Departure Rail Needed)

Given: Design ADT = 5000
V = 60 mph
Slope = 1V:4H front slope
Tangent roadway



BARRIER LENGTH OF NEED CALCULATION
(Example 35-4.07(1))

Figure 35-4I

BUREAU OF LOCAL ROADS & STREETS**ROADSIDE SAFETY**

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35-4(18)

Shoulder width = 8 ft = L_B $L_H = 15$ ft

Two-way roadway

 $L_F = 10$ ft

Unflared barrier (use steel plate beam guardrail, Type B, due to lack of deflection distance) located at edge of shoulder

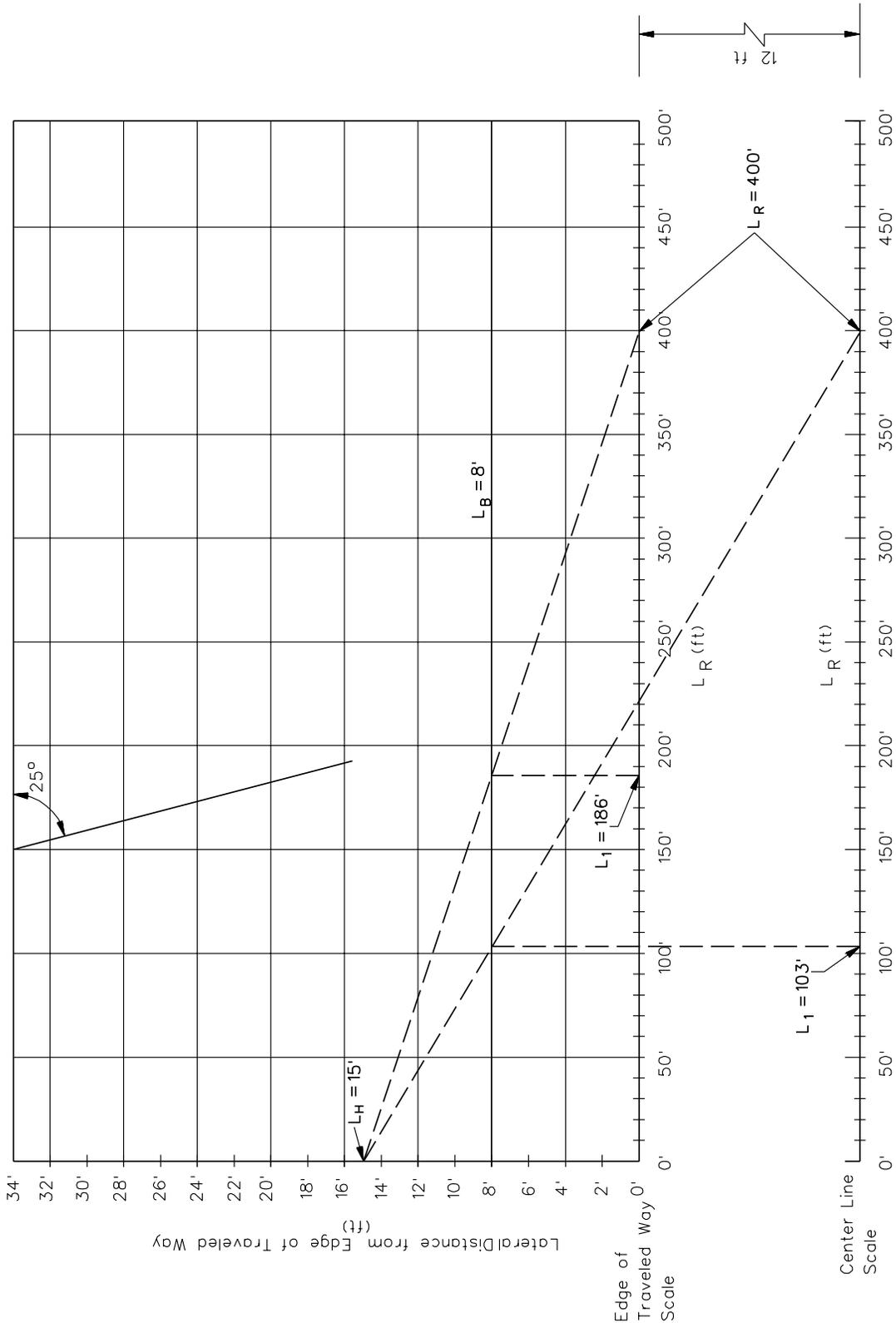
Problem: Determine the barrier length of need.

Solution: Using the procedure in Section 35-4.07, the following steps apply (see solution in Figure 35-4J):

1. $L_B = 8$ ft. Figure 35-4J illustrates the horizontal line.
2. From Figure 35-2A, $L_C = 20$ ft. Therefore, because $L_H < L_C$, locate $L_H = 15$ ft on the y-axis.
3. From Figure 35-4G, $L_R = 400$ ft. Locate point on "Edge of Traveled Way Scale" and "Center Line Scale."
4. Connect the points in Steps 2 and 3.
5. Draw the vertical line down to the L_R scales.
6. Read $L_1 = 186$ ft upstream from the hazard and $L_1 = 103$ ft downstream from the hazard.
7. Not applicable.
8. Not applicable (i.e., no flare).
9. Round L_1 upstream and downstream as discussed to ensure only full-length panels of guardrail are used.

Example 35-4.07(3) (Flared Barrier)

Given: Design ADT = 7000
 $V = 60$ mph
Slope = 1V:4H front slope
Tangent roadway
Shoulder width = 8 ft = L_B
 $L_H = 25$ ft
Two-way roadway
 $L_F = 15$ ft
Barrier (steel plate beam guardrail, Type A) with 1:20 flare



BARRIER LENGTH OF NEED CALCULATION
(Example 35-4.07(2))

Figure 35-4J

Problem: Determine the barrier length of need.

Solution: Using the procedure in Section 35-4.07 (adjusted for flare), the following steps apply (see solution in Figure 35-4K):

1. Figure 35-4K illustrates the location of barrier with 1:20 flare.
2. From Figure 35-2A, $L_C = 30$ ft. Therefore, because $L_H < L_C$, locate $L_H = 25$ ft on the y-axis.
3. From Figure 35-4G, $L_R = 425$ ft. Locate point on "Edge of Traveled Way Scale."
4. Connect the points in Steps 2 and 3.
5. Draw the vertical line down to the L_R scale. Read $L_1 = 135$ ft. *Note that, for the unflared barrier in Example 35-4.07(1), $L_1 = 285$ ft.*
6. Use the procedure to locate the downstream end of the barrier length of need:
 - a. Locate $L_F = 15$ ft on the x-axis.
 - b. Draw a line parallel to the 25° line (see Figure 35-4K).
 - c. Draw a vertical line down to the L_R scale. Read $L_3 = 18$ ft.
7. Flare rate has been used.
8. Round L_1 and L_3 as discussed to ensure only full-length panels of guardrail are used.

* * * * *

35-4.08 Minimum Length/Gaps

Short runs of barrier have limited value and should be avoided unless designed especially to shield a point hazard. Generally, a barrier should have at least 100 ft (30 m) of standard guardrail section exclusive of terminal sections and/or transition sections. Likewise, short gaps between runs of barrier are undesirable. Therefore, gaps of less than 200 ft (60 m) between barrier termini should be connected into a single run. Exceptions may be necessary for access.

35-4.09 Short-Radius Guardrail

A side road or entrance within the length of need of a guardrail installation poses a challenge to the design of a safe roadside. The most common approach to this situation has been to install a short-radius Type A guardrail around one or both of the roadway radius returns. However, a vehicle impacting the Type A guardrail at a high angle and speed may penetrate the barrier, or vault over the barrier as the posts lean back, creating a ramping effect. When penetration or vaulting does not occur, the vehicle will likely decelerate rapidly.

The designer should evaluate the following alternatives to installing a Type A guardrail on a short radius at intersections or entrances.

35-4.09(a) Relocate or Close the Intersecting Roadway/Entrance

Relocation or closure of the side road or entrance is the preferred solution over short radius guardrail, and should be considered during project scoping or during the Phase I preliminary engineering. This decision will involve consideration of project scope, cost, and impacts to adjacent properties and the environment. This alternative will not always be practical, but it will provide the most positive solution to the roadside safety issue. If this alternative is selected, additional consideration should be given to flattening side slopes, widening embankments, etc., to reduce the need for the barrier.

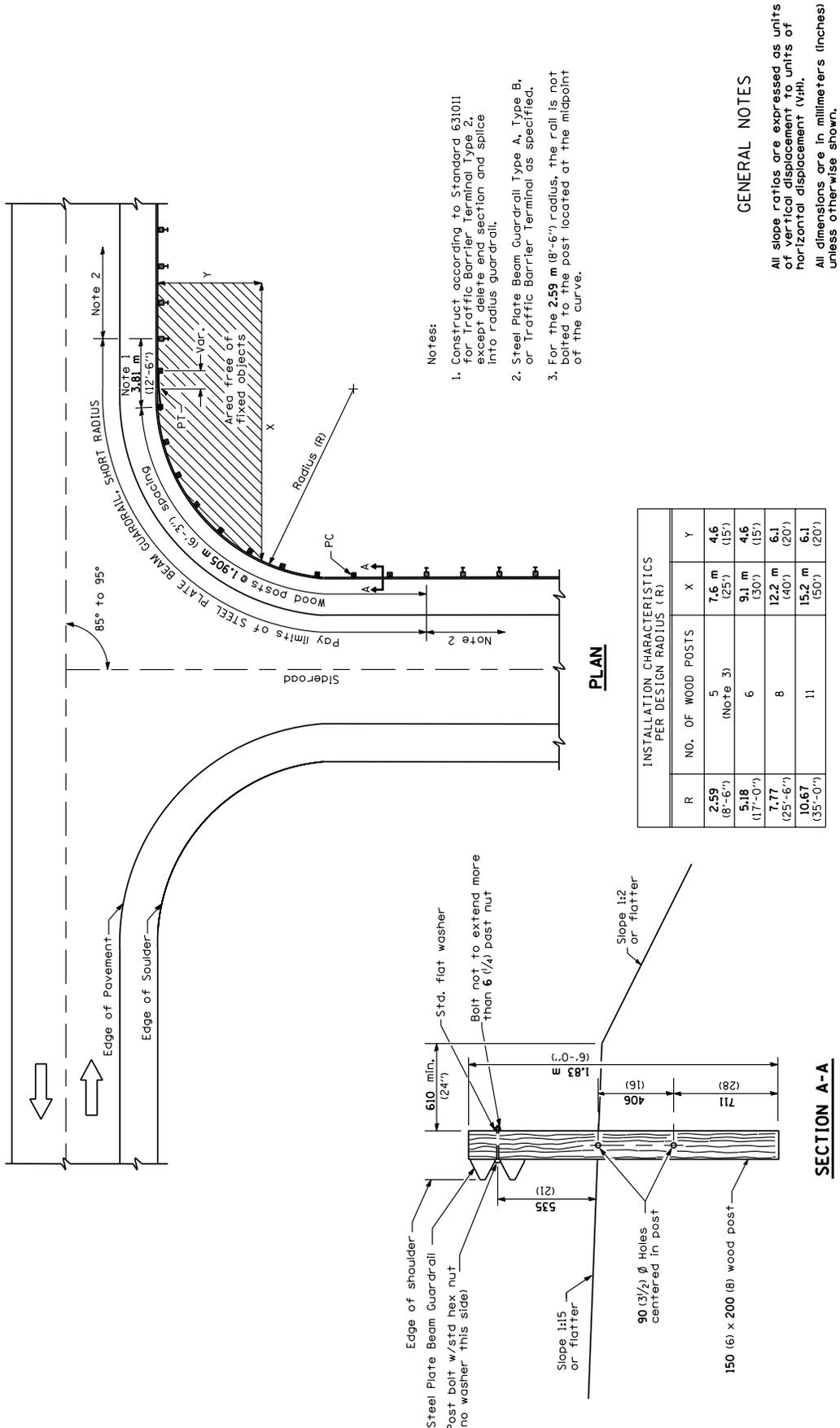
35-4.09(b) Terminate the Guardrail in Advance of the Intersecting Roadway/Entrance

When relocating or closing the roadway/entrance is not practical and where the nominal length of need may fall within the intersecting roadway (or just beyond), the designer may choose to truncate the standard guardrail with an approved terminal section in advance of the roadway. This will eliminate placing a short-radius guardrail in the intersection corner(s). Use this alternative where judgment or analysis indicates that this is preferable (e.g., flat slopes, minimal drop off) to the additional hazard posed by a short-radius guardrail installation.

35-4.09(c) Radius Guardrail

If relocating a roadway/entrance or terminating the guardrail short of its length of need cannot be accomplished, the designer may consider radius guardrail systems. Any radius guardrail system will impose constraints on how close it can be installed to a bridge, what radius can be used, and how far it must run along the intersecting side road.

Figure 35-4L presents an acceptable short-radius guardrail design. This design employs weakened Controlled Releasing Terminal (CRT) posts in the radius area. These weakened posts break away upon impact, allowing the rail to form a deep pocket to gradually decelerate and capture the impacting vehicle.



STEEL PLATE BEAM GUARDRAIL, SHORT RADIUS

Figure 35-4L

When terminating the radius guardrail system, the guardrail on the intersecting roadway should be completed to any required length of need and terminated with an appropriate end treatment. On a very low-speed roadway (e.g., private driveway), this may be a Type 2 terminal. On most public roadways, or other roadways where higher speeds are possible, a Type 1 terminal should be used.

To allow for proper system performance, the designer should be aware of several important constraints:

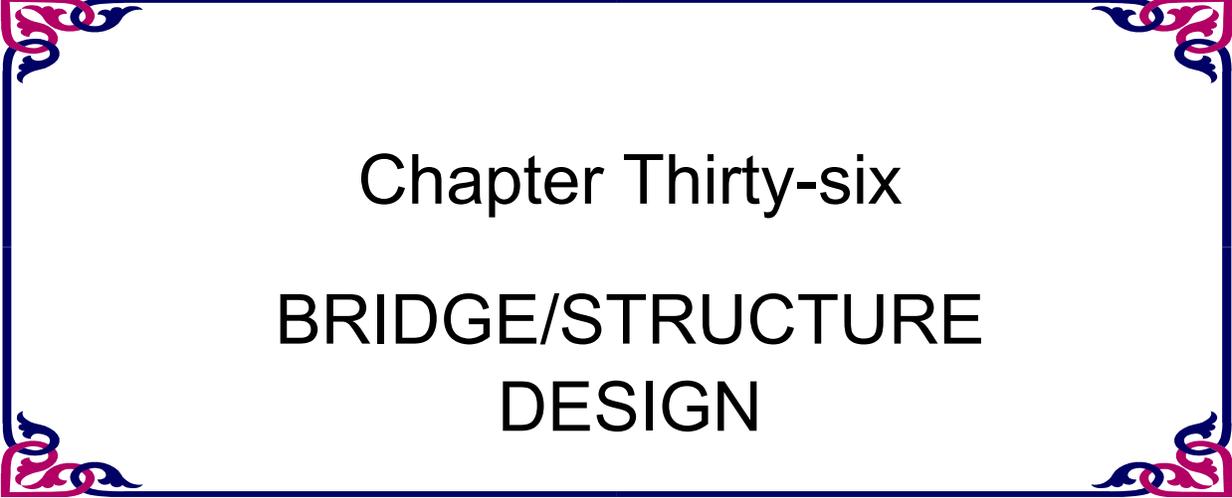
1. Intersection Angle/Radii. Use of the detail in Figure 35-4L is limited to the radii shown and to intersection angles of 85° to 95°. No extrapolations to radii shorter than 8'-6" (2.59 m) or longer than 35'-0" (10.67 m) should be attempted. Any job-specific designs for intermediate radii and/or other intersection angles should incorporate all features of posts, attachment, etc., and should use only full length guardrail panels, shop bent to the design radius in 5 ft (1.5 m) increments.
2. Deflection Distance. Because of the required deflection distance, this design requires a considerable clear area behind the radius and adjacent guardrail. This area is detailed on Figure 35-4L with the x and y coordinates.
3. Slope. The slope in front of the installation should not be steeper than 1V:15H. Before installing this detail where there is superelevation on the main roadway, perform a special analysis to determine the potential for vaulting of a vehicle.
4. Embankment. It is important to provide the 2 ft (600 mm) earth embankment behind the CRT posts to provide adequate bearing strength if hit. It is desirable that the slopes behind the guardrail not be steeper than 1V:2H.
5. Bridges. When used in close proximity to a bridge, this design should not be used unless there is room to install an approved transition to the bridge rail.
6. Debris. In crash testing, some heavy debris was observed flying about in the area behind the impact. Judgment must be used when installing these sections where people are likely to be present in the area behind the curved section.
7. Additional Protection. Because the short-radius guardrail system still represents some compromise in roadside design, the designer should attempt to shadow it from impacts. This can be done by applying a tangent run of guardrail (the minimum is two Type 1 terminals, back-to-back) on the approach side of the intersecting roadway.

If the CRT short-radius design in Figure 35-4L cannot be used at the site, the final option is to install the Type A guardrail on the required radius. Do not use the Type B guardrail. Because the use of the Type A guardrail is a compromise in roadside safety, the designer should attempt to shadow it from impacts. This can be done by applying a tangent run of guardrail (the minimum is two Type 1 terminals, back-to-back) on the approach side of the intersecting roadway.

35-5 REFERENCES

For information on clear zones, roadside hazards, and roadside barriers review the applicable publications listed below:

1. Guidelines for Geometric Design of Very Low-Volume Roads (ADT \leq 400), AASHTO
2. Roadside Design Guide, AASHTO



Chapter Thirty-six
BRIDGE/STRUCTURE
DESIGN

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Chapter Thirty-six
BRIDGE/STRUCTURE DESIGN

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Chapter Thirty-six

BRIDGE/STRUCTURE DESIGN

36-1 GENERAL

36-1.01 Scope of Work Definitions

The scope of work for a bridge project may be any of the following:

1. Bridge Replacement. Replacement of the entire existing bridge (i.e., superstructure, substructure, and foundation).
2. Bridge Reconstruction. Replacement of all or most of an existing bridge with the same type, size, and location (i.e., same substructure locations, span lengths, and bridge width). The foundation may or may not be reused.
3. Existing Bridge to Remain in Place. If an existing bridge is structurally sound, meets the design loading capacity and the minimum width criteria for a structure to remain in place, and it is not a high-accident location, it is likely not cost effective to improve the geometrics of the bridge. When these conditions are met, an existing bridge can remain in place. In some cases, only the bridge substructure (e.g., abutments, piers) and/or foundation (e.g., footings, piles) may require rehabilitative work. These may also be considered existing bridges to remain in place for the application of geometric design criteria.
4. Bridge Rehabilitation. Major work on one or more of the components of an existing bridge (i.e., superstructure, substructure, and/or foundation).
5. Bridge Deck Rehabilitation. If the existing bridge deck is structurally deficient, it may be rehabilitated as part of a project. In addition, where the bridge deck is structurally sound but the width is inadequate (i.e., the bridge is functionally obsolete), the bridge deck may be rehabilitated solely to widen the bridge deck. Bridge deck widening may then require work to the superstructure and/or substructure.
6. Bridge Deck Repair. The existing bridge deck is structurally adequate and the width is adequate to remain in place, but partial and full-depth repairs are required and an overlay may be necessary to improve rideability and to maintain the integrity of the deck.
7. Bridge Rails/Transitions. For reconstructed bridges or rehabilitated bridge decks, the existing bridge rails and/or approaching guardrail-to-bridge-rail transitions may need upgrading to meet current IDOT criteria. For existing bridges to remain in place within the project limits, the local agency, Central BLRS, district, and/or Bureau of Bridges and Structures will evaluate the adequacy of the existing bridge rail to determine if it should

be upgraded. The roadway designer will evaluate the adequacy of the existing approaching bridge rail transition for needed upgrading.

36-1.02 Bridge Condition Report

A Bridge Condition Report (BCR) is used to identify deficiencies and establish scope of work necessary to rehabilitate an existing structure for all funding types, and to justify replacement of existing structures (including bridges, culverts, tunnels, viaducts, etc.) for Federal-Aid projects. A BCR is also required as justification for those structures that are to remain. When required by these criteria, submit a BCR to IDOT for review and approval prior to or with submittal of the Preliminary Bridge Design and Hydraulic Report (PBDHR). The BCR must be approved for approval of the PBDHR. For guidance on the content and preparation of the Bridge Condition Report, see Sections 10-2.03 and 22-2.06.

36-1.03 Preliminary Bridge Design and Hydraulic Report

The Preliminary Bridge Design and Hydraulic Report contain the necessary information for use by IDOT personnel to review the preliminary bridge design and to process the hydraulic reports for local agency bridge and culvert construction projects. For guidance on the content and preparation of the PBDHR, see Section 10-2.03 and 22-2.06.

36-2 STRUCTURAL DESIGN

Structures include such items as bridges, single and multiple cell culverts, retaining walls, and sign structures. Structural designs shall have the dated seal, signature, and applicable certification affixed to the first sheet of the structural plans, usually the General Plan and Elevation sheet. Exceptions to this requirement include pre-approved designs such as pipe culverts, retaining walls or other structures contained in the Standard Specifications or IDOT manuals.

36-2.01 IDOT Criteria

The Bureau of Bridges and Structures has adopted the current edition of the AASHTO *Standard Specifications for Highway Bridges* for structural design. Exceptions, clarifications, exclusions, and supplements to the AASHTO *Standard Specifications* are published in the *IDOT Bridge Manual* and its supplemental *Manuals*. The *IDOT Standard Bridge Plans* presents standardized plan sheets and designs that are commonly used for the preparation of precast concrete deck beam bridge projects. These documents and the *IDOT Standard Specifications for Road and Bridge Construction* collectively form the design controls for all structures in the State of Illinois.

36-2.02 Bridge Design for Local Agencies

It is highly recommended that the structural design of all local agency bridge projects follow the same criteria as that used for IDOT bridges. The following Sections present additional criteria applicable to local agency bridge projects.

36-2.02(a) Foundations/Substructures

The following will apply to the design of foundations and substructures for bridges on local agency projects:

1. Type. The foundation for a bridge normally consists of concrete or steel piling. Substructure piers and abutments should be steel and/or concrete. Other materials (e.g., treated timber) may be used. However, because of inferior past performance, the use of timber piles is not recommended.
2. Pile/Abutment Lengths. For information on pile and abutment lengths, see the *IDOT Geotechnical Manual*.

36-2.02(b) Bridge Deck Protection

To reduce the deterioration of bridge decks and to provide additional protection for bridge decks that are subjected to deicing agents, Figure 36-2A presents those protective measures that should be provided.

Type of Bridge Deck	Type of Protection	Without Deicing Agents	With Deicing Agents
Slab Floors (Poured-in-Place)	2 1/4 in ± 1/4 in (55 mm ± 5 mm) concrete cover over deck reinforcement	Required	Required
	Use of high-quality concrete	Required	Required
	Epoxy coated reinforcement bars in top mat of deck reinforcement	Required	Required
	Protective coat (linseed oil) on bare concrete areas	Recommended	Required
Precast Prestressed Concrete Deck Beams	Flowable, non-shrink, non-metallic grout in longitudinal keyways	Recommended	Required
	Placement of mortar fairing course and waterproofing membrane system prior to surfacing with bituminous overlay	Recommended	Required
	Bituminous Overlay	Recommended	Required
	Corrosion Inhibitor	Optional	Recommended

Note: Include a statement indicating whether or not the structure will be subjected to deicing agents in the project correspondence (see Form BLR 10210).

PROTECTIVE MEASURES FOR BRIDGE DECKS

Figure 36-2A

36-2.02(c) Seismic Design

Local agencies must use Division IA of the AASHTO *Standard Specifications for Highway Bridges*, latest edition, to evaluate the seismic design of all new and reconstructed bridges.

Preliminary earthquake analyses provide that single-span bridges included in the *Standard Plans, Precast Prestressed Concrete Deck Beam Bridges*, Illinois Department of Transportation, adopted April 4, 2005, meet the minimum requirements of the AASHTO *Standard Specifications* statewide. Multiple-span precast prestressed concrete deck beam bridges (PPCDB) utilizing the “Standard Plan” design may be used without additional analysis only in the parts of the State that fall in the SPC A. For multiple-span PPCDB located in SPC B and C, adequacy for seismic design should be evaluated on a project-by-project basis.

For more information on seismic design, see the *IDOT Bridge Manual*.

36-2.02(d) Scour Evaluation Criteria

The National Bridge Inspection Standards (NBIS) requires that bridges, exclusive of culverts, be evaluated for their potential for failure due to streambed scour. Culverts are exempted from scour evaluation requirements but should be carefully monitored if scour appears to be a problem. This scour critical evaluation must be performed in accordance with FHWA Technical Advisory 5140.23 and FHWA Hydraulic Engineering Circular No. 18 (HEC 18), both titled *Evaluating Scour at Bridges*.

The scour evaluation should include all effects of long-term stream stability, constriction of the channel by the structure, and local scour. Calculations to estimate potential scour depths will be limited to contraction and local pier scour only. The HEC 18 equations are unreliable for calculating local scour at abutments and should not be used for that purpose. The following applies:

1. Scour Design for New/Rehabilitated Bridges. New and rehabilitated bridges must be designed for scour estimated for a flood with a 100 year recurrence interval. The substructure and foundations design must ensure stability for scour as previously stated. New bridges will be designed so that coding for Item 113, Scour Critical Appraisal Rating, in the ISIS is "5", "8" or "9". Rehabilitation projects also allow a rating of "7". The bridge designer's name should be submitted to the district as the scour analyst to be recorded in the ISIS.
2. Scour Evaluation of Existing Bridges. Existing bridges must be evaluated or assessed for estimated scour from a superflood with an approximate 500 year recurrence interval. Scour estimated by the Rational Method or calculated using the equations from HEC 18 for existing bridges will be considered acceptable up to the limit of substructure failure (factor of safety equal to 1). Bridges with unknown foundations should be assessed according to existing conditions and sound engineering judgment.

Scour evaluations performed for existing bridges that are open to traffic and require an NBIS maintenance inspection will provide the basis for the coding of Item 113 in ISIS; see Section 6-4. This evaluation may be performed utilizing the "Bridge Scour Assessment Procedure (BSAP)" or the "Simplified Scour Evaluation Method (SSAM)." Information on these methods can be obtained from the Bureau of Bridges and Structures.

36-2.03 Bridge Rails**36-2.03(a) Projects on the National Highway System**

With two exceptions, bridge rails on new projects on the National Highway System (NHS) must be crash-tested and meet the performance criteria of NCHRP 350 *Recommended Procedures for the Safety Performance Evaluation of Highway Features*. The designer should note that the use of any curb or brush block in combination with a bridge rail must also meet NCHRP 350

criteria; i.e., the crash test must have been conducted on the combination curb/bridge rail configuration. Existing bridge rail shall at a minimum meet NCHRP 230 standards; however, it is still desirable to meet NCHRP 350 standards.

The following two exceptions apply to the use of NCHRP 350-approved bridge rails on NHS projects:

- bridges with a current ADT less than 1000 vehicles per day, or
- bridges in urban areas where the regulatory speed limit is less than 40 mph (60 km/h) and the bridge and roadway cross section is a parapet/curb-and-gutter design.

For these two exceptions and with approval from IDOT, local agencies may use bridge rails that have not been crash tested to NCHRP 350 criteria on a case-by-case basis. All bridge designs must meet AASHTO criteria for loading and configuration. In areas where records indicate a number of crashes have previously occurred or where unique geometric conditions create a significant potential for crashes, the designer should evaluate the need for a crash-tested rail at these sites.

36-2.03(b) Non-NHS Projects

For bridge projects on other than NHS routes, reference is made to the NCHRP 350 criteria for the designer's use. All bridge designs must meet AASHTO criteria for loading and configuration. In areas where records indicate a number of crashes have previously occurred or where unique geometric conditions create a significant potential for crashes, the designer should evaluate the need for a crash-tested rail at these sites.

36-2.04 Utility Attachments

36-2.04(a) General

Utility facilities attached to highway structures present varying degrees of hazard to the road user and to the structure. Utility attachments are not recommended if there are other practical methods to provide utility accommodation; however, the local agency may grant approval for the accommodation of utilities on bridges based on an engineering study.

Section 36-2.04 addresses the requirements, limitations, procedures, and assessment of charges for the permitted attachment of utility facilities to bridges or traffic structures on or over public highways in Illinois. The provisions of this Section are applicable to both existing and proposed bridges for the attachment of a new utility, the expanding of an existing utility attachment, or the voiding of an existing permit for a utility attachment.

The approval of an application for a utility attachment to a highway structure should be based on:

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- the type, volume, pressure, or voltage of the commodity to be transmitted and the associated risk to the road user and the structure;
- the type, length, and value of the structure and its relative importance to the transportation system;
- the alternative routings available to the utility and their relative practicality;
- the proposed method of attachment;
- the degree of interference with bridge maintenance work;
- the aesthetic impact to the structure of the utility attachment; and
- the public benefit expected from the utility service compared to the risk of structural attachment.

Utilities should not be attached to structures when alternative locations are available. Alternative locations, separate from the bridge, include:

- underground,
- under stream,
- independent poles,
- cable supports, and
- tower supports.

The utility company must include the supporting data in its request to demonstrate the impracticality of alternative routing.

When the local agency requires the removal or adjustment of any existing utility attachment due to the renovation or removal of an existing bridge, the existing permit should be automatically voided. The issuance of a new Bridge Attachment Permit will acknowledge receipt of any assessment charge and will give the necessary permission to attach, operate, and maintain the facility. For a new structure, the permit should include an agreement for the period of construction, as well as a provision to attach, operate, and maintain the facility upon completion of the construction.

Approved cut-off facilities should be required at each end of the highway structure so that service through the facilities attached to the structure can be cut off in case of a crash or other occurrence requiring such interruption.

The local agency should require plans and specifications showing the size, weight per foot (meter), and proposed method of attachment of the utility elements and stating the type of commodity to be transmitted, the proposed pressure or voltage, and the proposed location of cutoffs adjacent to the structure.

Any anticipated expansion should be included in the permit.

36-2.04(b) Acceptable Attachment Methods

If it is determined that there is no reasonable alternative location separate from the bridge, the following attachment locations will be considered in the following order of preference: 1) diaphragms, 2) beams, and 3) deck. However, in any case, attachment to main structural members or to the deck will only be allowed when the structural integrity of the structure is not impaired.

Where utility attachment is necessary, the following general practices should be followed:

1. For existing structures, locate the attachment below the floor of the structure between beams or girders and above the lowest structural member.
2. For new structures, consider the utility conduits in the structure design.
3. Design supports and hangers to clamp or bolt without drilling to steel and prestressed or post-tensioned concrete structural elements.
4. Design inserts for hangers to be drilled into existing structures or cast into new structures in non-critical concrete areas (e.g., the floor slab). Inserts for new construction should be shown on the construction plans.

36-2.04(c) Attachment Methods Not Recommended

Utility installations transmitting volatile, flammable, corrosive, energized, or pressurized products (especially those under significant pressure) are the highest risk facilities, and attachments to bridges generally should not be permitted. In addition, the following practices or attachment methods are not allowed:

- burying conduit or cable in bridge deck slabs or sidewalks, except bridge lighting conduit may be allowed in the lower part of the parapet curb.
- drilling holes outside the middle third of the web of load-carrying structural steel elements,
- welding onto structural steel elements,
- drilling into prestressed or post-tensioned concrete supporting beams,
- casting inserts into the bottom of prestressed concrete members,
- attachments that will reduce critical clearances or freeboard,
- attachments outside the fascia of the bridge,
- gas pipelines over 4 in (100 mm) in diameter or having internal pressure exceeding 75 psig (520 kPa),
- more than one gas pipeline per structure, and

- pipelines carrying liquids or gases that are considered extraordinarily hazardous.

36-2.04(d) Additional Considerations

The following lists additional factors that should be considered for proposed utility attachments to bridges:

1. No attachment will be permitted that impairs inspection and maintenance procedures.
2. To preserve aesthetics, if a bridge is in a visible area, the utility should be attached underneath the structure, tucked in among the beams, rather than hooked to the outside.
3. To ensure a safe installation, the utility attachment should be on the downstream side of the bridge because, during floods, trees and other drift will occasionally strike the beams.
4. Because of maintenance work on bridge rails, do not allow attachments to bridge rails or the bolts used to fasten bridge rails to bridges.
5. Trenching operations that are so close to the bridge footings that there may be undercutting or sloughing must not be allowed.
6. Attachments to historic bridges should be coordinated with the applicable historic agencies (e.g., Illinois Historic Preservation Agency).
7. Seismic factors must be considered for proposed utility attachments.
8. Utility facilities may pass through free-standing abutments, but not those that move with temperature changes.
9. Installation of the utility must not interfere with the contractor constructing the bridge.
10. The following specifically applies to proposed pipelines on bridges:
 - For a pipeline installation to be approved, it must either be encased or extra strong. If the utility company proposes to meet this requirement by using higher strength pipe, the local agency should require certificates on the high-strength pipe.
 - Design the attachment to prevent discharge of the pipe product into the stream or river in case of pipe failure.
 - Using bridge members to resist forces caused by moving fluids will not be permitted.

36-2.05 Culverts

Section 38-3 discusses the structural design of culverts.

36-2.06 Retaining Walls

36-2.06(a) Preliminary Design

There are many different types of retaining wall systems (e.g., conventionally reinforced concrete, MSE, soldier pile, sheet pile) that can be used on transportation projects. The review of the preliminary design (TS&L review) is required for all walls that are a minimum of 10 ft (3 m) high, as measured from the top of the wall to the bottom of the footing or cast-in-place fascia. This submittal for review should include the configuration of the wall, type of construction, and soils borings. The number of borings and the detailed information required is described in the *IDOT Bridge Manual* and the *Geotechnical Manual*. This review submittal should be sent to the district for transmittal to the Local Bridge Unit and will be reviewed by the Foundation Unit of the Bureau of Bridges and Structures.

36-2.06(b) Final Design Plans

An Illinois licensed structural engineer shall design all retaining walls that are at least 10 ft (3 m) high, as described in Section 36-2.06(a). Pile-supported retaining walls on spread footing foundations will not require a review of the final plans because the pile type and loads have been reviewed during the initial review. Spread footing walls normally will not require a final plan review because the allowable bearing pressure is determined and shown on the TS&L during the initial design, with the understanding that the designer will later size the footing using this value. The district can generally accept these plans based on the licensed structural engineer's seal and certification.

Retaining walls other than conventionally reinforced concrete (e.g., soldier pile, sheet pile, MSE, soil nailed, gabion, bin, crib block double wall) that are 10 ft (3 m) or greater in height are less common and require the submittal of preliminary plans, and possibly final plans for review and approval for structural adequacy.

36-3 BRIDGE SIZING/GEOMETRICS

A variety of factors determine the appropriate size and cross section of a bridge under design. Section 36-3 discusses the geometric design elements pertaining to bridge design (e.g., bridges on horizontal curves, cross slopes). Section 36-4 presents typical sections for bridge overpasses and underpasses. Section 36-5 presents tables of geometric design criteria for bridges on local facilities.

The design criteria provided in Section 36-3 are applicable to all bridges on the local system located within the limits of a proposed improvement, except those bridges located within a 3R type improvement or where specific policy items are governed by other IDOT directions. Bridge widths for 3R type improvements are included in Chapter 33.

36-3.01 Bridge Width

See Sections 36-4 and 36-5 for bridge width criteria and application.

36-3.02 Bridge Length

36-3.02(a) Bridges Over Roadways

The roadway section passing beneath a bridge will determine the bridge length in combination with structural design elements (e.g., abutment type). The underpass opening will be based on the following roadway design elements:

- the underpass roadway width;
- the presence of sidewalks and/or bikeways;
- the presence of auxiliary lanes; and
- the horizontal clearance to obstructions (i.e., the roadside clear zone).

See Section 36-4 for typical underpass sections. For high unit cost bridges, the designer may consider locating abutments or piers on the right side of the roadway adjacent to the shoulder where the savings in structure cost could make the required barrier protection cost effective.

36-3.02(b) Bridges Over Waterways

Among other factors, bridge length over waterways is determined by considering local topography, hydraulic recommendations, geometric recommendations, geotechnical considerations, and structural factors. The locations and elevations of the bridge abutments are dependent on the method used to terminate the approach embankment and transition to the structure. Where a stable end slope terminates the embankment, an open abutment should be located at or near the top of the end slope. End slopes should be 1V:2H or as otherwise

established by a geotechnical stability analysis. Where the embankment is terminated at a vertical plane, a closed or earth-retaining abutment should be located at that plane. The use of an end slope to terminate the embankment results in a longer bridge than one using a closed abutment; however, overall bridge costs are generally lower with the open abutment design because of the high cost of closed abutments. Closed abutments are seldom economical where their height exceeds 10 ft (3 m) and should not be used without a detailed cost investigation.

36-3.03 Vertical Clearances

See Sections 36-4 and 36-5 for vertical clearance criteria and application.

36-3.04 Sidewalks and Bikeways

If pedestrian activity is anticipated, provide sidewalks on both sides of urban and suburban structures. The standard sidewalk width on structures is 5 ft (1.5 m). Where wider sidewalks exist on approaching roadways, sidewalk widths greater than 5 ft (1.5 m) may be considered.

If an approach roadway with a shoulder has a sidewalk that is to be carried across the bridge, a traffic barrier should be provided between the roadway and the sidewalk. For design speeds of 45 mph (70 km/h) or less, a curb may be placed at the edge of the bridge roadway and continued along the edge of the shoulder of the approach roadway. See Section 36-4 for a typical section.

Bikeways should be accommodated on the structure as described in Chapter 42.

36-3.05 Horizontal Curves

Superelevation transitions should be avoided on bridges and their approaches. Where a curve is necessary on a bridge, the desirable treatment is to place the entire bridge and its approaches on a flat horizontal curve with minimum or no superelevation. In this case, a uniform superelevation rate is provided throughout (i.e., the superelevation transition is neither on the bridge nor its approaches) or the normal crown section is maintained throughout the curve.

Where a bridge is located within a superelevated horizontal curve, the entire bridge roadway is sloped in the same direction and at the same rate across the deck (i.e., the shoulders or gutters and traveled way will be in a planar section). This also applies to the approach traveled way and the approach shoulder pavements. The approach traveled way and approach shoulders are illustrated in the *IDOT Highway Standards*. However, the high-side shoulder on a roadway section off the bridge should slope away from the traveled way at a rate such that the maximum shoulder rollover factor for the roadway classification and design traffic. To accomplish the longitudinal shoulder slope transition away from the bridge, the designer should refer to the applicable figure in Section 36-4. See Chapter 29 for more information on horizontal alignment.

If the bridge is built on tangent but the roadway is built on curve, an additional width may be necessary to provide the minimum horizontal clearance to the bridge rail.

36-3.06 Cross Slopes

The typical sections in Section 36-4 illustrate the cross slope criteria for bridges, which is typically 1.5% to 2.0% for the traveled way and 2.0% for the shoulders. This means that the shoulder cross slope (which varies from 4.0% to 8.0%) on the approaching roadway must be transitioned to meet the cross slope on the bridge. The rate of transition for the shoulder slope should be equal to a maximum relative longitudinal gradient of 0.4% between the edge of traveled way and the outside edge of shoulder.

For more information, see the *IDOT Bridge Manual*.

36-3.07 Grades

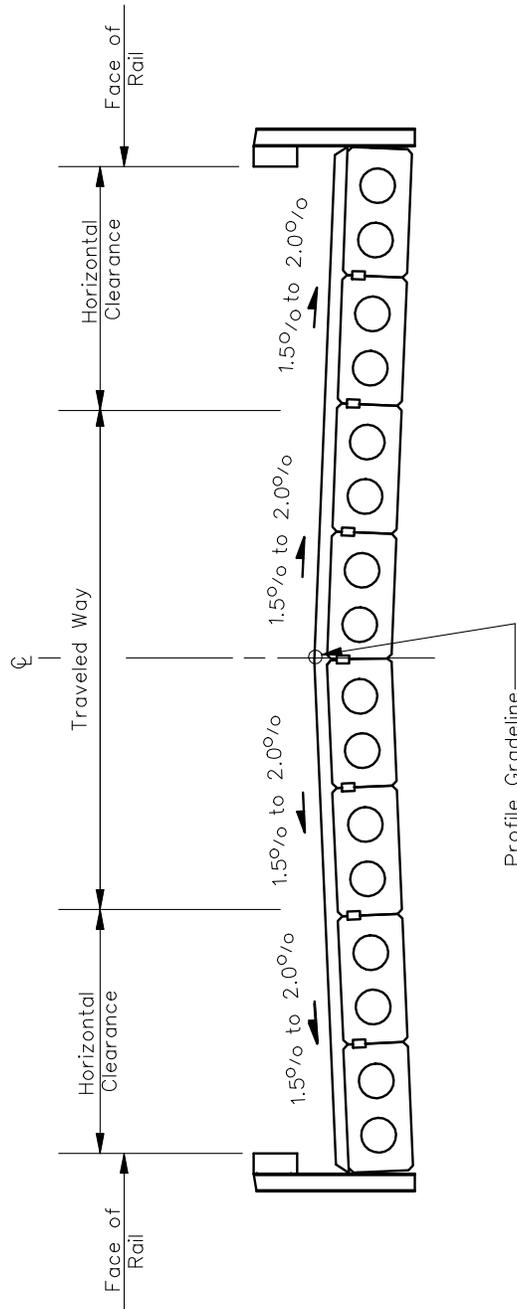
Where a bridge is not within the limits of a vertical curve and has a curb, the designer should provide a minimum longitudinal gradient of 0.5% across the bridge. Otherwise, a 0.0% gradient is acceptable for structures without curbs or those with curbs that have a superelevation.

36-4 TYPICAL SECTIONS

This Section presents typical sections for bridges on tangent or with superelevation; for roadways beneath bridges; and for highways passing over railroads. With the exception of cross slopes on bridges, the typical sections do not provide the numerical dimensions for the various cross section elements; i.e., these are nomenclature presentations. See Section 36-5 and Chapter 32 for the applicable numerical criteria.

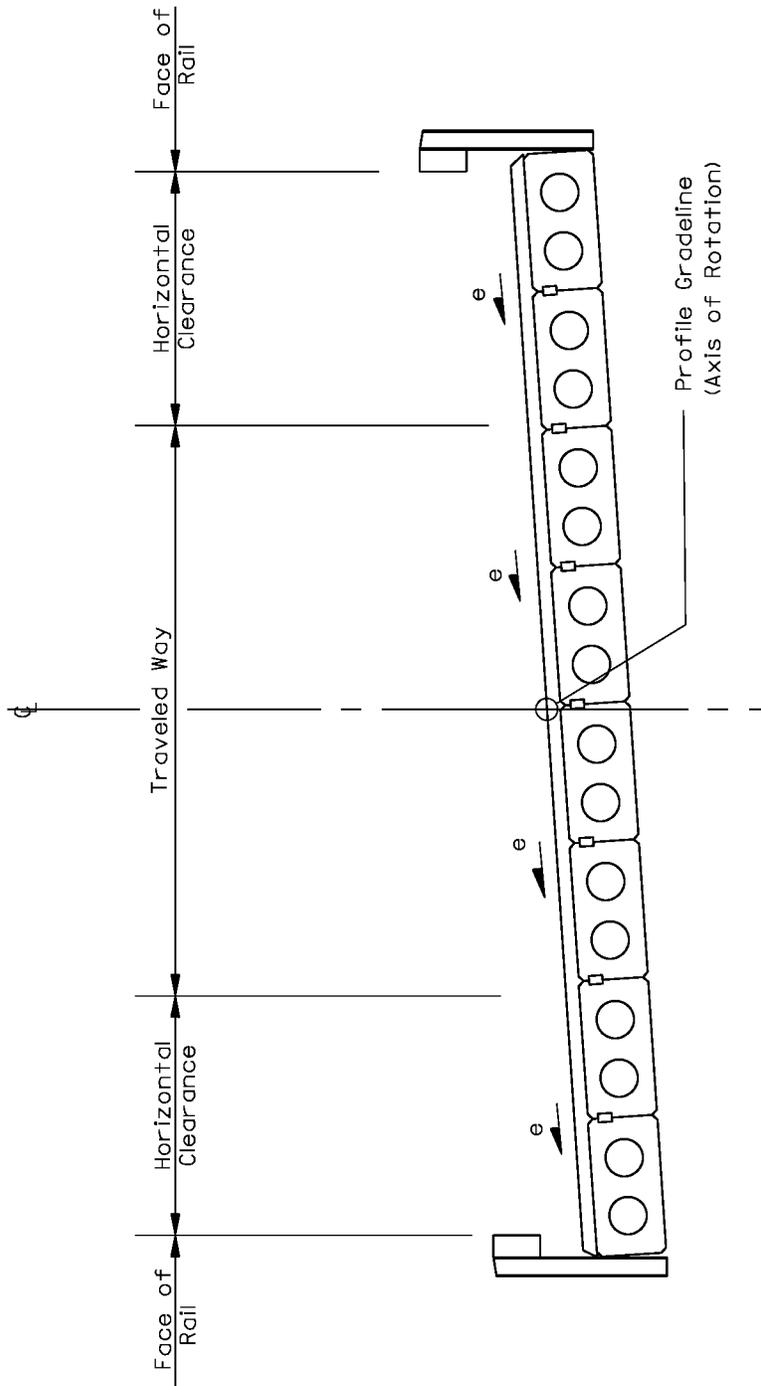
The following typical section figures are included in this Section:

- Clear Roadway Width of Bridges for New and Reconstructed Rural Two-Lane Roads (Figure 36-4A).
- Clear Roadway Width of Superelevated Bridges on Rural Two-Lane Roads (Figure 36-4B).
- Clear Roadway Width of Bridges for New and Reconstructed Urban Streets with Raised-Curb Median (Figure 36-4C).
- Clear Roadway Width of Bridges for New and Reconstructed Roads and Streets with Bikeways (Figure 36-4D).
- Clear Roadway Width of Bridges for New and Reconstructed Two-Lane Urban Streets (Flush/Traversable Median) (Figure 36-4E).
- Clear Roadway Width of Superelevated Bridges on Urban Streets with Raised-Curb Median (Figure 36-4F).
- Clear Roadway Width of Superelevated Bridges on Urban Streets with Flush/Traversable Median (Figure 36-4G).
- Clear Roadway Width of Superelevated Bridges on Two-Lane Urban Streets (Figure 36-4H).
- Clearances for Bridges over Two-Lane Roads (Figure 36-4I).
- Highway Grade Separation over Railroad (Natural Ground Less Than 4 ft (1.2 m) Below Rail) (Figure 36-4J).
- Highway Grade Separation over Railroad (Natural Ground 4 ft (1.2 m) or More Below Rail) (Figure 36-4K).



CLEAR ROADWAY WIDTH OF BRIDGES FOR NEW AND
RECONSTRUCTED RURAL TWO-LANE ROADS

Figure 36-4A

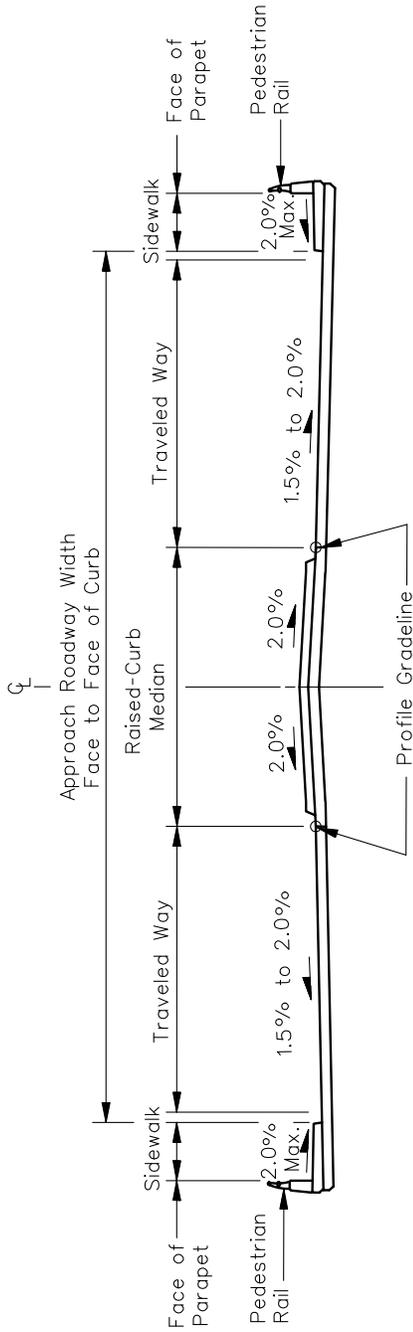


Note:

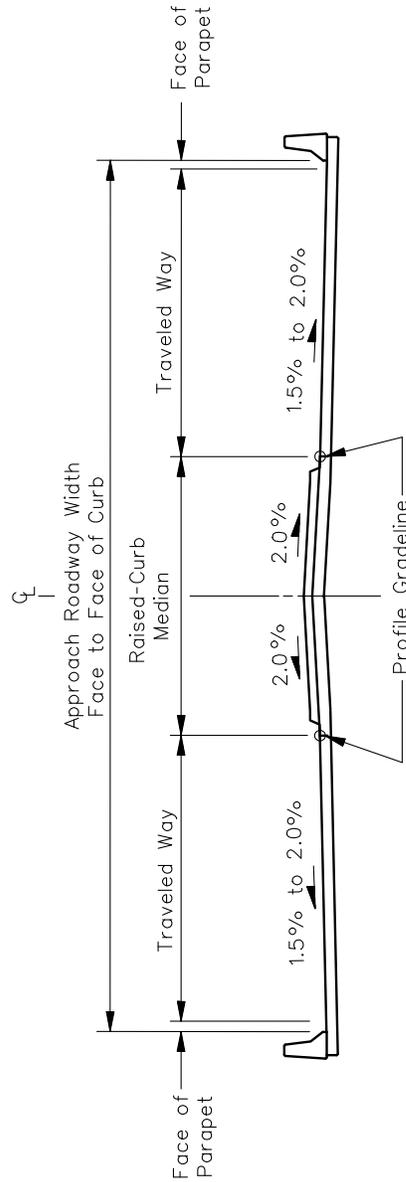
Where a bridge lies within a horizontal curve with superelevation, the shoulder on the high side of the bridge (starting just off the end of the bridge approach shoulder pavement) will be gradually transitioned into the design slope of the shoulder on the approaching roadway. Also see the IDOT Highway Standards. This transition should be accomplished by providing a maximum relative longitudinal difference in gradient of 0.4% between the edge of the traveled way and the outside edge of the shoulder.

**CLEAR ROADWAY WIDTH OF SUPERELEVATED BRIDGES
ON RURAL TWO-LANE ROADS**

Figure 36-4B



Sidewalk — Both Sides



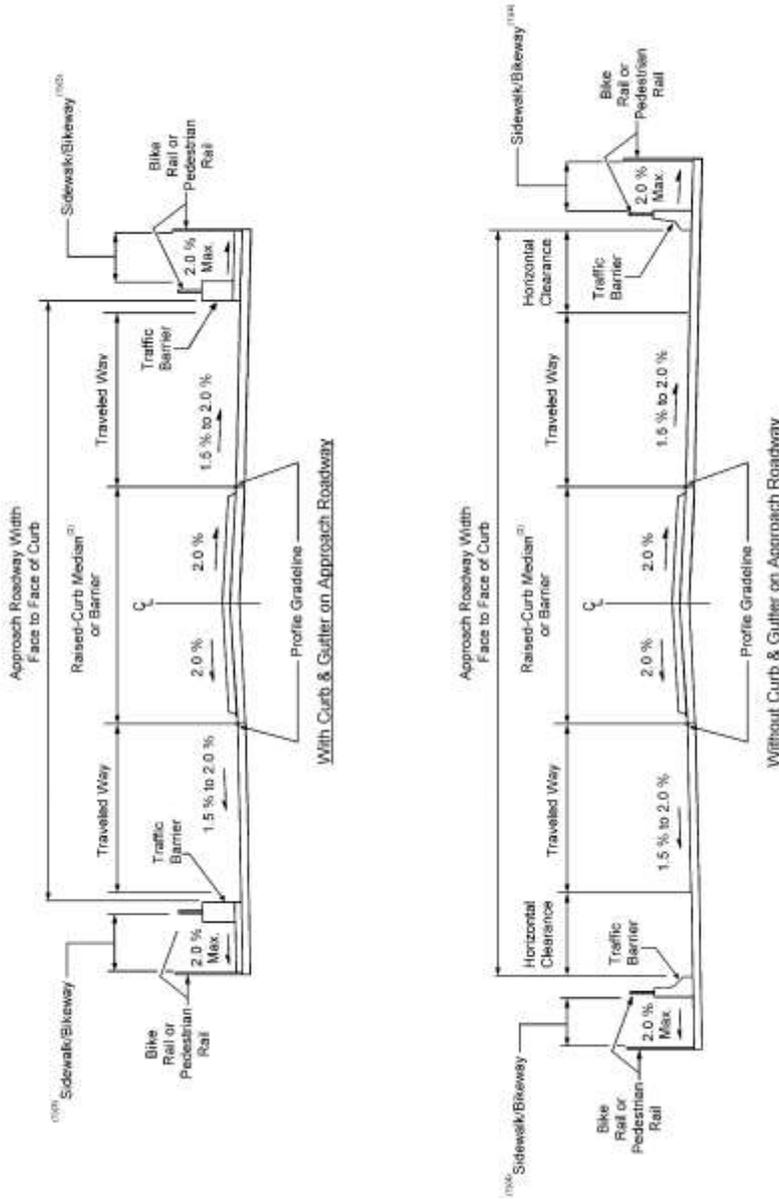
Sidewalks Not Provided

Note:

Where a flush/traversable median is used on the approach, a raised-curb median may be used across the structure where bridge decks are subject to frequent icing conditions.

**CLEAR ROADWAY WIDTH OF BRIDGES FOR NEW AND RECONSTRUCTED
URBAN STREETS WITH RAISED-CURB MEDIAN**

Figure 36-4C

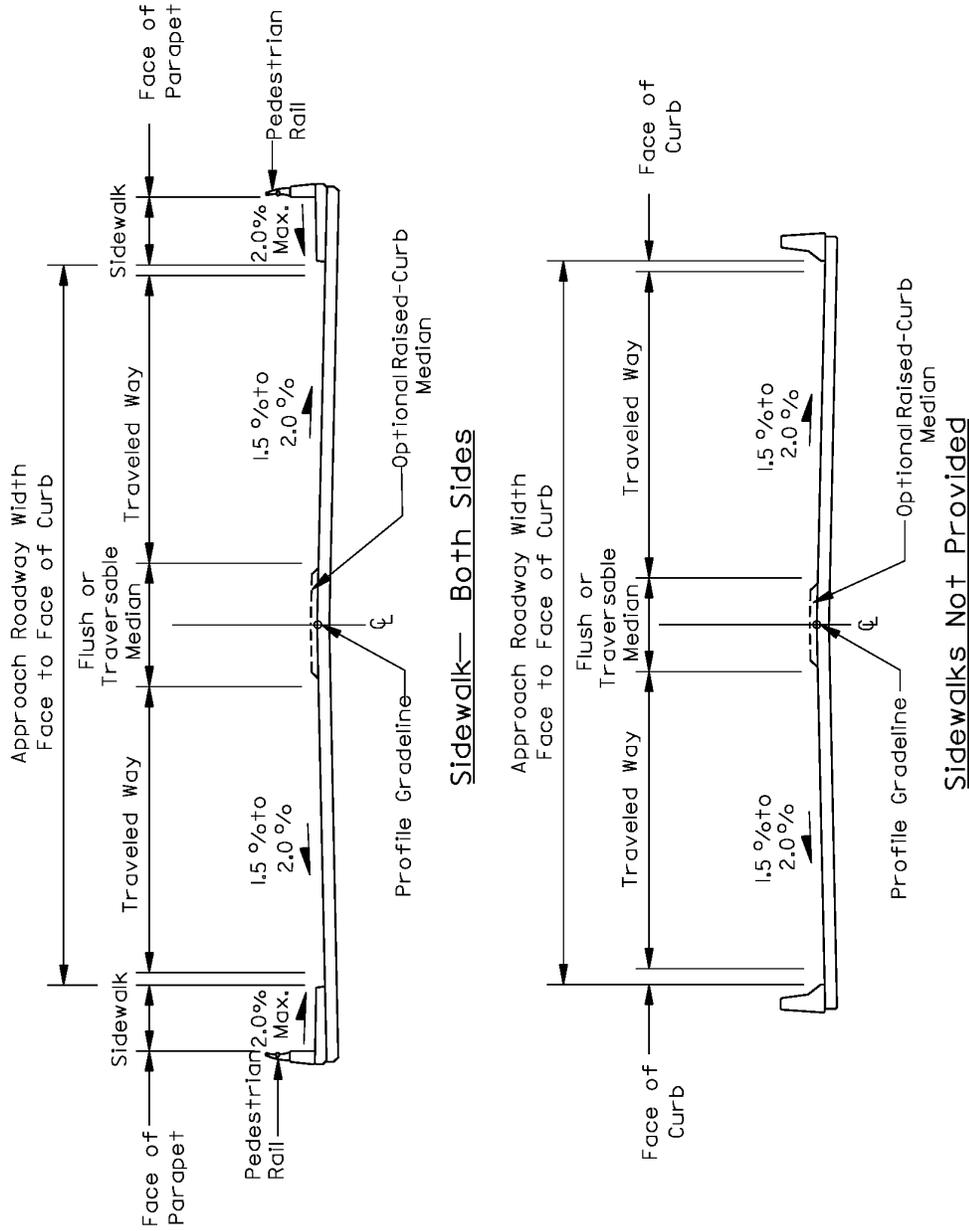


Notes:

1. If bikeways are required on one side only, design the parapet, handrail, and bike rail as appropriate.
2. Where a flush/traversable median is used on the approach, a raised-curb median may be used across the structure where bridge decks are subject to frequent icing conditions.
3. Only consider this template under special warrant or conditions (e.g., vehicular posted speed limits of 45 mph or greater with high pedestrian volumes, concentration of elementary school children, designated off-road bikeways, or other demonstrated hazardous conditions).
4. Only consider this template with no curb and gutter on the approaches under special warrant or conditions (e.g., vehicular posted speed limits of 45 mph or greater with high pedestrian volumes, concentration of elementary school children, designated off-road bikeways, or other demonstrated hazardous conditions).

**CLEAR ROADWAY WIDTH OF BRIDGES FOR NEW AND RECONSTRUCTED
ROADS AND STREETS WITH BIKEWAYS**

Figure 36-4D

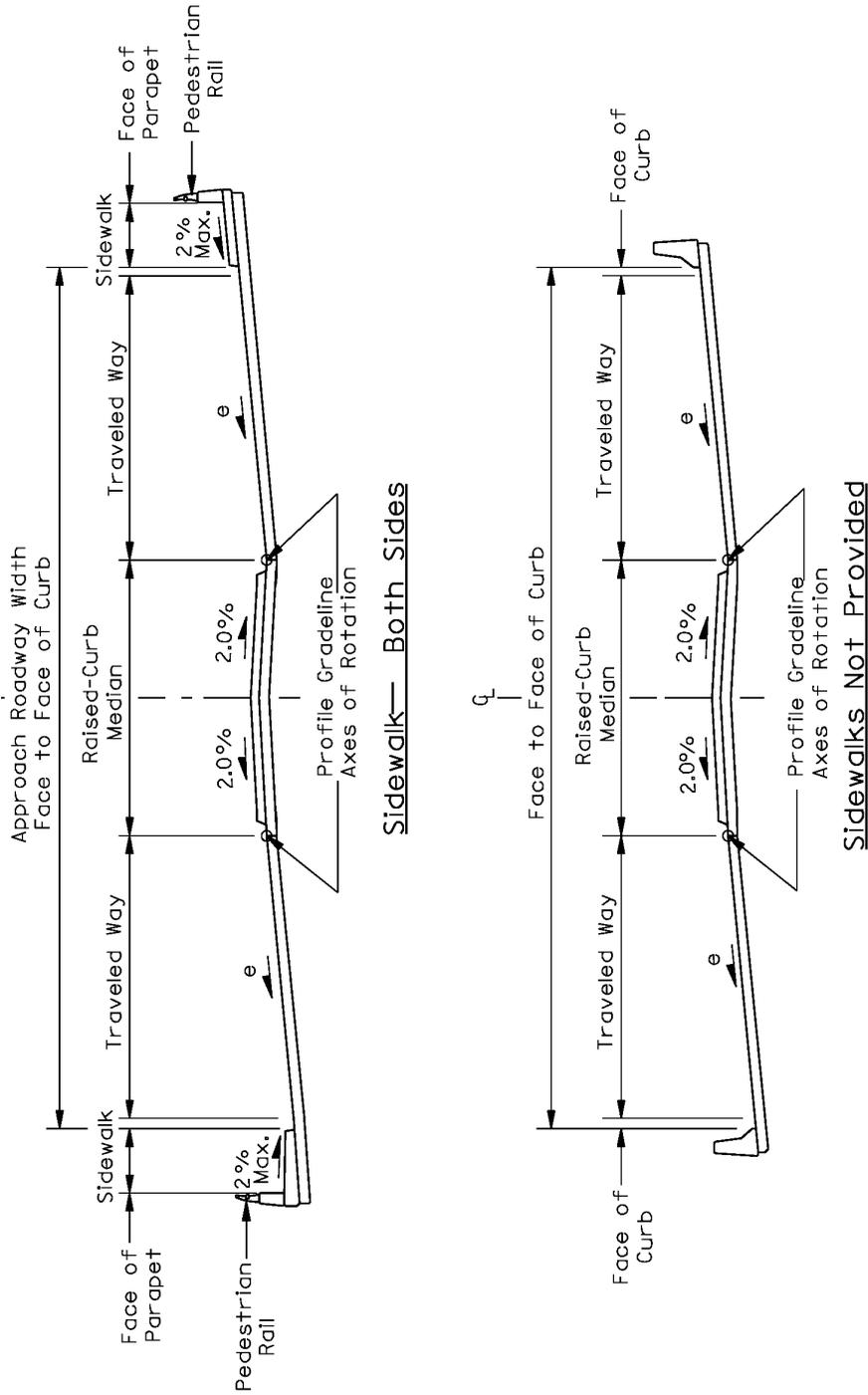


Note:

Where a flush/traversable median is used on the approach, a raised-curb median may be used across the structure where bridge decks are subject to frequent icing conditions.

**CLEAR ROADWAY WIDTH OF BRIDGES FOR NEW AND RECONSTRUCTED
TWO-LANE URBAN STREETS
(Flush/Traversable Median)**

Figure 36-4E

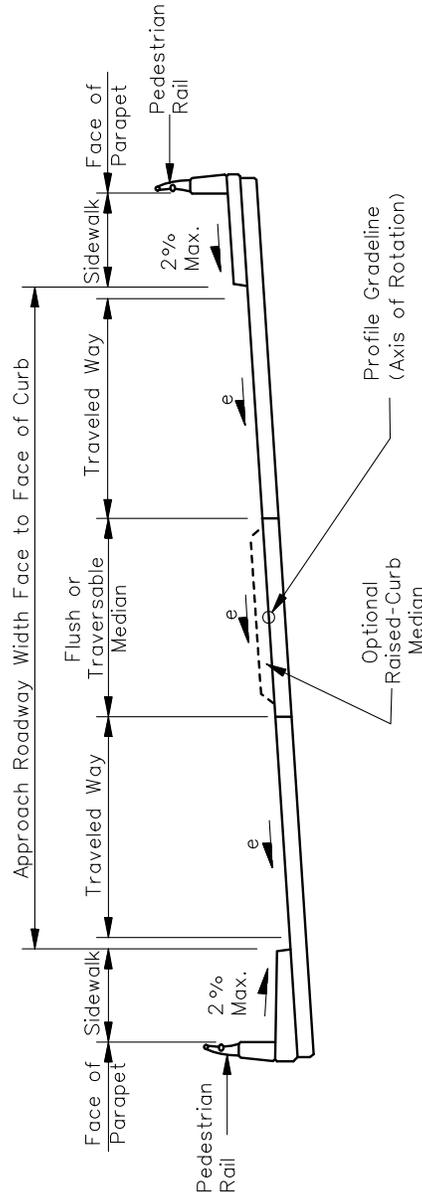


Note:

Where an urban bridge lies within a horizontal curve with superelevation, the gutter on the high side of the bridge (starting just off the end of the bridge approach pavement) is gradually transitioned into the design slope of the gutter on the approaching roadway. See the IDOT Highway Standards. This transition should be accomplished by providing a maximum relative longitudinal difference in gradient of 0.40% between the edge of the traveled way and the flow line of the gutter.

**CLEAR ROADWAY WIDTH OF SUPERELEVATED BRIDGES ON URBAN
STREETS WITH RAISED-CURB MEDIUM**

Figure 36-4F

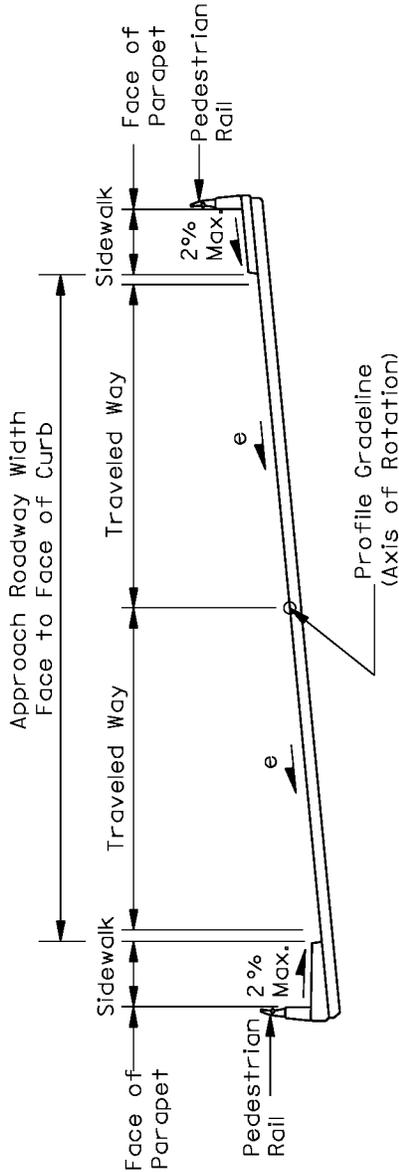


Note:

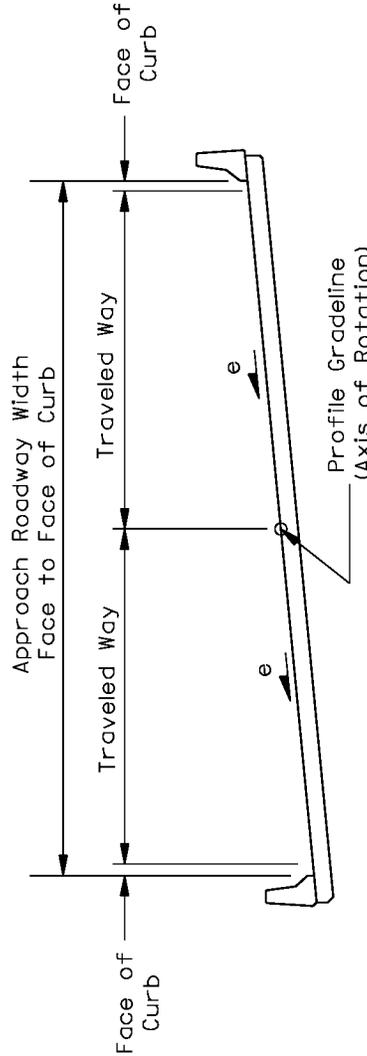
Where an urban bridge lies within a horizontal curve with superelevation, the gutter on the high side of the bridge (starting just off the end of the bridge approach pavement) is gradually transitioned into the design slope of the gutter on the approaching roadway. See the IDOT Highway Standards. This transition should be accomplished by providing a maximum relative longitudinal difference in gradient of 0.40% between the edge of the traveled way and the flow line of the gutter.

**CLEAR ROADWAY WIDTH OF SUPERELEVATED BRIDGES
ON URBAN STREETS WITH FLUSH/TRAVERSABLE MEDIAN**

Figure 36-4G



Sidewalk— Both Sides



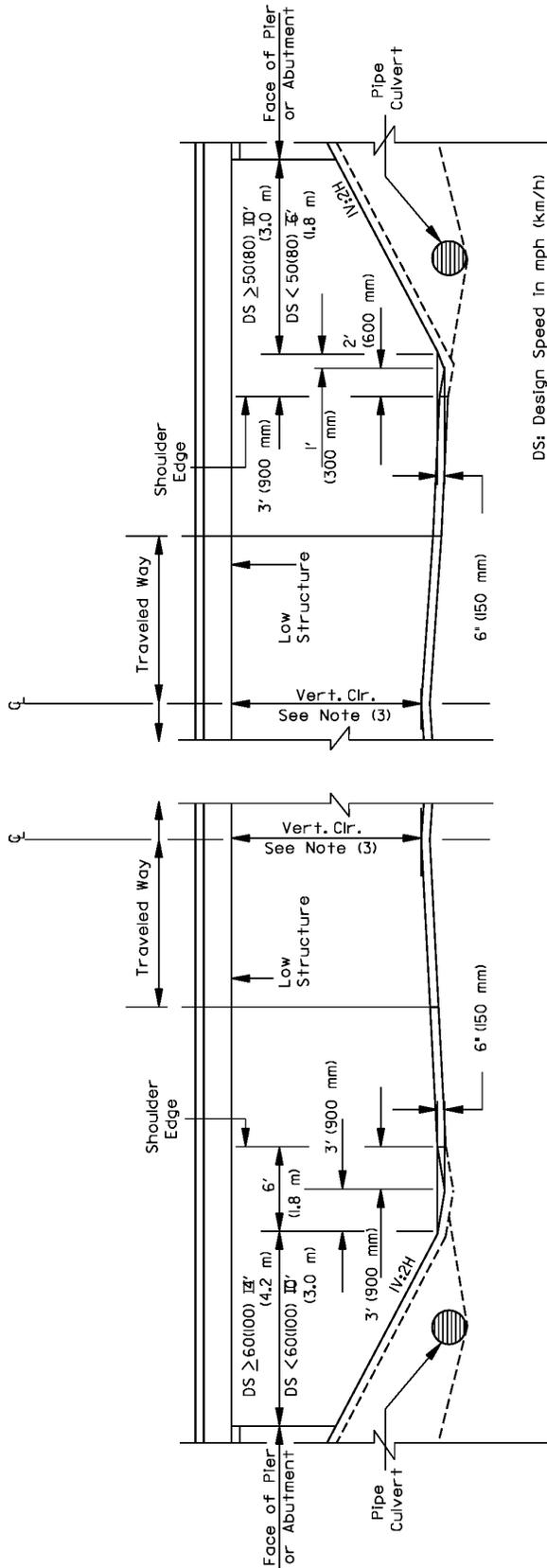
Sidewalks Not Provided

Note:

Where an urban bridge lies within a horizontal curve with superelevation, the gutter on the high side of the bridge (starting just off the end of the bridge approach pavement) is gradually transitioned into the design slope of the gutter on the approaching roadway. See the IDOT Highway Standards. This transition should be accomplished by providing a maximum relative longitudinal difference in gradient of 0.40% between the edge of the traveled way and the flow line of the gutter.

**CLEAR ROADWAY WIDTH OF SUPERELEVATED BRIDGES
ON TWO-LANE URBAN STREETS**

Figure 36-4H



CONFIGURATION A

CONFIGURATION B

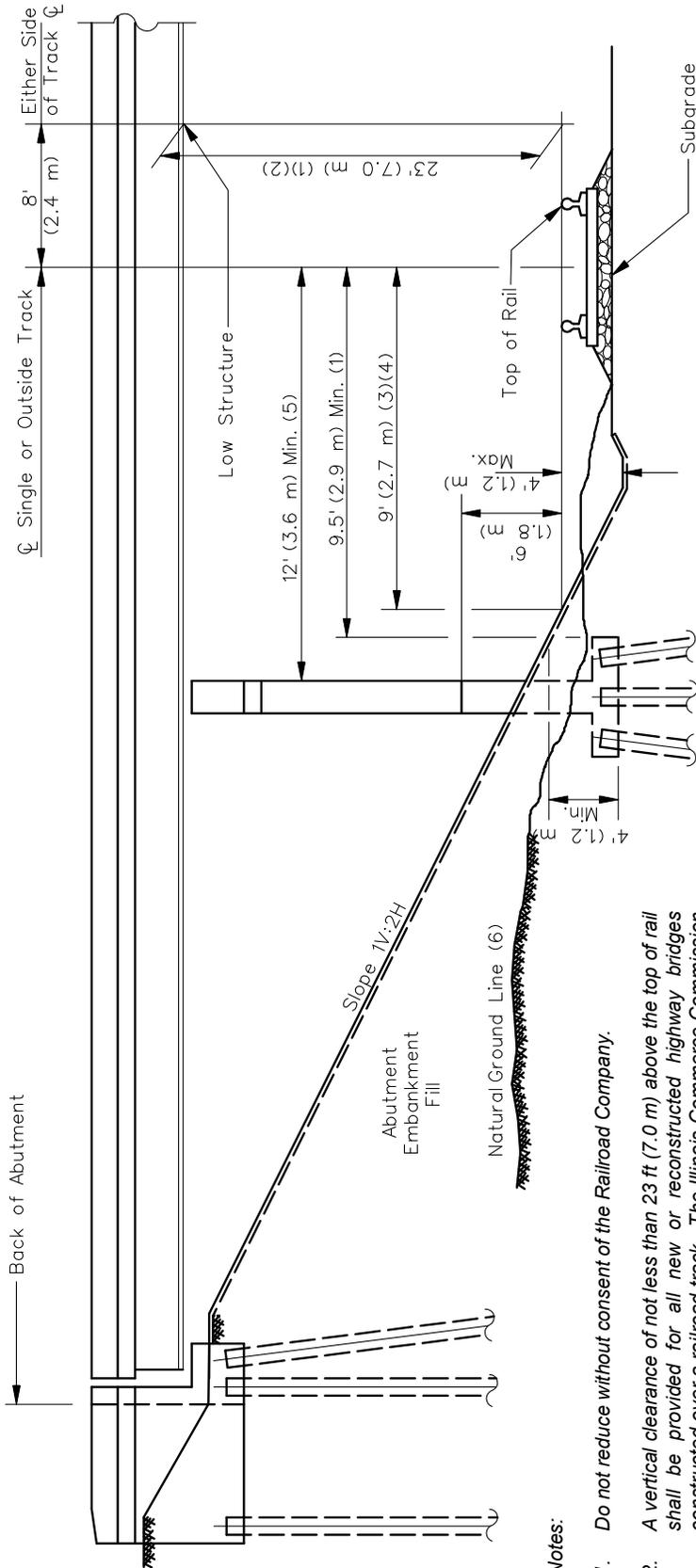
Functional Classification of Underpassing Highway	Current ADT or 20-Year DHV	Configuration	Minimum Vertical Clearance
Rural Arterial (New)	All ADTs	A	16'-6" (5.0 m)
Rural Arterial (Reconstruction)	All ADTs	A	16'-3" (4.9 m)
Urban Arterial	All ADTs	A	14'-9" (4.5 m)
Local Road or Collector	DHV > 200	A	14'-9" (4.5 m)
Local Road or Collector	DHV ≤ 200	B	14'-9" (4.5 m)
Local Road or Collector	ADT ≤ 400	B	14'-9" (4.5 m)

Notes:

1. Locate the upstream traffic end of a through pipe culvert outside the clear zone of the near edge of traveled way.
2. All horizontal dimensions are right-angle dimensions.
3. Locate the minimum clearance point at the least clearance point above the usable roadway under, including stabilized shoulders.

CLEARANCES FOR BRIDGES OVER TWO-LANE ROADS

Figure 36-4I



TYPICAL SECTION AT RIGHT ANGLE TO TRACK WHERE
NATURAL GROUNDLINE IS LESS THAN 4' (1.2 m) BELOW TOP
OF RAIL OR ANY ELEVATION ABOVE TOP OF RAIL (6)

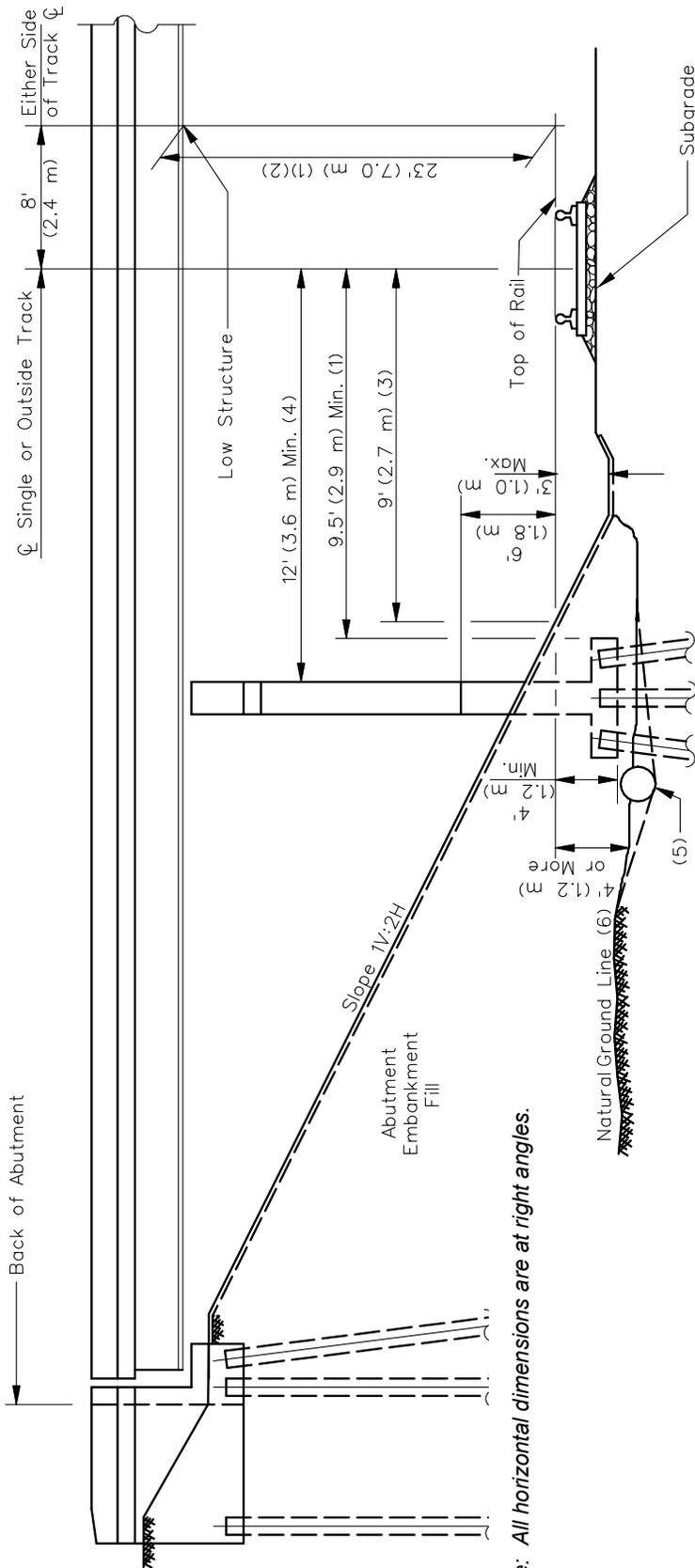
Note: All horizontal dimensions are at right angles.

Notes:

1. Do not reduce without consent of the Railroad Company.
2. A vertical clearance of not less than 23 ft (7.0 m) above the top of rail shall be provided for all new or reconstructed highway bridges constructed over a railroad track. The Illinois Commerce Commission may permit a lesser clearance if it determines that the 23 ft (7.0 m) clearance standard cannot be justified based on engineering, operational, and economical conditions.
3. This dimension may be increased by up to 8 ft (2.4 m) on one side only, as may be necessary for off-track maintenance equipment when justified by the Railroad Company.
4. This dimension may be increased by up to 3 ft (1.0 m) where special conditions, such as heavy and drifting snow, are a problem.
5. Locate piers or columns so as not to encroach on drainage ditches.
6. Where natural ground is 4 ft (1.2 m) or more below top of rail, see Figure 36-4K.

**HIGHWAY GRADE SEPARATION OVER RAILROAD
(Natural Ground Less Than 4 ft (1.2 m) Below Rail)**

Figure 36-4J



Note: All horizontal dimensions are at right angles.

Notes:

1. Do not reduce without consent of the Railroad Company.
2. A vertical clearance of not less than 23 ft (7.0 m) above the top of rail shall be provided for all new or reconstructed highway bridges constructed over a railroad track. The Illinois Commerce Commission may permit a lesser clearance if it determines that the 23 ft (7.0 m) clearance standard cannot be justified based on engineering, operational, and economical conditions.
3. This dimension may be increased by up to 8 ft (2.4 m) on one side only, as may be necessary for off-track maintenance equipment when justified by the Railroad Company.
4. Locate piers or columns so as not to encroach on drainage ditches.
5. Intercepted drainage along railroad embankment shall be accommodated with a minimum 3 ft (900 mm) diameter culvert or carried along highway embankment.
6. Where natural ground is less than 4 ft (1.2 m) below top of rail, see Figure 36-4J.

TYPICAL SECTION AT RIGHT ANGLE TO TRACK WHERE NATURAL GROUNDLINE IS 4' (1.2 m) OR MORE BELOW TOP OF RAIL (6)

HIGHWAY GRADE SEPARATION OVER RAILROAD
(Natural Ground 4 ft (1.2 m) or More Below Rail)

Figure 36-4K

36-5 TABLES OF DESIGN CRITERIA

Figure 36-5A presents the design criteria for new or reconstructed bridges on rural collectors/local roads. Figure 36-5B presents the criteria for new or reconstructed bridges on suburban/urban arterials. Figure 36-5C presents the criteria for new or reconstructed bridges on urban collectors/local streets.

BUREAU OF LOCAL ROADS & STREETS
BRIDGE/STRUCTURE DESIGN

36-5(2)

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Classification	Collector				Local				
	See Figure 32-2A				See Figure 32-2B				
Approach Roadway Criteria	≤ 400	401-2000	2001-4000	> 4000	≤ 250	251-400	401-2000	2001-4000	> 4000
Design Traffic Volumes (ADT)	24' (Traveled Way + 2' each side)	28' (Traveled Way + 3' each side)	32' (Traveled Way + 5' each side)	40' (6) (Approach Roadway Width)	22' (7) (Traveled Way + 2' each side)	24' (Traveled Way + 2' each side)	28' (Traveled Way + 3' each side)	30' (Traveled Way + 4' each side)	40' (6) (Approach Roadway Width)
Clear Roadway Bridge Widths (Face-to-Face of Traffic Barriers) ⁽²⁾⁽³⁾⁽⁴⁾	22'	22'	24'	28'	20'	20'	22'	24'	28'
Minimum Width of Bridges (Face-to-Face of Traffic Barriers) Allowed to Remain in Place ⁽⁶⁾	20 year ⁽¹⁰⁾	20 year	30 year	30 year	15 year ⁽⁷⁾	20 year	20 year	30 year	30 year
Minimum Design Flood Frequency	1'								
Minimum Clearance Above Design High-Water Elevation ⁽⁶⁾	HS-20								
Design Live Load	New				HS-15				
	Remain in Place ⁽¹¹⁾				H-15 (H-10 where ADT < 50)				
Vertical Clearance for Structures Over Highways ⁽⁹⁾	New				See Figure 36-4I				
	Remain in Place				14'				
Horizontal Clearance for Structures Over Highways					See Figure 36-4I				
Horizontal Clearance Over Railroads					See Figures 36-4J and 36-4K				
Vertical Clearance for Pedestrian or Bicycle Structures Over Highways					17'-3"				
Vertical Clearance Over Railroads					23'-0"				

DESIGN CRITERIA FOR NEW OR RECONSTRUCTED⁽¹⁾ RURAL BRIDGES
Figure 36-5A (US Customary)

BUREAU OF LOCAL ROADS & STREETS
BRIDGE/STRUCTURE DESIGN

Jan 2006

36-5(3)

Classification	Collector				Local				
	Figure 32-2A				Figure 32-2B				
Approach Roadway Criteria	≤ 400	401-2000	2001-4000	> 4000	≤ 250	251-400	401-2000	2001-4000	> 4000
Design Traffic Volumes (ADT)	7.2 m (Traveled way + 0.6 m each side)	8.6 m (Traveled way + 1 m each side)	9.6 m (Traveled way + 1.5 m each side)	12.0 m (6) (Approach Roadway Width)	6.6 m (7) (Traveled way + 0.6 m each side)	7.2 m (Traveled way + 0.6 m each side)	8.6 m (Traveled way + 1 m each side)	9.0 m (Traveled way + 1.2 m each side)	12.0 m (Approach Roadway Width) (6)
Clear Roadway Bridge Widths (Face-to-Face of Parapets) ⁽²⁾⁽³⁾⁽⁴⁾	6.6 m	6.6 m	7.2 m	8.4 m	6.0 m	6.0 m	6.6 m	7.2 m	8.4 m
Minimum Width of Bridges (Face-to-Face of Parapets) Allowed to Remain in Place ⁽⁶⁾	20 year ⁽¹⁰⁾	20 year	30 year	30 year	15 year ⁽⁷⁾	20 year	20 year	30 year	30 year
Minimum Design Flood Frequency	300 mm								
Minimum Clearance Above Design High-Water Elevation ⁽⁸⁾	MS-18								
Design Live Load	New				MS-13.5				
	Remain in Place ⁽¹¹⁾				M-13.5 (M-9 where ADT < 50)				
Vertical Clearance for Structures Over Highways ⁽⁹⁾	New				See Figure 36-41				
	Remain in Place				4.3 m				
Horizontal Clearance for Structures Over Highways	See Figure 36-41								
Horizontal Clearance for Structures Over Railroads	See Figures 36-4J and 36-4K								
Vertical Clearance for Pedestrian or Bicycle Structures Over Highways	5.3 m								
Vertical Clearance for Structures Over Railroads	7.0 m								

DESIGN CRITERIA FOR NEW OR RECONSTRUCTED⁽¹⁾ RURAL BRIDGES
Figure 36-5A (Metric)

Footnotes for Figure 36-5A

- (1) *Implies reconstruction of a significant length of existing highway either on new location or within existing right-of-way. For reconstruction of relatively short intermittent highway segments within a project, the design criteria used, where cost-safety effective, should be consistent with the adjacent highway design but not less than that allowed to remain in place.*
- (2) *The minimum bridge width shall not be less than the width of the approaching traveled way plus the paved portions of the shoulders.*
- (3) *Bridge widths for bridge rehabilitation projects are discussed in Chapter 33.*
- (4) *For reconstruction projects, where the minimum required shoulder widths on a structure can only be obtained with the addition of new beams and substructure, a cost-safety evaluation should be made to determine the appropriateness of providing the required width. Significant decreases of the required widths should not be considered.*
- (5) *Bridges remaining in place without a design exception approval when a safety record is satisfactory if the bridge is being gapped within a roadway section. Clear width between curbs or rails, whichever is less, should be equal to or greater than the approach traveled way width.*
- (6) *For bridges in excess of 100 ft (30 m) in length, a minimum bridge width of 30 ft (9.0 m) will be permitted.*
- (7) *For road district projects only, the bridge width may be 20 ft (6.0 m), and the design flood frequency may be 10 years for ADTs less than or equal to 150.*
- (8) *For reconstruction projects, the proposed low superstructure should not be below the existing superstructure unless 1 ft (300 mm) of clearance is achieved. Any proposed clearance less than 1 ft (300 mm) above design high-water elevation must be accompanied by a request for a design exception.*
- (9) *The minimum required vertical clearance must be available over the traveled way and any paved shoulders.*
- (10) *The design flood frequency may be 15 years for ADT under 250.*
- (11) *The design live load for bridges to remain in place only applies to minor rehabilitation and in-kind replacements (e.g. rail or joint repair, partial deck repair, individual stringer replacement, etc.). Other work, including deck replacement shall be considered new.*

Note: Traveled way width is the sum of the widths of all travel lanes. It is the larger of the value from Chapter 32 or, for existing bridges, the existing (or proposed) width of the approach traveled way.

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BRIDGE/STRUCTURE DESIGN

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36-5(5)

Classification	Suburban Arterial			Urban Two-Way Arterial			Urban One-Way Arterial		
	TWS-2	TWS-4	TWS-6	TWS-2	TWS-4	TWS-6	OWS-2	OWS-3	OWS-4
Highway Type	See Figure 32-2C			See Figure 32-2D			See Figure 32-2E		
Approach Roadway Criteria	Two-Way DHV ⁽²⁾			One-Way DHV ⁽²⁾					
Design Traffic Volumes	< 1250	1250-2050	2050-2900	< 1250	1250-2050	2050-2900	< 1300	1300-1850	> 1850
Clear Roadway Bridge Widths (Face-to-face of Parapets or Curbs) ⁽³⁾⁽⁴⁾	Approach Surface Width			Approach Roadway Width (but not less than existing roadway width) or Face-to-Face of Curb as Specified in Chapter 32					
Minimum Width of Bridges (Face-to-Face of Parapets or Curbs) Allowed to Remain in Place ⁽⁵⁾	Traveled Way + 2' Each Side for Rural Approach Cross Sections Width of Approach Roadway (face-to-face of curb) for Urban Approach Cross Sections								
Minimum Design Flood Frequency	30 year								
Minimum Clearance Above Design High-Water Elevation ⁽⁶⁾	1'								
Design Live Load	New								
	Remain in Place ⁽⁸⁾								
Vertical Clearance for Structures Over Highways ⁽⁷⁾	New								
	Remain in Place								
Horizontal Clearance for Structures Over Highways	See Figure 36-4I or 1.5' Behind Face of Curb								
Vertical Clearance for Pedestrian or Bicycle Structures Over Highways	17'-3"								
Vertical and Horizontal Clearance for Structures Over Railroads	See Figures 36-4J and 36-4K								

TWS = Two-Way Street OWS = One-Way Street

DESIGN CRITERIA FOR NEW OR RECONSTRUCTED⁽¹⁾ SUBURBAN/URBAN ARTERIAL BRIDGES
Figure 36-5B (US Customary)

BUREAU OF LOCAL ROADS & STREETS
BRIDGE/STRUCTURE DESIGN

36-5(6)

Jan 2006

Classification	Suburban Arterial			Urban Two-Way Arterial			Urban One-Way Arterial		
	TWS-2	TWS-4	TWS-6	TWS-2	TWS-4	TWS-6	OWS-2	OWS-3	OWS-4
Highway Type	See Figure 32-2C			See Figure 32-2D			See Figure 32-2E		
Approach Roadway Criteria	Two-Way DHV ⁽²⁾								
Design Traffic Volumes	< 1250	1250-2050	2050-2900	< 1250	1250-2050	2050-2900	< 1300	1300-1850	> 1850
Clear Roadway Bridge Widths (Face-to-face of Parapets or Curbs) ^{(3),(4)}	Approach Surface Width			Approach Roadway Width (but not less than existing roadway width) or Face-to-Face of Curb as Specified in Chapter 32					
Minimum Width of Bridges (Face-to-Face of Parapets or Curbs) Allowed to Remain in Place ⁽⁵⁾	Traveled Way + 600 mm Each Side for Rural Approach Cross Sections Width of Approach Roadway (face-to-face of curb) for Urban Approach Cross Sections								
Minimum Design Flood Frequency	30 year								
Minimum Clearance Above Design High-Water Elevation ⁽⁶⁾	300 mm								
Design Live Load	New								
	Remain in Place ⁽⁸⁾								
Vertical Clearance for Structures Over Highways ⁽⁷⁾	New								
	Remain in Place								
Horizontal Clearance for Structures Over Highways	See Figure 36-4I								
Vertical Clearance for Pedestrian or Bicycle Structures Over Highways	4.3 m								
Vertical and Horizontal Clearance for Structures Over Railroads	See Figure 36-4J or 450 mm Behind Face of Curb								
	5.3 m								
	See Figures 36-4J and 36-4K								

TWS = Two-Way Street OWS = One-Way Street

DESIGN CRITERIA FOR NEW OR RECONSTRUCTED⁽¹⁾ SUBURBAN/URBAN ARTERIAL BRIDGES
Figure 36-5B (Metric)

Footnotes for Figure 36-5B

- (1) *Implies reconstruction of a significant length of existing highway either on new location or within existing right-of-way. For reconstruction of relatively short intermittent highway segments within a project, the design criteria used, where cost-safety effective, should be consistent with the adjacent highway design but not less than that allowed to remain in place.*
- (2) *The design hourly volumes (DHV) are calculated using a peak hour factor (PHF) = 1.0; adjust these values using local peak-hour factors.*
- (3) *Bridge widths for bridge rehabilitation projects are discussed in Chapter 33.*
- (4) *For urban bridges requiring sidewalks, the width of the sidewalks is 5 ft (1.5 m) unless a wider width is specified by the local agency.*
- (5) *Bridges remaining in place without a design exception approval when a safety record is satisfactory if the bridge is being gapped within a roadway section. Clear width between curbs or rails, whichever is less, should be equal to or greater than the approach traveled way width.*
- (6) *For reconstruction projects, the proposed low superstructure should not be below the existing superstructure unless 1 ft (300 mm) of clearance above design high water is achieved. Any proposed clearance less than 1 ft (300 mm) above design high water elevation must be accompanied by a request for a design exception.*
- (7) *The minimum required vertical clearance must be available over the traveled way and any paved shoulders.*
- (8) *The design live load for bridges to remain in place only applies to minor rehabilitation and in-kind replacements (e.g. rail or joint repair, partial deck repair, individual stringer replacement, etc.). Other work, including deck replacement shall be considered new.*

Note: Traveled way width is the sum of the widths of all travel lanes. It is the larger of the value from Chapter 32 or, for existing bridges, the existing (or proposed) width of the approach traveled way.

BUREAU OF LOCAL ROADS & STREETS
BRIDGE/STRUCTURE DESIGN

36-5(8)

Jan 2006

Classification	Urban Two-Way Collector		Urban One-Way Collector		Urban Local	
	TWS-2	TWS-2	OWS-2	OWS-2	TWS-2	TWS-2
Highway Type	See Figure 32-2F	See Figure 32-2F	See Figure 32-2G	See Figure 32-2G	See Figure 32-2H	See Figure 32-2H
Approach Roadway Criteria	Two-Way ADT	Two-Way ADT	One-Way ADT	One-Way ADT	Two-Way ADT	Two-Way ADT
Design Traffic Volumes	<5000	≥5000	<5000	≥5000	<1000	1000-5000
Clear Roadway Bridge Widths (Face-to-face of Parapets or Curbs) ⁽²⁾⁽³⁾	Approach Roadway Width (but not less than existing roadway width) or Face-to-Face of Curb as Specified in Chapter 32					
Minimum Width of Bridges (Face-to-Face of Parapets or Curbs) Allowed to Remain in Place ⁽⁴⁾	Approach Roadway Width or Face-to-Face of Curb					
Minimum Design Flood Frequency	30 year					
Minimum Clearance Above Design High-Water Elevation ⁽⁵⁾	1'					
Design Live Load	New					
	Remain in Place ⁽⁷⁾					
Vertical Clearance for Structures Over Highways ⁽⁶⁾	New					
	Remain in Place					
Horizontal Clearance for Structures Over Highways	See Figure 36-4I					
Vertical Clearance for Pedestrian or Bicycle Structures Over Highways	17'-3"					
Vertical and Horizontal Clearance for Structures Over Railroads	See Figures 36-4J and 36-4K					

TWS = Two-Way Street OWS = One-Way Street

DESIGN CRITERIA FOR NEW OR RECONSTRUCTED⁽¹⁾ URBAN COLLECTOR/LOCAL STREETS BRIDGES
Figure 36-5C (US Customary)

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BRIDGE/STRUCTURE DESIGN

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Classification	Urban Two-Way Collector		Urban One-Way Collector		Urban Local	
	TWS-2	TWS-2	OWS-2	OWS-2	TWS-2	TWS-2
Highway Type	TWS-2	TWS-2	OWS-2	OWS-2	TWS-2	TWS-2
Approach Roadway Criteria	See Figure 32-2F		See Figure 32-2G		See Figure 32-2H	
Design Traffic Volumes	Two-Way ADT		One-Way ADT		Two-Way ADT	
	<5000	≥5000	<5000	≥5000	<1000	1000-5000
Clear Roadway Bridge Widths (Face-to-face of Parapets or Curbs) ⁽²⁾⁽³⁾	Approach Roadway Width (but not less than existing roadway width) or Face-to-Face of Curb as Specified in Chapter 32					
Minimum Width of Bridges (Face-to-Face of Parapets or Curbs) Allowed to Remain in Place ⁽⁴⁾	Approach Roadway Width or Face-to-Face of Curb					
Minimum Design Flood Frequency	30 year					
Minimum Clearance Above Design High-Water Elevation ⁽⁵⁾	300 mm					
Design Live Load	New					
	Remain in Place ⁽⁷⁾					
Vertical Clearance for Structures Over Highways ⁽⁶⁾	New					
	Remain in Place					
Horizontal Clearance for Structures Over Highways	See Figure 36-4I					
Vertical Clearance for Pedestrian or Bicycle Structures Over Highways	5.3 m					
Vertical and Horizontal Clearance for Structures Over Railroads	See Figures 36-4J and 36-4K					

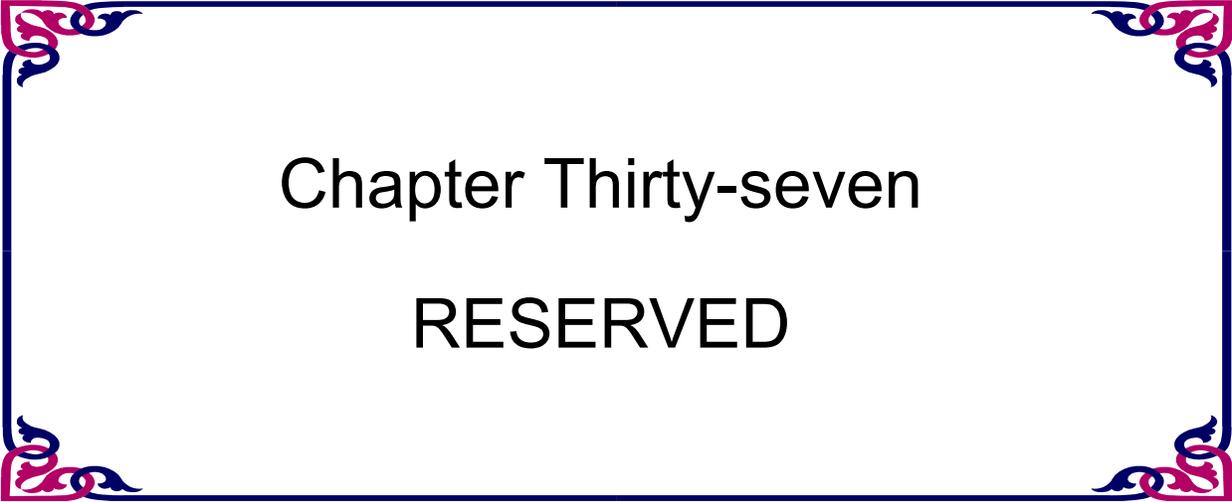
TWS = Two-Way Street OWS = One-Way Street

DESIGN CRITERIA FOR NEW OR RECONSTRUCTED⁽¹⁾ URBAN COLLECTOR/LOCAL STREETS BRIDGES
Figure 36-5C (Metric)

Footnotes for Figure 36-5C

- (1) *Implies reconstruction of a significant length of existing highway either on new location or within existing ROW. For reconstruction of relatively short intermittent highway segments within a project, the design criteria used, where cost-safety effective, should be consistent with the adjacent highway design but not less than that allowed to remain in place.*
- (2) *Bridge widths for bridge rehabilitation projects are discussed in Chapter 33.*
- (3) *For urban bridges requiring sidewalks, the width of the sidewalks is 5 ft (1.5 m) unless a wider width is specified by the local agency.*
- (4) *Bridges remaining in place without a design exception approval when a safety record is satisfactory if the bridge is being gapped within a roadway section. Clear width between curbs or rails, whichever is less, should be equal to or greater than the approach traveled way width.*
- (5) *For reconstruction projects, the proposed low superstructure should not be below the existing superstructure unless 1 ft (300 mm) of clearance above design high water is achieved. Any proposed clearance less than 1 ft (300 mm) above design high water elevation must be accompanied by a request for a design exception.*
- (6) *The minimum required vertical clearance must be available over the traveled way and any paved shoulders.*
- (7) *The design live load for bridges to remain in place only applies to minor rehabilitation and in-kind replacements (e.g. rail or joint repair, partial deck repair, individual stringer replacement, etc.). Other work, including deck replacement shall be considered new.*

Note: Traveled way width is the sum of the widths of all travel lanes. It is the larger of the value from Chapter 32 or, for existing bridges, the existing (or proposed) width of the approach traveled way.

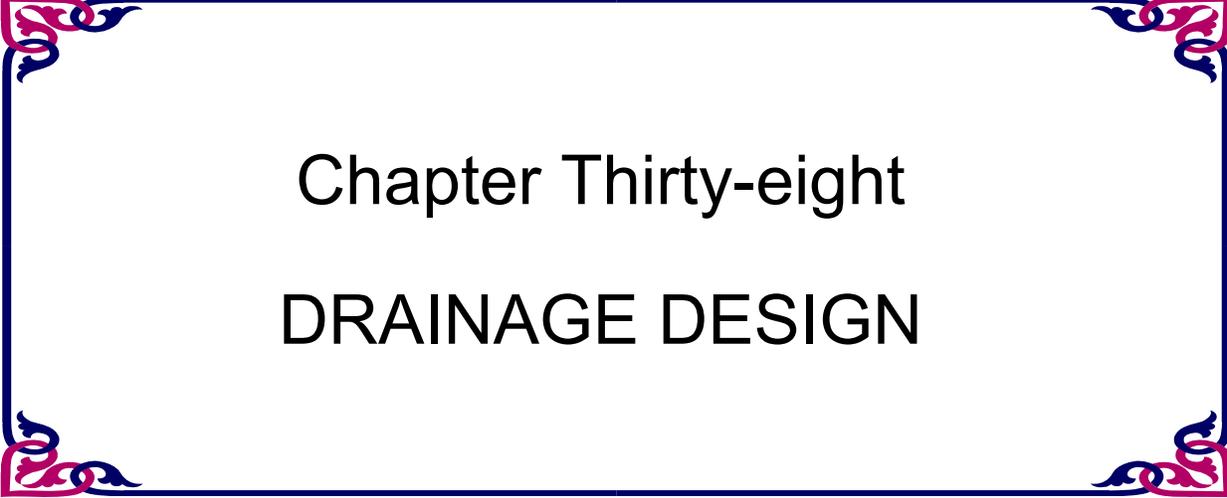


Chapter Thirty-seven

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Chapter Thirty-eight
DRAINAGE DESIGN

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Chapter Thirty-eight
DRAINAGE DESIGN

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Chapter Thirty-eight

DRAINAGE DESIGN

Chapter 38 presents drainage design criteria specifically for local agency projects. For information on design procedures, the designer should reference the *IDOT Drainage Manual*. In addition, the *Illinois Drainage Code* (42 ILCS) provides the laws relative to rights of drainage, as well as those regarding the construction, maintenance, and repair of drains, ditches, and levees.

38-1 ROADSIDE DITCHES

In addition to Section 38-1, the designer should refer to the following in the *BLRS Manual*:

- Section 31-2 “Roadside Elements,” and
- Chapter 32 “Geometric Design Tables,” which presents criteria for the configuration of roadside ditches.

38-1.01 Definition

A roadside ditch is defined as an open channel paralleling the highway embankment within the limits of the highway right-of-way. Its primary function is to collect runoff from the highway and areas adjacent to the right-of-way and to transport this accumulated water to an acceptable outlet point. A secondary function of a roadside ditch is to drain the base of the roadway to prevent saturation and loss of support for the pavement.

38-1.02 Flood Frequencies

Flood frequencies for the design of ditches and ditch linings for rural roadways are given in Figure 38-1A. Figure 38-1B provides the flood frequencies for urban collector and local streets. For urban arterials, use a 30 year flood frequency for ditch designs and a 10 year flood frequency for ditch lining designs. The use of higher frequencies may be warranted in areas especially sensitive to flooding or erosion.

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DRAINAGE DESIGN

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Design Traffic	Flood Frequency Ditches	Flood Frequency Ditch Lining	
		Arterials	All Others
Under 400 ADT	15 years	10 years	5 years
ADT 400 - 2000	20 years	10 years	5 years
ADT over 2000	30 years	10 years	10 years

FLOOD FREQUENCIES FOR RURAL ROADWAYS

Figure 38-1A

Design Traffic	Flood Frequency Ditches	Flood Frequency Ditch Lining
Under 1000 ADT	15 years	5 years
ADT 1000 – 5000	20 years	5 years
Over 5000	30 years	10 years

Note: For all urban arterials, the flood frequency for ditches is 30 years and the flood frequency for ditch linings is 10 years.

**FLOOD FREQUENCIES FOR URBAN STEETS
(Urban Collectors and Local Streets)**

Figure 38-1B

38-1.03 Ditch Cross Section

Design features that should be considered include the following:

1. **Depth.** A depth of 2 ft (600 mm) for a standard trapezoidal ditch, or 1.5 ft (450 mm) for V-ditches where the ADT < 250, is recommended but not required. To provide adequate subbase drainage and to minimize the effect of freeze-thaw cycles on the pavement structure, the depth of the roadside ditch below the shoulder should be equal to the maximum depth of frost penetration for the locale.
2. **Shape.** Except for low-volume roads (under 250 ADT), all permanent ditches should be trapezoidal shaped with a bottom width of at least 2 ft (600 mm) or curved bottom ditches, which are ideal for hydraulic and safety purposes. Triangular ditches are highly susceptible to erosion and easily blocked by debris. When a ditch bottom width of over 4 ft (1.2 m) is used, the bottom should be sloped at 1V:20H toward the center of the

ditch. This "V"-shaped bottom will deter the forming of a meandering low-flow channel and will minimize standing water in the ditch.

3. Vegetation. Consider the difficulties associated with establishing and maintaining vegetation on steep slopes. Slopes steeper than 1V:2H may require special erosion control measures. In areas of very erosive soils, 1V:2H or even flatter slopes may require special attention.
4. Sideslopes. Sideslopes for ditches should comply with the design criteria for the road. See Chapter 31 for more detailed information.
5. Transitions. Changes between different ditch cross sections should be made with gradual transitions to avoid the creation of turbulent flow conditions and to improve the appearance of the finished project. Recommended transition rates are 25 ft per 1 ft (25 m per 1 m) change in ditch bottom width, and 100 ft (30 m) for each change in side slope from 1V:2H to 1V:3H, 1V:3H to 1V:4H, etc.

38-1.04 Ditch Gradient

To minimize ponding and silting accumulation, a grade of at least 0.3% should be provided on all roadside ditches. Grades in the range of 0.4% to 0.6% are usually more desirable. There is no upper limit on ditch gradients; however, the steeper the grade, the greater the expense may be for erosion control requirements.

38-1.05 Ditch Capacity

Analyze a proposed roadside ditch at critical locations to verify that it will provide adequate hydraulic capacity to carry the peak rate of runoff that is expected to occur with the design frequency. The Rational Method or the regression equations developed by the US Geological Survey are recommended methods for determining design discharges. See the *IDOT Drainage Manual* for guidance in determining discharges.

38-1.06 Ditch Linings

The investigation of the need for protective linings may be necessary for ditch design. If adequate protection is not provided, unsightly gullies appear, maintenance costs increase, and highway structures may be damaged. Include a lining if the side slope or bed material of the ditch will erode at the flow velocity that would occur during a storm that occurs with a flood frequency of 5 or 10 years. Use 10 years only if the design traffic is over 2000 ADT in rural areas and 5000 ADT in urban areas for collectors and local roads and streets. Use 10 years for all arterials; see Figure 38-1B. Note that ditch lining frequencies are lower than those used for other aspects of design, because the extra cost of protecting ditches against velocities of higher frequency floods almost always outweighs any resulting reduction in maintenance costs.

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DRAINAGE DESIGN

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A lining is recommended when the design velocity is above the values for bare soil as shown in Figure 38-1C.

Soil Type	Bare Soil ft/sec (m/sec)	With Grass ft/sec (m/sec)
Fine Sand (Non-Colloidal)	2.0 (0.6)	4.0 (1.2)
Sandy Loam (Non-Colloidal)	2.0 (0.6)	5.0 (1.5)
Silt Loam (Non-Colloidal)	2.5 (0.75)	6.0 (1.8)
Alluvial Silts (Non-Colloidal)	3.0 (0.9)	6.0 (1.8)
Ordinary Firm Loam	3.0 (0.9)	6.0 (1.8)
Fine Gravel	4.0 (1.2)	—
Alluvial Silts (Colloidal)	4.0 (1.2)	7.0 (2.1)
Stiff Clay (Non-Colloidal)	4.5 (1.4)	8.0 (2.4)
Graded Loam to Cobbles (Non-Colloidal)	4.5 (1.4)	8.0 (2.4)
Graded Silt to Cobbles (Colloidal)	5.0 (1.5)	8.0 (2.4)
Coarse Gravel (Non-Colloidal)	6.0 (1.8)	—
Cobbles and Shingles	7.0 (2.1)	—
Shale and Hard Pans	8.0 (2.4)	—

AVERAGE MAXIMUM PERMISSIBLE VELOCITIES

Figure 38-1C

If the design velocity for a grass-lined ditch is below the maximum permissible velocity for the soil with a grass surface, the ditch should be lined with sod, or it should be seeded and lined with a fibrous material (e.g., jute mat, other suitable measures) to protect the earth surface until the vegetation becomes established. If greater protection is required, provide a mechanical lining (e.g., riprap, bituminous material, concrete) or other suitable measures.

After the minimum limits of lining are established, each section of lining should be extended downstream a sufficient distance to allow the flow to slow down before it enters the unprotected or less protected ditch. Figure 38-1D provides the recommended lengths for this transitional lining.

Scouring Slopes*	Length of Transition
0% - 4%	25 ft (7.5 m)
4% - 6%	50 ft (15 m)
6% - 10%	75 ft (23 m)
Over 10%	100 ft (30 m)

* This is the ditch gradient at the lower end of the section of ditch where lining is required.

TRANSITIONAL DITCH LINING

Figure 38-1D

38-1.07 Outlet Treatment

The final step in designing a roadside ditch is the determination of any required special measures at the points where ditch flow is outletted onto adjacent properties. In general, if the flow conditions caused by the improvement will not cause “undue harm” to the downstream property, expensive protection measures are probably not warranted. The definition of “undue harm” must be left to the judgment of the designer.

For more detailed information, see the *IDOT Drainage Manual*.

38-2 STORM SEWERS

38-2.01 Design Procedures

Design the storm sewer system by determining the drainage area, computing the runoff using the Rational Method and computing the capacity using the Manning Equation. Other design methods may be used subject to district approval. The complete storm sewer design should meet the requirements in the following Sections. For more information, see the *IDOT Drainage Manual*.

38-2.02 Design Frequency

A 10 year flood frequency is recommended. For approved combined sewers in the city of Chicago, a 5 year frequency is permissible. A higher flood frequency may be used if consistent with the design standard of the local system.

At underpasses where the storm sewer system is the only outlet for stormwater, use a 25 year flood frequency.

38-2.03 Drainage Area

The drainage area eligible for MFT or Federal-aid funding will be the tributary area determined by the topography (natural drainage area) of the location. For interconnected systems, drainage will be determined based on conveyance through the project area from existing systems. Design the new system to accept the "Q" (discharge) of the adjacent system or the discharge needed solely for highway purposes, whichever is greater.

38-2.04 Pipe Size

The minimum size for storm sewers is 12 in (300 mm) for main lines and 8 in (200 mm) for lateral lines.

38-2.05 Location

When economically practical, locate storm sewers outside the roadway pavement. Where storm sewers are located under the pavement or within 2 ft (600 mm) of the pavement edge, provide for trench backfill and ensure the top of the pipe is at least 6 in (150 mm) below the bottom of the pavement structure. At other locations, provide a minimum cover of 3 ft (1 m).

38-2.06 Slopes

Maintain a uniform slope that provides a velocity between 3 and 10 ft/sec (0.9 and 3 m/sec). The minimum velocity allowed in storm sewer systems is 3 ft/sec (0.9 m/sec). A flatter slope that is sufficient enough to maintain a velocity of 2 ft/sec (0.6 m/sec) will be permitted only in special cases. Where it is necessary to exceed 10 ft/sec (3 m/sec), consider using drop structures.

38-2.07 Manholes

To permit the inspection, cleaning, and removal of obstructions, manholes should be located as follows:

- where two or more storm sewers converge,
- where pipe size changes,
- where an abrupt change in alignment occurs,
- where an abrupt change of the grade occurs, and
- at spacings meeting the criteria in Figure 38-2A.

Avoid placing manholes in the traveled way. Where it is necessary, do not place them in the normal wheel tracks, unless their avoidance is impractical. The designer should ensure that new or relocated manholes and inlets are not placed within accessibility routes based on the ADA criteria; see Section 41-6.

Pipe Size	Maximum Distance
8 in - 24 in (200 mm - 600 mm)	350 ft (100 m)
27 in - 36 in (675 mm - 900 mm)	400 ft (120 m)
42 in - 54 in (1050 mm - 1350 mm)	500 ft (150 m)
≥ 60 in (1500 mm)	1,000 ft (300 m)

MAXIMUM MANHOLE SPACING

Figure 38-2A

38-2.08 Catch Basins

Catch basins are designed to collect and distribute storm or surface waters. Most catch basins use an outlet pipe to disperse the water to a natural source of outlet. Some catch basins are designed with leaching chambers or pits to percolate in the soil.

The designer should check that the locations of the catch basins are located at low points of sags. The locations should also be checked to determine if conflicts exist with curb ramps, in-place utilities, approaches, or other features. For additional guidance on catch basins, see the *IDOT Drainage Manual*.

38-2.09 Inlets

Inlets should be spaced and designed so that diversion from the natural course will not occur. Inlets located at low points in the roadway grade should be designed to receive all flow presented to it. Provide two inlets at the low point of sag vertical curves. Inlets at other locations will allow overflow.

Combination curb-and-gutter grates are recommended for sump and debris-clogging locations (e.g., on a very flat grade). Gutter grates only are recommended for all remaining locations. For additional information on grate types, see the *IDOT Highway Standards*.

The following encroachment limitations are the maximum allowable for determining inlet spacing:

1. Shoulders. For sections with full shoulders (6 ft (1.8 m) or more), no encroachment is allowed in the travel lanes. The maximum spread is limited to the shoulder width.
2. Parking Lanes. For sections with permanent parking lanes, no encroachment is allowed into the travel lanes. The maximum spread is limited to the parking lane.
3. Two-Lane Streets. For sections with one lane in each direction, the maximum encroachment into the traveled way is 4 ft (1.2 m). However, where the surface width is less than 30 ft (9 m), then the maximum encroachment is 3 ft (1 m).
4. Multilane Streets. The following will apply:
 - a. Two or More Lanes in Each Direction. Maximum encroachment may be up to half of the outside travel lane.
 - b. Three or More Lanes in Each Direction. With one lane draining to the median, the maximum encroachment into the traveled way is 4 ft (1.2 m) on median side and a maximum half of the travel lane for the outside travel lane.

38-3 CULVERT DESIGN**38-3.01 General**

A culvert is a drainage structure consisting of a closed conduit that conveys water from a natural channel or waterway transversely under a roadway. General criteria for various classes of highway are outlined in Figure 38-3A. The design procedures in this Section should be followed for each design after identifying the basic criteria from Figure 38-3A.

Use the following general procedure when designing a culvert:

1. Obtain all necessary field data from survey books, USGS maps, contour maps, etc. Conduct a field inspection to verify design assumptions (e.g., effects of ponding, streambed elevations, size of existing culverts, size and volume of debris). A field reconnaissance is required for all large culverts, defined as 48 in (1200 mm) in diameter or greater.
2. Assemble the design features pertaining to the proposed roadway (e.g., profile grade, class and type of highway).
3. Assemble the design criteria for selection of the culvert (e.g., velocity; allowable headwater; design discharge; inlet and outlet conditions; slope, smoothness, and length of culvert).
4. Determine the volume of runoff from the drainage area using the *IDOT Drainage Manual*.
5. Determine the geometric proportions of the culvert required to accommodate the non-erodible runoff along the highway and abutting properties.

Maintained By	Usage (Road Class)	Kind of Drainage Structure Permitted	Minimum Permissible Diameter	Headwalls or End Sections
Local Agency	Across Road	Any one kind of pipe culvert may be specified to the exclusion of all other kinds.	18 in (450 mm) for Counties and Road District	Where needed
	Entrances		24 in (600 mm) 12 in (300 mm) 10 in (250 mm) for municipalities	

Notes:

1. *The width of roadbed for field and private entrances should not be less than 16 ft (5 m).*
2. *Multiple pipe installations that are 48 in (1.2 m) in diameter or larger should be spaced one-half diameter or 3 ft (900 mm) apart. Smaller pipe should be spaced 2 ft (600 mm) apart.*
3. *Where head room is critical, pipe arches will be permitted.*

GENERAL CULVERT DESIGN POLICIES

Figure 38-3A

38-3.02 Design Requirements

Design all across-road culverts to carry the design flood frequency discharge without property damage upstream or downstream. Culverts may be designed below head provided the property damage restriction is not violated.

Consider the following structural criteria as part of the culvert selection and design:

1. Minimum Culvert Lengths. The minimum allowable culvert length will be the roadway width (i.e., traveled way plus shoulder).
2. Clearance. Where there is too little cover above the top of culvert for circular pipes, consider the following alternatives:
 - box culverts,
 - elliptical reinforced concrete pipe,
 - corrugated structural plate pipe arches, and
 - multiple circular pipes of smaller diameter.

Select the appropriate alternative based on the hydraulic equivalent and economic analysis.

3. Earth Loads. Embankment fills up to 35 ft (10.5 m) above the top of pipe culverts are addressed in the *IDOT Standard Specifications for Road and Bridge Construction*, which specifies the class of concrete and thickness of metal to be used for various fill heights.

Fill heights in excess of 35 ft (10.5 m) require special design consideration and may result in the use of reinforced concrete box culverts installed by the "Imperfect Trench Method of Construction" or, in some cases, corrugated structural plates or pipe arches. In all cases of special design, an economic analysis of the various culvert alternatives should be made, including all acceptable methods of installation, before making a final selection.

4. Foundation Conditions. Where expensive structures will be constructed beneath high, wide fills, conduct foundation explorations to an appropriate depth (i.e., soil borings) to determine subsurface conditions and to check the uniformity of the material through the length of the culvert barrel. Consult with the District Geotechnical Engineer for guidance. See Section 36-2.02 for more information.
5. Culvert Rigidity. Structural adequacy of special non-standard design culverts should be confirmed by an Illinois licensed structural engineer.
6. Impact. For pipe culverts, provide a minimum cover of 6 in (150 mm) between the top of the pipe and the bottom of the pavement subbase. Check minimum fill height

requirements in the *IDOT Standard Specifications*. Reinforced concrete box culverts may be designed with no cover.

7. Erosion Control. Evaluate the potential for scour at the culvert outlet by determining outlet velocities. Provide channel protection if the average maximum permissible velocity for bare soil is exceeded.
8. Headwalls/End Sections. For culverts not typically requiring headwalls or end sections (see Figure 38-3A), several conditions may require their use. Headwalls and end sections may be required to:
 - reduce the length of culvert pipe,
 - meet hydraulic requirements, and/or
 - provide additional strength for the ends of corrugated metal pipes subject to crushing loads.

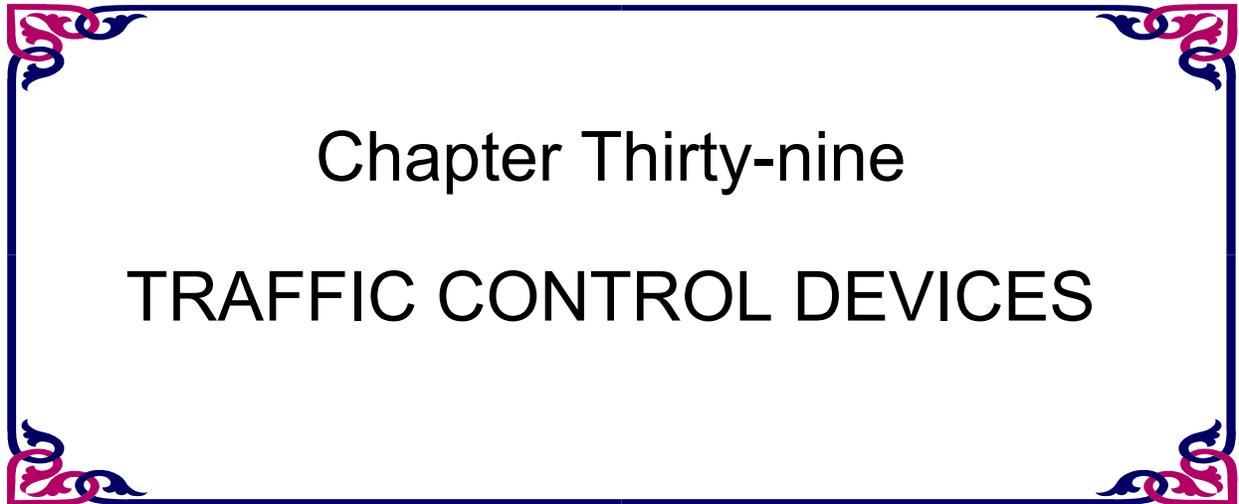
38-4 DRAINAGE AND LEGAL RESTRICTIONS

The following legal restrictions apply to drainage design:

1. Discharge of Sewage into Open Ditches. Section 605 ILCS 5/9-123 prohibits the discharge of sewage into open ditches along any public street or highway. Form BLR 38410 may be procured from the district for notifying violators of this law.

Effluent from septic tanks is not allowed to outlet within 10 ft (30 m) of the right-of-way.

2. Water Flow Interferences in Highway Ditches. Section 605 ILCS 5/9-117 prohibits encroachments by fencing, plowing, or ditching or in any other manner interfering with the flow of water in highway ditches. Written permission from a highway authority is required for changing drainage patterns by draining farmland into highway ditches that did not drain in that direction previously.



Chapter Thirty-nine

TRAFFIC CONTROL DEVICES

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Chapter Thirty-nine
TRAFFIC CONTROL DEVICES

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Chapter Thirty-nine

TRAFFIC CONTROL DEVICES

39-1 GENERAL

The purpose of traffic control devices, as well as the principles for their use, is to promote highway safety and efficiency by providing for the orderly movement of all road users on streets and highways throughout the nation. Traffic control devices notify road users of regulations, and provide warning and guidance needed for the safe, uniform, and efficient operation of all elements of the traffic stream. The *Illinois Vehicle Code*, 625 ILCS 5/11-303 and 5/11-304 establishes the responsibility for the erection and maintenance of traffic control devices on State highways and on local roads. Various other sections of Chapter 11 of the *Illinois Vehicle Code* deal with specific traffic regulations and control devices.

39-1.01 National Manual on Uniform Traffic Control Devices (MUTCD)

FHWA publishes *MUTCD*, which contains national design, application, and placement standards for traffic control devices. *MUTCD* is adopted in accordance with 23 U.S.C. 109(d) and 23 C.F.R. 655.603, and is approved as the national standard. This *Manual* contains the basic principles that govern the design and use of traffic control devices for all streets and highways open to public travel, regardless of type or class or the public agency having jurisdiction. All traffic control devices nationwide must conform to *MUTCD*.

39-1.02 Illinois Manual on Uniform Traffic Control Devices (ILMUTCD)

States must adopt *MUTCD*, along with any supplement that a State may require within two years of issuance by FHWA. The *Illinois Vehicle Code*, 625 ILCS 5/11-301 authorizes *ILMUTCD*. *ILMUTCD* consists of the national *MUTCD*, including subsequent official revisions, as amended by the *Illinois Supplement to MUTCD*. These publications are available on the IDOT website. In the interest of statewide uniformity, forward requests for interpretations, experimentation, and changes to *ILMUTCD* to the IDOT Central Bureau of Operations.

ILMUTCD is divided into parts covering various criteria applicable to all roads and streets. Part 5 specifically supplements and references the criteria for traffic control devices commonly used on low volume roads. A low volume road is considered to be outside built-up areas and has a traffic volume of less than 400 AADT.

39-1.03 ILMUTCD Text Headings

The *ILMUTCD* text is divided into four headings — standard, guidance, option, and support. Use the appropriate text to classify the nature of the information. *ILMUTCD* defines these headings as follows:

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1. Standard. A standard is a statement of required, mandatory, or specifically prohibitive practice regarding a traffic control device. All Standard statements are labeled, and the text appears in bold type. The verb “shall” is typically used. The verbs “should” and “may” are not used in Standard statements. Standard statements are sometimes modified by Options. Standard statements shall not be modified or compromised based on engineering judgment or engineering study.
2. Guidance. This heading is a statement of recommended, but not mandatory, practice in typical situations, with deviations allowed if engineering judgment or engineering study indicates the deviation to be appropriate. All Guidance statements are labeled, and the text appears in unbold type. The verb “should” is typically used. The verbs “shall” and “may” are not used in Guidance statements. Guidance statements are sometimes modified by Options.
3. Option. This heading is a statement of practice that is a permissive condition and carries no requirement or recommendation. Option statements sometime contain allowable modifications to a Standard or Guidance statement. All Option statements are labeled, and the text appears in unbold type. The verb “may” is typically used. The verbs “shall” and “should” are not used in Option statements.
4. Support. This is an informational statement that does not convey any degree of mandate, recommendation, authorization, prohibition, or enforceable condition. Support statements are labeled, and the text appears in unbold type. The verbs “shall,” “should,” and “may” are not used in Support statements.

39-2 HIGHWAY SIGNING

39-2.01 Purpose and Responsibilities

The purpose of signing on local public agency (LPA) roads and streets is to ensure safety by providing for the orderly and predictable movement of motorized and non-motorized traffic throughout the local system, and to provide guidance and warnings as needed to ensure the safe and informed operation of the users of the system. Signs are essential to regulate and guide traffic over established routes, and to provide information concerning direction and destinations. Additionally, signs are used to warn of hazards that are not evident and to call attention to special regulations and restrictions. To be effective, a highway sign should meet the following minimum requirements:

- fulfill a need,
- command attention,
- convey a clear, simple meaning,
- command respect of road users, and
- provide adequate time for proper response.

Section 39-2 provides guidance regarding the use of highway signs on LPA roads and streets. The guidance provided must be used in conjunction with sound engineering judgment and *ILMUTCD*. Traffic control devices must be in compliance with *ILMUTCD* (625 ILCS 5/11-304). Placement of traffic control devices on township or road district roads is also subject to the written approval of the county engineer. Highway signing should be used only where warranted by facts and field studies. Failure to install and maintain proper signing on local highways and streets has resulted in liability suits involving municipality, county, and township employees, who are responsible for highways and highway signing. For additional information on highway signing material specifications, design, and application criteria, review the applicable publications listed in Section 39-6.

Economics frequently limit the ability to place all signs that may be needed. For this reason, it is important for roadway needs to be inventoried, identified, and prioritized so that such needs can be fulfilled. Consider the following when establishing priorities:

- safety hazards and driver and pedestrian safety,
- number, severity, and cause of crashes,
- volume of traffic, and
- availability of finances, manpower, equipment, and materials.

39-2.02 General Design Principles

39-2.02(a) Driver Expectancy

Drivers expect things to operate in certain ways. When a driver's expectancy is incorrect, either it takes longer to respond properly or the driver may respond poorly or incorrectly. Driver expectancy is affected by the type and function of road, and what the driver expects on a road is greatly influenced by what is experienced on the previous road section. The consistent use and placement of traffic control devices help ensure driver expectancy.

39-2.02(b) Positive Guidance

Positive guidance is the concept by which a driver can be given sufficient information where and when it is needed, and in a form that can be best used to avoid unsafe conditions. Positive guidance can be given to the driver through combinations of signs, hazard markers, "Safe Speed" advisory plates, and the view of the road ahead.

39-2.02(c) Consistency

Consistency relates to the "sameness" of the nature of the road from one section to another. Inconsistencies are sudden changes in the nature of the road. Physical improvements to the roadway are generally impractical. Consequently, signing is often used to warn the driver of the upcoming roadway inconsistency.

39-2.02(d) Location

Uniform placement of signs, although desirable, is not always practical, because roadway alignment and other factors often dictate a more advantageous location. When determining sign locations, consider the following:

1. Special Locations. Usually, signs should be placed on the right side of the roadway. Under certain circumstances, however, signs may be placed on channelizing islands or on the left side of the roadway along sharp, right hand curves. These signs should supplement the right hand signs.
2. Nighttime Visibility. Locate signs to optimize their nighttime visibility. Pay particular attention to the orientation angle of the sign face with respect to oncoming traffic.
3. Dual Signing. Single signing should be used unless a dual signing configuration is warranted. Consider dual signing on one way roadways (e.g., on both sides of the traveled way) for additional emphasis where a single sign may not provide adequate warning and where roadway geometry or other factors (e.g., multiple lanes, trucks, parked vehicles) may cause a single sign to be obscured.
4. Field Conditions. Adherence to desired placement is not always practical. Adjust sign locations to accommodate field conditions and try to avoid areas such as:
 - a. at short sags in the roadway,
 - b. beyond the crest of a vertical curve,
 - c. where a sign would be obscured by parked cars,
 - d. where a sign would create an obstruction for pedestrians or bicyclists,
 - e. where a sign would obscure visibility of hazardous locations,
 - f. where the visibility of a sign would be impaired by overhead illumination,

- g. where a sign would be vulnerable to roadside splatter, and/or
- h. at locations close to foliage where the sign face may be covered.

In some cases, signs can be shifted longitudinally without compromising their intended purpose, which may improve visibility.

5. Sign Groups. In general, signs are mounted on individual supports. However, it may be necessary to erect a sign grouping (e.g., route markings). Consider wind loading and breakaway post criteria when designing sign groups.
6. Advance Warning Signs. Warning signs are placed in advance of the conditions to which they apply. If the distances identified in *ILMUTCD* cannot be met, consider other measures to attract the motorist's attention to the sign (e.g., flashing beacons, distance plates).
7. Roadside Safety. Signs should have the maximum practical lateral clearance from the edge of the traveled way to provide safety of motorists who may leave the roadway and strike the sign support. Supports for ground mounted signs located within the clear zone must be made breakaway or yielding. Where practical, locate signs behind a roadside barrier that is warranted for other reasons. Provide adequate clearance to the back of the guardrail post to accommodate the barrier's dynamic deflection. Additionally, do not place breakaway sign supports in drainage ditches where erosion and freezing might affect the proper operation of the support. It is also possible that an errant vehicle entering the ditch might be inadvertently guided into a sign support.

39-2.03 Maintenance Considerations

Highway signs should be maintained in proper position and be kept clean and legible. Damaged signs should be replaced as soon as practical. Poorly maintained signs lose their effectiveness, and signs that are damaged, defaced, dirty, or missing are ineffective. To ensure adequate maintenance and reduce the potential for litigation, a schedule of inspections should be established, including nighttime inspections. Local agency personnel should also observe the signing on a daily basis as they drive the roads and streets for other purposes. Records of all signs, inspections, sign maintenance activities, and crashes should be maintained to help identify deficiencies. Pay particular attention to the following conditions:

- missing, damaged, obstructed, or hidden signs,
- absence of advanced warning signs, where needed (e.g., Stop Ahead, "T" intersection, railroads),
- signs placed at an improper height or angle, and
- sign faces that are worn or dirty with respect to reflectivity.

39-2.04 Sign Erection and Placement

Sign erection and placement criteria for highway signs are documented in *ILMUTCD*. Additional guidance may be found in the BLRS publication *Signing of Road District and Township Highways*, and the references listed in Section 39-6. The following is a summary of these criteria:

1. Height. Signs erected in rural areas should be mounted at a height of at least 5 ft (1.5 m) above the level of the pavement or roadway edge, measured to the bottom of the sign. In areas where there is parking, pedestrian traffic, or obstructions to view, the mounting height should be at least 7 ft (2.1 m) above the level of pavement or roadway edge. The height to the bottom of a secondary sign may be 1 ft (300 mm) less than these heights.
2. Lateral Clearance. The minimum offset of a sign should be 12 ft (3.6 m) from the edge of the traveled way to the near edge of the sign. If the shoulder is wider than 6 ft (3.6 m), the minimum offset should be 6 ft (1.8 m) from the edge of the shoulder. In urban areas, a lesser clearance may be used where necessary. Although 2 ft (600 mm) is the recommended minimum, in areas where sidewalk width is limited or where existing poles are close to the curb, a clearance of 1 ft (300 mm) is allowable.
3. Orientation. Signs should be vertically mounted at right angles to the direction of, and facing, the traffic that they are intended to serve. When mirror reflection from the sign face is encountered to such a degree as to reduce legibility, the sign should be turned slightly away from oncoming traffic at an angle of 2° to 5° greater than right angles. On curved alignments, the angle of placement should be determined by direction of approaching traffic rather than by the roadway edge at the point where the sign is located.
4. Posts and Mounting. Sign posts, foundations, and mountings must be constructed to hold signs in a proper and permanent position, and to resist swaying in the wind or removal by vandalism. A single post may be used for the erection of up to 24 in (600 mm) diamond shaped signs, signs with a horizontal dimension of 30 in (750 mm) or less, and individual signs with areas of 6.25 ft² (0.58 m²) or less. A double post installation should be used for signs that are larger. All posts should be breakaway. Breakaway supports for signs are designed to break or yield when struck by a vehicle. FHWA has adopted the testing parameters and criteria in the *AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals* for determining acceptable breakaway performance. Any post design that has been evaluated and accepted by FHWA may be used. The following are acceptable types of sign posts typically used in Illinois:
 - tubular steel posts,
 - telescoping steel posts no greater than 2 ¼ in by 2 ¼ in (57 mm by 57 mm),
 - U-channel posts,
 - 4 in by 4 in (100 mm by 100 mm) wood posts, and
 - 4 in by 6 in (100 mm by 150 mm) wood post with the 6 in (150 mm) side parallel to the roadway with appropriately drilled holes to ensure that the post is breakaway.

In urban areas, it may be convenient to band or otherwise fasten signs to existing utility or light poles, with the approval of the appropriate utility company.

39-2.05 Retroreflectivity and Illumination

Regulatory, warning, and guide signs shall be retroreflective or illuminated to show the same shape and similar color by both day and night, unless specifically stated otherwise in *ILMUTCD*. The requirement for sign illumination shall not be considered to be satisfied by street or highway lighting.

Retroreflection of sign elements may be accomplished by means shown in Figure 39-2A.

Means of Retroreflection	Sign Element
Reflector buttons or similar units	Symbol Word Message Border
A material that has a smooth, sealed outer surface over a microstructure that reflects light	Symbol Word Message Border Background

RETROREFLECTION OF SIGN ELEMENTS

Figure 39-2A

Illumination of sign elements may be accomplished by means shown in Figure 39-2B.

Means of Illumination	Sign Element
Light behind the sign face	Symbol Word Message Background Symbol, word message, and background (through a translucent material)
Attached or independently mounted light source designed to direct essential uniform illumination onto the sign face	Entire sign face
Light emitting diodes (LED)	Symbol Word Message Portions of the sign border
Other devices or treatments that highlight the sign shape, color, or message: <ul style="list-style-type: none"> • luminous tubing • fiber optics • incandescent light bulbs • luminescent panels 	

ILLUMINATION OF SIGN ELEMENTS

Figure 39-2B

39-2.06 Maintaining Minimum Retroreflectivity

39-2.06(a) General

Retroreflectivity is one of a several factors associated with maintaining nighttime sign visibility. LPAs or officials having jurisdiction of regulatory, warning, and guide signs shall use an assessment or management method that is designed to maintain sign retroreflectivity at or above the established minimum levels in *ILMUTCD*.

39-2.06(b) Assessment or Management Methods

One or more of the following assessment or management methods should be used to maintain sign retroreflectivity:

1. Visual Nighttime Inspection – The retroreflectivity of an existing sign is assessed by a trained sign inspector conducting a visual inspection from a moving vehicle during nighttime conditions. Signs that are visually identified by the inspector to have retroreflectivity below the minimum levels should be replaced.
2. Measured Sign Retroreflectivity – Sign retroreflectivity is measured using a retroreflectometer. Signs with retroreflectivity below the minimum levels should be replaced.
3. Expected Sign Life – When signs are installed, the installation date is labeled or recorded so that the age of a sign is known. The age of the sign is compared to the expected sign life. The expected sign life is based on the experience of sign retroreflectivity degradation in a geographic area compared to the minimum levels. Signs older than the expected life should be replaced.
4. Blanket Replacement – All signs in an area/corridor, or of a given type, should be replaced at specified intervals. This eliminates the need to assess retroreflectivity or track the life of individual signs. The replacement interval is based on the expected sign life, compared to the minimum levels, for the shortest life material used on the affected signs.
5. Control Signs – Replacement of signs in the field is based on the performance of a sample of control signs. The control signs might be a small sample located in a maintenance yard or a sample of signs in the field. The control signs are monitored to determine the end of retroreflective life for the associated signs. All field signs represented by the control sample should be replaced before the retroreflectivity levels of the control sample reach the minimum levels.
6. Other Methods – Other methods developed based on engineering studies may be used.

The publication entitled “Methods for Maintaining Traffic Sign Retroreflectivity” (FHWA-HRT-08-026 November 2007) is available at www.fhwa.dot.gov/retro.

39-2.06(c) Exempt Signs

The following signs may be may excluded from the retroreflectivity maintenance guidelines:

- parking, standing, and stopping signs (R7 and R8 series),
- walking/hitchhiking/crossing signs (R9 series, R10-1 through R10-4b),
- Adopt-A-Highway signs,
- all signs with blue or brown backgrounds, and
- bikeway signs that are intended for exclusive use by bicyclists or pedestrians

39-2.06(d) Compliance Periods

Implementation and continued use of an assessment or management method that is designed to maintain regulatory and warning sign retroreflectivity at or above the established minimum levels in the *ILMUTCD* is required for LPAs by June 13, 2014. LPAs should consider using the same assessment and management method for replacement of street name signs and overhead guide signs that are identified as failing to meet the established minimum levels in the *ILMUTCD* by January 22, 2018.

39-2.07 Dimensions

The sign dimensions prescribed in the sign size tables in the *ILMUTCD* and in the “Standard Highway Signs and Markings” book shall be used unless engineering judgment determines other sizes are appropriate. The sizes shown in the minimum columns that are smaller than the sizes shown in the Conventional Road columns in the various sign size tables in the *ILMUTCD* shall only be used on low-speed roadways, alleys, and private roads open to public travel where the reduced legend size would be adequate for the regulation or warning, or where physical conditions preclude the use of larger sizes.

39-2.08 Regulatory Signs

39-2.08(a) General

Regulatory signs inform highway users of traffic laws or other regulations and indicate the applicability of legal requirements. These signs must be installed at or near those locations where the regulations apply and must be installed to provide adequate visibility and legibility in order to obtain compliance. All regulatory signs should be retroreflective or illuminated, consistent with current retroreflectivity standards. Signing criteria (e.g., dimensions, legend, shape, color, and placement) for various road classes and speeds are documented in *ILMUTCD* and the BLRS publication *Signing of Road District and Township Highways*.

39-2.08(b) Stop Signs

625 ILCS 5/11-302 grants local authorities and road district highway commissioners the authority to designate any street or highway under their jurisdiction as a through highway and to require all vehicles to stop or yield before entering or crossing the through highway. STOP (R1-1) signs should be used if engineering judgment indicates that one or more of the following conditions exist:

- at an intersection of a less important road with a main road where application of the normal right-of-way rule would not be expected to provide reasonable compliance with the law,
- on a street entering a through highway or street,
- at an unsignalized intersection in a signalized area, or
- at an intersection where a combination of high speed, restricted view, or crash records indicate a need for control by a STOP sign.

Where a full stop is not necessary at all times, give consideration to less restrictive measures (e.g., YIELD sign) before installing a STOP sign. Existing STOP sign locations should be reviewed periodically to determine whether, due to changed conditions, a less restrictive control could accommodate the traffic demands safely and more effectively.

STOP signs should not be used for speed control. Portable STOP signs shall not be used except for emergency situations and temporary traffic control purposes.

39-2.08(c) Multi-way Stop Signs

The decision to install multi-way stops should be based on an engineering study. The following criteria should be considered:

- as an interim measure where traffic signals are justified,
- 5 or more crashes in a 12 month period that are susceptible to correction by a multi-way stop;
- the total vehicular volume entering an intersection from both major street approaches averages at least 300 vehicles per hour for any eight hours of an average day, and the combined total vehicular, bicycle, and pedestrian volume entering from both approaches of the minor street averages at least 200 units per hour for the same eight-hour period with an average delay of at least 30 seconds per vehicle on the minor approaches (70% of the above minimum vehicular volume warrants if the 85th percentile speed exceeds 40 mph (60 km/h)).

Other criteria discussed in *ILMUTCD* may also be considered in an engineering study.

At intersections where all approaches are controlled by STOP (R1-1) signs, an ALL WAY supplemental plaque (R1-3P) shall be mounted below each STOP sign. Supplemental plaques with legends such as 2-WAY, 3-WAY, 4-WAY, or other numbers of ways shall not be used with STOP signs.

Plaques with the appropriate alternative messages of TRAFFIC FROM LEFT (RIGHT) DOES NOT STOP (W4-4aP) or ONCOMING TRAFFIC DOES NOT STOP (W4-4bP) should be used at intersections where STOP signs control all but one approach to the intersection, unless the only non-stopped approach is from a one-way street.

39-2.08(d) Yield Signs

The YIELD (R1-2) sign assigns right-of-way to traffic on certain approaches to an intersection. Vehicles controlled by a YIELD sign need to stop only when necessary to avoid interference with other traffic that is given the right-of-way. The YIELD sign may be erected at an entrance to an intersection instead of a STOP sign to give preference to traffic on a through street or highway designated in accordance with Section 625 ILCS 5/11-302. A YIELD sign may be used instead of a STOP sign if engineering judgment indicates that either of the following conditions exists:

- when the ability to see all potentially conflicting traffic is sufficient to allow a road user traveling at the regulatory speed to pass through the intersection or to stop in a reasonably safe manner, or

- at any intersection where a problem exists and where engineering judgment indicates the problem to be susceptible to correction by use of the YIELD sign.

39-2.08(e) Speed Limit Signs

The SPEED LIMIT (R2-1) signs are used to inform motorists of:

- the maximum statutory speed limit established in 625 ILCS 5/11-601, and
- altered speed limits established on the basis of an appropriate engineering and traffic investigation in accordance with 625 ILCS 5/11-604.

625 ILCS 5/11-604 empowers counties, municipalities, and park districts to establish speed limits on highways and streets for which they have maintenance responsibility. Counties also have this authority over township highways. The establishment of speed limits shall be based on an engineering and traffic investigation. The IDOT Bureau of Operations publication *Policy on Establishing and Posting Speed Limits on the State Highway System* or other established procedures may be used.

The following factors may be considered when determining speed limits:

- road surface characteristics, shoulder condition, grade, alignment, and sight distance,
- the 85th percentile speed and pace speed,
- roadside development and environment,
- parking practices and pedestrian activity, and
- reported crash experience for a recent 12 month period.

39-2.08(f) No-Passing Zones

The DO NOT PASS (R4-1) sign may be used at the beginning of, and at intervals within, a zone through which sight distance is restricted or where other conditions make overtaking and passing inappropriate. A NO PASSING ZONE (W14-3) sign may also be used on the left side of the roadway for additional emphasis. The PASS WITH CARE (R4-2) sign should be installed at the end of a no-passing zone if a DO NOT PASS (R4-1) sign has been installed.

39-2.08(g) Road Closed Signs

The ROAD CLOSED (R11-2) sign is used to mark roads closed to all traffic. A ROAD CLOSED – LOCAL TRAFFIC ONLY (R11-3) or ROAD CLOSED TO THROUGH TRAFFIC (R11-4) sign should be used where through traffic is not permitted or the closure is some distance beyond the sign, but the highway is open to local traffic up to the point of closure. These signs shall be preceded by the applicable Advanced Road Closed warning sign with the secondary legend AHEAD.

39-2.08(h) Weight Limit Signs

Weight limit signs are used on bridges and roadways where a weight restriction has been authorized. 625 ILCS 5/15-316 governs weight restrictions on roadways. A road district highway commissioner must obtain written approval from the county engineer prior to erection of weight restriction signs. 625 ILCS 5/15-317 governs weight restrictions on structures. The IDOT Local Bridge Unit establishes the numeric value of the maximum posted weight for LPA structures. See Section 2B.59 of the *ILMUTCD*.

39-2.08(i) Penalty for Dumping on Public Highways Signs

The use of the PENALTY FOR DUMPING ON PUBLIC HIGHWAYS sign is authorized by 605 ILCS 5/9-121. Consider its use only at locations where dumping is likely to occur. This sign should be located so as to provide the most efficient display of the message, either parallel or at a right angle to the pavement.

39-2.08(j) Engine Braking Signs

The use of the ENGINE BRAKING (R5-I106) sign is authorized by 625 ILCS 5/12-602.1. A county or municipality may furnish, install and maintain ENGINE BRAKING signs along streets and highways under their jurisdiction. The ENGINE BRAKING signs shall not be installed on freeways or interstate highways under the jurisdiction of the Department. With permission of the Department, the ENGINE BRAKING signs may be installed and maintained along roads or streets, other than freeways and interstates, under the jurisdiction of the Department in accordance with 625 ILCS 5/11-303(b).

39-2.08(k) Unsignalized Pedestrian Crosswalk Signs

The use of STOP HERE FOR PEDESTRIANS (R1-5b or R1-5c), IN-STREET PEDESTRIAN CROSSING (R1-6a), and OVERHEAD PEDESTRIAN CROSSING (R9-1a) signs are authorized by 625 ILCS 5/11-1002 at unsignalized pedestrian crosswalks. Therefore, signs using yield symbol or yield text (R1-5, R1-5a, R1-6, or R1-9) shall not be used at unsignalized pedestrian crosswalks.

39-2.09 Warning Signs

39-2.09(a) General

Warning signs are used to alert traffic of existing or potentially hazardous conditions either on or adjacent to the roadway. Warning signs require caution on the part of the motorist and may call for an adjustment of speed or other maneuvers in the interest of their own safety and that of pedestrians and other motorists. The use of warning signs should be based on the results of an engineering study or engineering judgment.

Typical locations and conditions that may warrant the use of warning signs include:

- changes in horizontal alignment,
- intersections,
- advance warning of traffic control devices,

- converging traffic lanes,
- narrow roadways,
- changes in roadway design,
- steep grades,
- roadway surface conditions,
- in advance of railroad crossings,
- entrances and crossings,
- reduction in speed limits,
- no-passing zones, and
- road closures.

Because warning signs are primarily for the benefit of the driver who is unacquainted with the roadway, it is very important that care be given to the advance placement of these signs. The total time to perceive and complete a reaction to a sign is the sum of the times necessary for Perception, Identification (understanding), Emotion (decision making), and Volition (execution of decision), and is commonly referred to as the PIEV time. The PIEV time can vary from several seconds for general warning signs, to 6 seconds or more where high judgment is required. See *ILMUTCD* for the recommended minimum advance warning distances.

39-2.09(b) Horizontal Alignment Signs

The design and application of horizontal alignment warning signs to advise motorists of a change in the roadway alignment are addressed in Sections 2C.07 through 2C.15 of the *ILMUTCD*. In advance of horizontal curves on freeways, on expressways, and on roadways with more than 1,000 AADT that are functionally classified as arterials or collectors, horizontal alignment warning signs shall be used in accordance with Figure 39-2C based on the speed differential between the roadway's posted or statutory speed limit or 85th-percentile speed, whichever is higher, or the prevailing speed on the approach to the curve, and the horizontal curve's advisory speed. Horizontal Alignment Warning signs may also be used on other roadways, or on arterial and collector roadways with less than 1,000 AADT, based on engineering judgment.

A horizontal alignment Turn (W1-1) sign shall be used instead of a Curve (W1-2) sign in advance of curves that have advisory speeds of 30 mph or less. The use of an Advisory Speed Plaque (W13-1) may also be used to supplement any warning sign to indicate the advisory speed for a condition.

The Chevron Alignment (W1-8) sign is intended to provide additional emphasis and guidance to motorists as to sharp changes of horizontal alignment. Where used, locate these signs on the outside of the curve or turn, in line with and at approximately a right angle to approaching traffic. Spacing of the signs should be such that the motorist always has two in view until the change in alignment eliminates the need for the signs.

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The One-Direction Large Arrow (W1-6) sign may be used as a supplement or alternative to the Chevron Alignment (W1-8) sign to delineate a change in horizontal alignment, or may be used to supplement a Turn (W1-1) sign or Reverse Turn (W1-3) sign to emphasize the abrupt curvature.

Type of Horizontal Alignment Sign	Difference Between Speed Limit and Advisory Speed				
	5 mph	10 mph	15 mph	20 mph	25 mph or more
Turn (W1-1), Curve (W1-2), Reverse Turn (W1-3), Reverse Curve (W1-4), Winding Road (W1-5), and Combination Horizontal Alignment/Intersection (W10-1) (see Section 2C.07 to determine which sign to use)	Recommended	Required	Required	Required	Required
Advisory Speed Plaque (W13-1P)	Recommended	Required	Required	Required	Required
Chevrons (W1-8) and/or One Direction Large Arrow (W1-6)	Optional	Recommended	Required	Required	Required
Exit Speed (W13-2) and Ramp Speed (W13-3) on exit ramp	Optional	Optional	Recommended	Required	Required

Note: Required means that the sign and/or plaque shall be used, recommended means that the sign and/or plaque should be used, and optional means that the sign and/or plaque may be used.

HORIZONTAL ALIGNMENT SIGN SELECTION

Figure 39-2C

39-2.09(c) Intersection Warning Signs

Intersection Warning (W2-1 through W2-6) signs may be used in advance of an intersection to indicate the presence of an intersection and the possibility of turning or entering traffic, and should illustrate or depict the general configuration of the intersecting roadway. Lines of different widths in the diagram may show the relative importance of the intersecting roads. The Cross Road (W2-1) and Side Road Symbol (W2-2 or W2-3) signs show side-road entering from the left and/or right and the angles of intersection. These signs should not generally be used on an approach where traffic is required to stop before entering the intersection. The “T” Symbol (W2-4) sign is intended to warn traffic approaching an intersection where the road ends at the intersection. It may be desirable to place a Two-Direction Large Arrow (W1-7) sign at the far side of the “T” in line with, and at approximately a right angle to, approaching traffic. A similar application of the “Y” Symbol sign applies to warning traffic approaching a “Y” intersection where the road continues in two directions.

39-2.09(d) Advanced Traffic Control Signs

The STOP AHEAD (W3-1), YIELD AHEAD (W3-2), or SIGNAL AHEAD (W3-3) sign shall be installed on an approach to a primary traffic control device that is not visible for sufficient distance to permit the driver to respond to the device. Obstructions causing limited visibility might include roadway alignment, structures, parked vehicles, and foliage.

STOP AHEAD signs on local roads that intersect with a State highway will usually be maintained by the local agency. If the local agency insists that IDOT maintain the signs, an agreement must be entered with the appropriate IDOT district. The agreement will allow IDOT to maintain the signs, but will require the local agency to perform all inspections and notify IDOT when maintenance is required. IDOT will not patrol the local agency's roads and streets for the purpose of inspecting the STOP AHEAD signs.

39-2.09(e) Speed Reduction Signs

In rural areas, a SPEED ZONE AHEAD (W3-5) sign should be used to inform motorists of a reduced speed zone when engineering judgment indicates the need for advanced warning to comply with the posted speed limit ahead. These signs are not usually used in urban areas due to relatively low speeds.

39-2.09(f) Road Narrows Sign

A ROAD NARROWS (W5-1) sign should be used in advance of a transition in lane width of a two lane road to a width so that vehicles might not be able to pass safely without reducing speed.

39-2.09(g) Narrow Bridge Sign

The NARROW BRIDGE (W5-2) sign should be used in advance of a bridge or culvert having a clear two way roadway width of 16 ft to 18 ft (4.9 m to 5.5 m), or any bridge or culvert having a roadway clearance less than the width of the approach pavement. Additional emphasis should be provided by the use of object markers or delineators on both sides of the approach roadway.

39-2.09(h) One Lane Bridge Sign

A ONE LANE BRIDGE (W5-3) sign should be used on two way roadways in advance of bridges or culverts having a clear roadway width of less than 16 ft (4.9 m). A ONE LANE BRIDGE sign should also be used where commercial vehicles constitute a high proportion of the traffic or the alignment limits the sight distance on the approach to a structure having a clear roadway width of 18 ft (5.5 m) or less. Object markers or delineators should also be placed on both sides of the approach roadway.

39-2.09(i) Advisory Speed Plaques

The Advisory Speed (W13-1) Plaque may be used to supplement any warning sign to indicate the advisory speed for a condition. The Advisory Speed Plaque shall be used where an engineering study indicates a need to advise users of the advisory speed for a condition. The advisory speed may be the 85th percentile speed, the speed corresponding to the 16° ball bank indicator, or a speed determined by an engineering study.

39-2.10 Special Speed Zones

39-2.10(a) School Area Signs

Use the SCHOOL SPEED LIMIT IS 20 MPH ON SCHOOL DAYS WHEN CHILDREN ARE PRESENT (S4-I100) sign to establish speed zones authorized under 625 ILCS 5/11-605. The

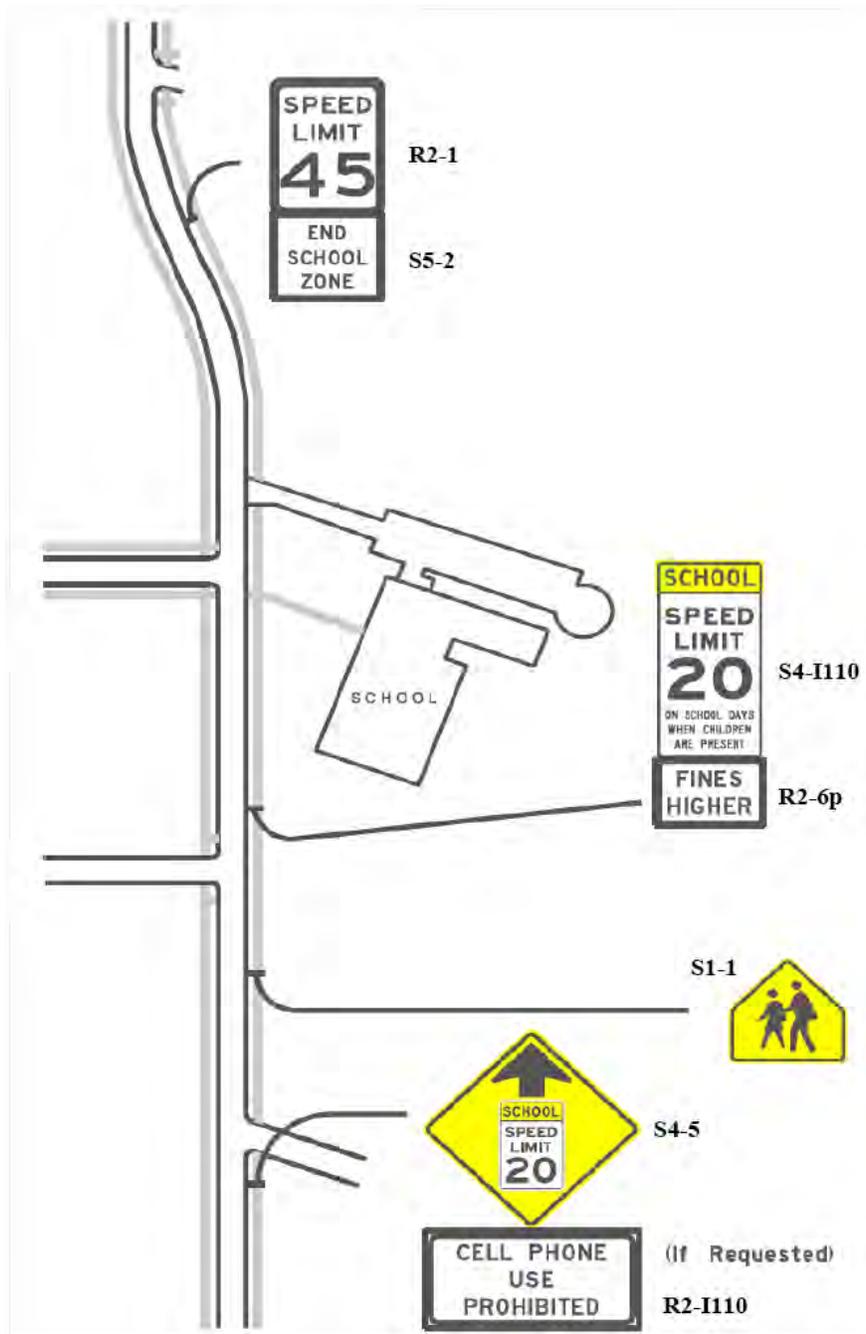
speed zone should be used where elementary through high school buildings, or grounds devoted primarily to normal school day activities, are adjacent to the highway, or where groups of children cross the highway enroute to and from a school not adjacent to the highway. Do not sign areas that are devoted primarily to athletic or other extracurricular activities as school speed zones. A SCHOOL (S1-1) sign shall be placed in advance of a school speed zone using *ILMUTCD* Table 2C-4 to determine the placement. In addition, a REDUCED SCHOOL SPEED ZONE AHEAD (S4-5, S4-5a) sign shall be placed in advance of the first school speed limit sign where the posted speed limit in the area is greater than 30 mph. This sign should be installed 500 to 600 ft (152 to 183 m) in advance of the school speed zone when practical. A FINES HIGHER (R2-6P) plaque shall be installed under the first school speed limit 20 mph sign. An END SCHOOL ZONE (S5-2) sign shall be installed at the end of the designated 20 mph school speed zone. Above this sign, a standard Speed Limit (R2-1) sign shall be installed to remind drivers of the regulatory speed limit. A CELL PHONE USE PROHIBITED (R2-I110) may be installed separately or under the SCHOOL (S1-1) sign. See Figure 39-2D for a typical application for school zone signage.

The School Crosswalk Warning assembly should be installed at marked crosswalks, including signalized locations used by students going to and from school, as determined by an engineering study. The School Crosswalk Warning assembly (S-1 with diagonal arrow) shall not be installed on approaches at crossings controlled by a STOP sign. Only crossings adjacent to schools and those on established school pedestrian routes may be signed. Where used, the sign will be erected at the crosswalk, or as close to it as practical.

The School Advance Warning assembly (S1-1 with supplemental plaque) should be used in advance of locations where school buildings or grounds are adjacent to the highway, except where a physical barrier (e.g., fencing) separates school children from the highway. The School Advance Warning assembly shall be used in advance of any installation of the School Crossing Warning assembly. If used, install the School Advance Warning assembly not less than 150 ft (45 m) nor more than 700 ft (210 m) in advance of the school grounds or school crossings.

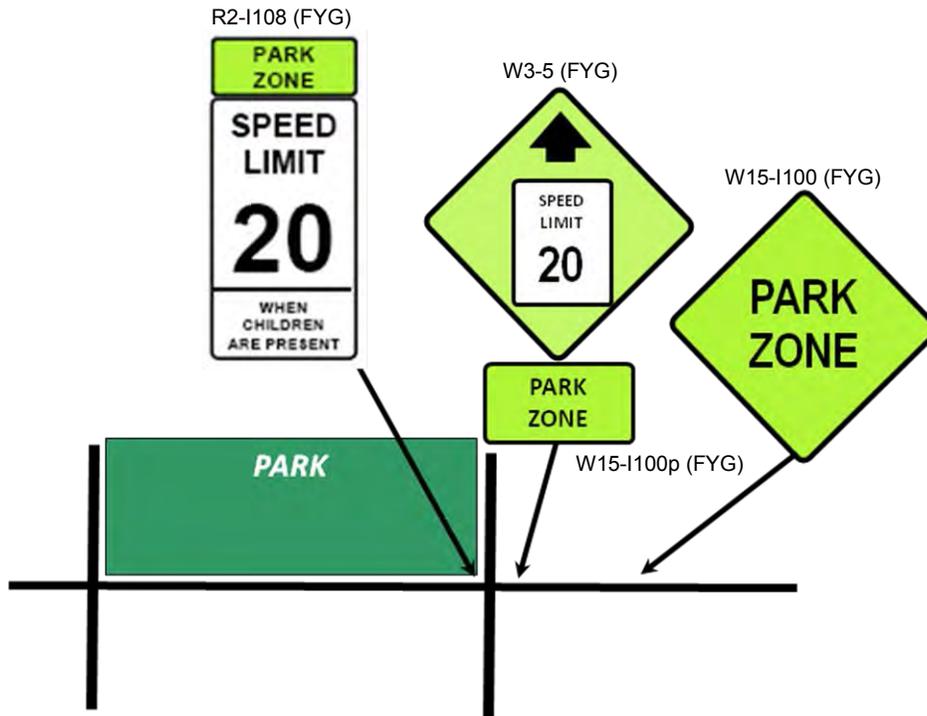
39-2.10(b) Park Zone Signs

The limited park speed zone authorized by 625 ILCS 5/11-605.3 may be established near the parks and recreation facilities and areas or any lands owned or operated by a park district that are used for recreational purposes, as well as on the portions of any street or intersection adjacent to a park zone that are under the control of a local agency and have been designated and approved by ordinance or resolution as a park zone street. If a street already has a posted speed limit lower than 20 mph, the lower limit may be used for that park zone street. Section 2B.170 and Section 2C.170 of the *ILMUTCD* establishes sign guidelines. See Figure 39-2E for a typical application for park zone signage.



TYPICAL SCHOOL ZONE SIGNAGE

Figure 39-2D



TYPICAL PARK ZONE SIGNAGE

Figure 39-2E

39-2.11 Railroad Crossing Signs

The Highway-Rail Grade Crossing Advance Warning (W10-1) sign shall be installed in advance of all at-grade railroad crossings, except:

- on low-volume, low-speed roadways crossing minor spurs or other tracks that are infrequently used and that are flagged by members of the train crews;
- in business or residential districts where active highway-rail grade crossing traffic control devices are in use, or
- where physical conditions do not permit even a partially effective display of the sign.

Additionally, if the distance between the railroad tracks and an intersection, measured from the edge of the tracks to edge of the parallel roadway, is less than 100 ft (30 m), install the Highway-Rail Crossing Advance Warning (W10-2, W10-3, or W10-4) signs on each approach of the highway that is parallel to the railroad. The purpose of these signs is to warn motorists turning at the intersection that a railroad crossing is ahead. A Railroad Crossing Advance Warning sign is not required on the approach to the crossing between the parallel highway and the tracks.

Install a XX FT BETWEEN TRACKS AND HIGHWAY Storage Distance sign on any approach to a railroad grade crossing where the distance between the rail closest to a subsequent STOP sign controlled highway intersection, and the intersection stop line is less than 81 ft (25 m). The distance shown is measured from a point 6 ft (1.8 m) from the rail closest to the intersection to the stop line or crosswalk, whichever is closest, rounded down to the nearest 5 ft (1.5 m). Where there is no stop line or crosswalk, the measurement is from a point 5 ft (1.5 m) from the edge of the closest through traveled lane. Do not use these signs at traffic signal controlled intersections except as an interim measure at any location with an intersection traffic signal, which will be changed to near-side intersections signals on the approach side of the tracks at the grade crossing at a future time.

See *ILMUTCD* and the BLRS publication *Signing of Road District and Township Highways* for design and placement details of Railroad Advance Warning signs.

39-2.12 Miscellaneous Signing

39-2.12(a) General

Guide signs are used to inform the motorist of intersecting routes, of cities, villages, or other important destinations, to identify nearby rivers and streams, parks, forests, and historical sites, and to give information that will help direct the motorist in the most simple, direct manner possible. Signs of this type, therefore, should be placed at locations where needed for driver guidance and direction. Once erected, it is essential that the guide sign be maintained.

The guide signs that are used most often on local agency roads are the destination, distance, and informational signs. These signs consist of a white message on a green background and must be retroreflective unless otherwise specified in *ILMUTCD*. Unlike most other types of signs, guide signs do not lose their effectiveness with frequent use. These signs should not contain so much information or be so close together that the driver will lose the messages.

39-2.12(b) County Route Numbering System

County highways are assigned route numbers. A county may elect to install route marking signs on this system of highways. County Route (M1-6) sign shall be used.

39-2.12(c) Rural Reference System

The Rural Reference System is a voluntary system that provides for the development of uniform reference points on rural county and township roads. Use of the Rural Reference System is recommended to provide orientation for non local travelers and can also be used as a rural address program. With this system, traffic crashes can be located with an accuracy of 0.1 of a mile (0.16 km). Signs are usually placed at each intersection and provide the location within the county. The reference system coordinates may be combined with the road name on the signs. The Street Name (D3-1) sign shall be used.

39-2.12(d) Street Name Signs

Street name signs should be installed at all street intersections in urban areas and should be installed in rural areas to identify important roads. The lettering for names of streets and highways on Street Name (D3-1) sign shall be composed of a combination of lower-case letters with initial upper-case letters. The only acceptable alternative background colors for Street Name (D3-1) sign shall be blue, brown, or white. Regardless of whether green, blue, or brown is used as the background color for Street Name (D3-1) sign, the legend (and border, if used) shall be white. For Street Name (D3-1) sign that uses a white background, the legend (and border, if used) shall be black.

39-2.12(e) Tourist Oriented Directional Signs

Pursuant and subject to 625 ILCS 5/11-304, local agencies may install signs alerting motorists of tourist oriented businesses that are on roads in rural areas under local agency jurisdiction. The decision to place or allow Tourist Oriented Directional Signing (TODS) on the local system rests with the local agency. Local agencies also have the authority to sell or lease space on these signs to the owners or operators of the businesses. TODS on highways under local agency jurisdiction must be in conformance with *ILMUTCD*.

For state maintained non-freeways that are outside the urban areas, TODS is covered by Title 92 of the Illinois Administrative Code Part 541.

39-2.12(f) Non-Highway Vehicle Signs

Pursuant and subject to 625 ILCS 5/11-1426.1, local agencies may authorize, by ordinance or resolution, the operation of non-highway vehicles to operate on highways and/or bridges under their jurisdiction if the local agency determines that the public safety will not be jeopardized. Local agencies may restrict the types of non-highway vehicles that are authorized to be used in its highways. Before permitting the operation of non-highway vehicles on its highways, local agencies must consider the volume, speed, and character of traffic on the highway and determine whether non-highway vehicles may safely travel on or cross the highway.

Non-Highway Vehicles include:

1. All-Terrain Vehicle as defined by 625 ILCS 5/1-101.8
2. Golf Carts as defined by 625 ILCS 5/1-123.9
3. Off-Highway Motorcycle as defined by 625 ILCS 5/1-153.1
4. Recreational Off-Highway Vehicle as defined by 625 ILCS 5/1-168.8

Upon determining that non-highway vehicles may safely travel on or cross the highway, and the adoption of an ordinance or resolution by local agencies, the GOLF CART CROSSING (W11-11) sign, the ALL-TERRAIN VEHICLES (W11-I100) sign, or the OFF-HIGHWAY VEHICLES (W11-I102) sign may be installed where dictated by engineering judgment.

39-2.12(g) Low-Speed Vehicle Signs

Pursuant and subject to 625 ILCS 5/11-1426.2, low-speed vehicles as defined by 625 ILCS 5/1-140.7 may be driven or operated upon any highway in Illinois where the posted speed limit is 30 miles per hour or less. Local agencies may allow, by ordinance or resolution, the operation of low-speed vehicles on any and all streets under its jurisdiction having a speed limit of more than 30 miles per hour but not greater than 35 miles per hour. Before permitting the operation of low-speed vehicles on highways having a speed limit of more than 30 miles per hour but not greater than 35 miles per hour, local agencies must consider the volume, speed, and character of traffic on the highway and determine whether non-highway vehicles may safely travel on or cross the highway. The LOW-SPEED VEHICLE (W11-I101) sign may be installed where dictated by engineering judgment.

Local agencies may prohibit, by ordinance or resolution, the operation of low-speed vehicles on any and all streets under its jurisdiction. If such a determination is made, USE PROHIBITED BY _____ (R5-I107) sign shall be posted at appropriate locations.

39-2.12(h) Community Wayfinding Signs

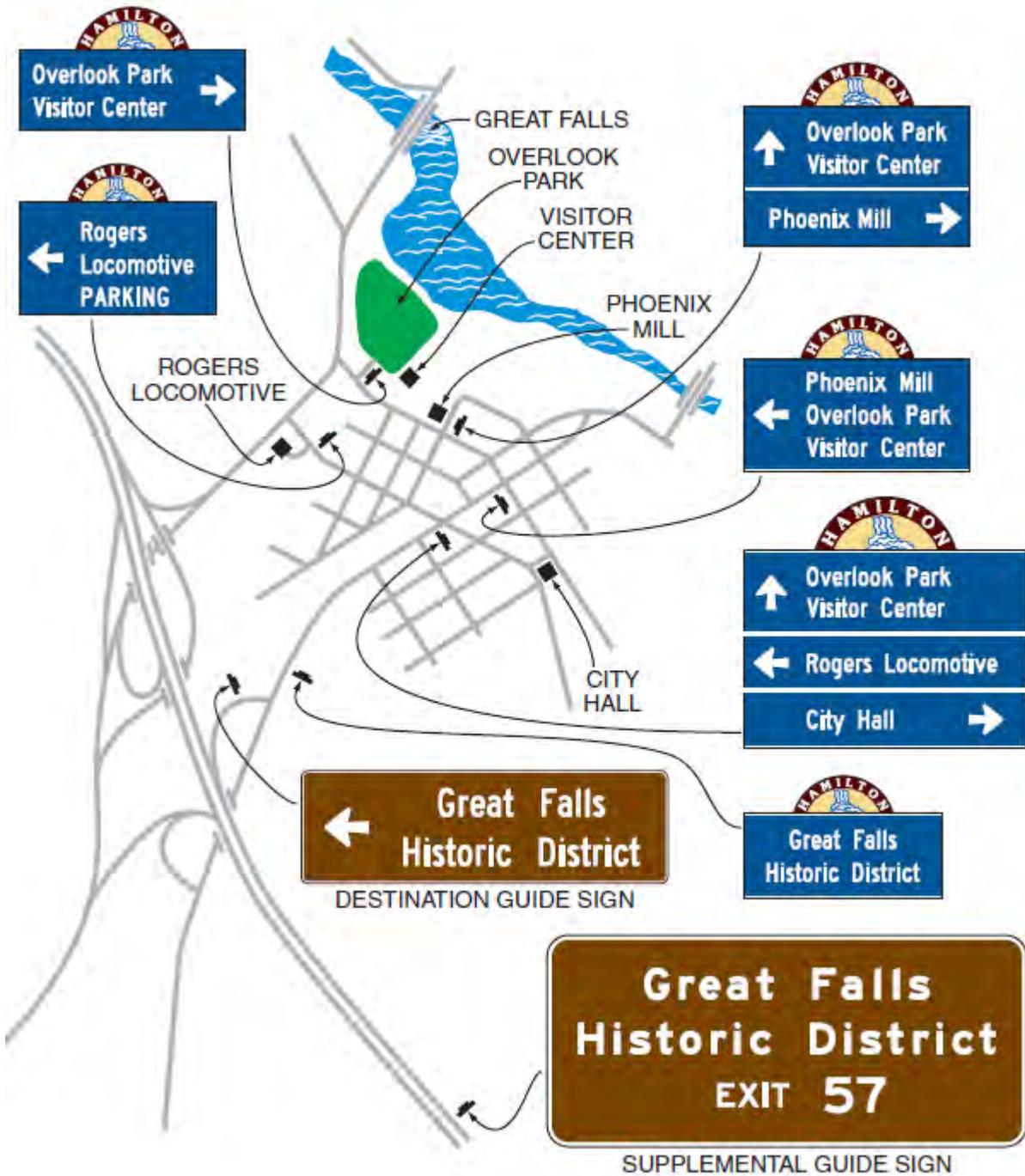
Community wayfinding guide signs (see Section 2D.50 of *ILMUTCD*) are part of a coordinated and continuous system of signs that direct tourists and other road users to key civic, cultural, visitor, and recreational attractions and other destinations within a city or a local urbanized or downtown area. Community wayfinding guide signs are a type of destination guide sign for conventional roads with a common color and/or identification enhancement marker for destinations within an overall wayfinding guide sign plan for an area.

The use of community wayfinding guide signs shall be limited to conventional roads under an agency's jurisdiction. All local agency requests to use these signs on state highways should be submitted to the District Operations Manager. Community wayfinding guide signs shall not be installed on freeway or expressway mainlines or ramps. Direction to community wayfinding destinations from a freeway or expressway shall be limited to the use of a Supplemental Guide sign (see Section 2E.35 of the *ILMUTCD*) on the mainline and a Destination sign (see Section 2D.37 of the *ILMUTCD*) on the ramp to direct road users to the area or areas within which community wayfinding guide signs are used.

Figures 39-2F and 39-2G illustrate various examples of the design and application of community wayfinding guide signs.

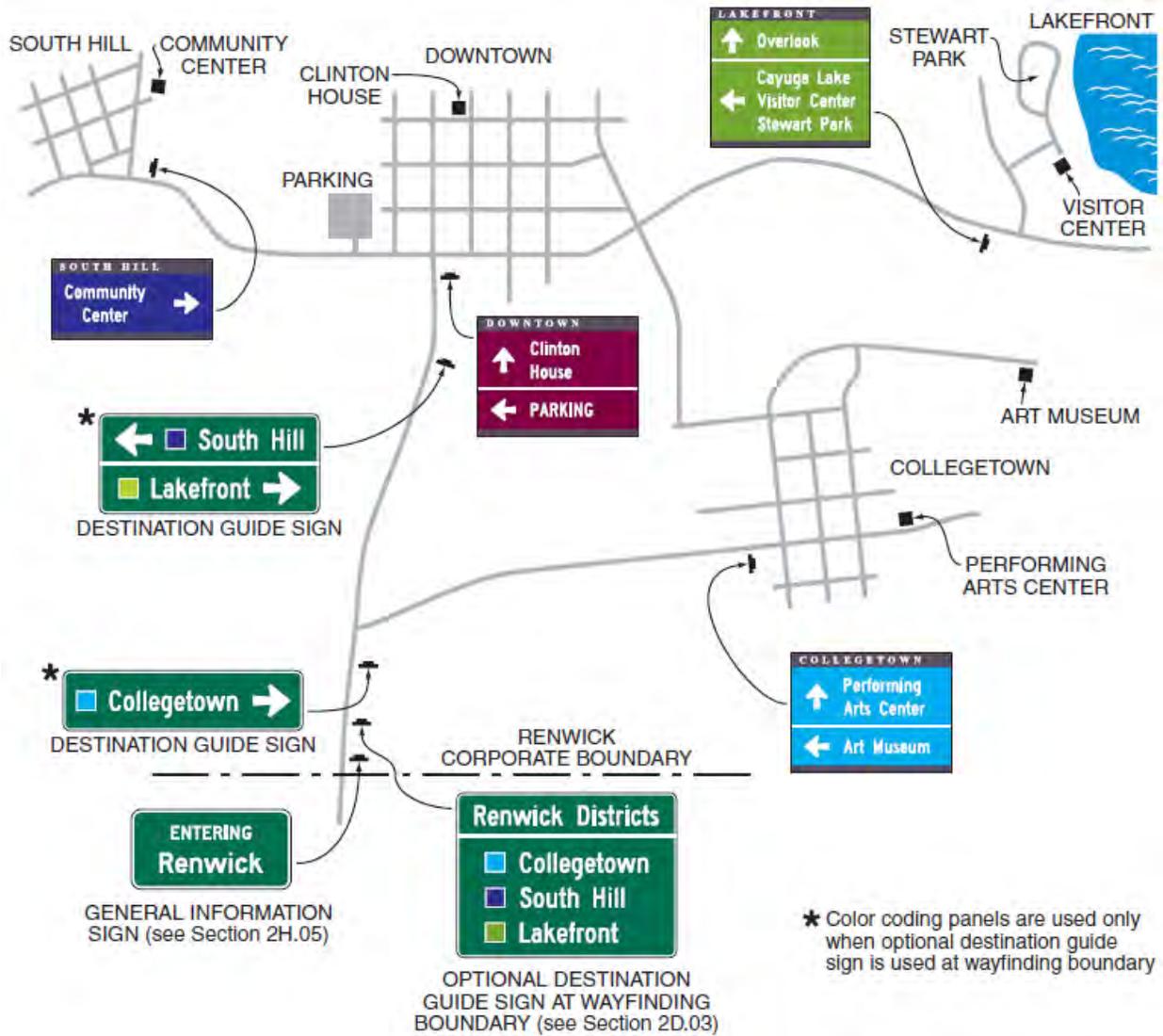
39-2.12(i) Adopt-a-Highway Signs

The sign shown in Figure 39-2H has been developed for use by local agencies for their respective Adopt-a-Highway program signs. It is not necessary for local agencies to seek IDOT approval for the logo or message to be used on this design.



COMMUNITY WAYFINDING GUIDE SIGN SYSTEM SHOWING DIRECTION FROM A FREEWAY OR EXPRESSWAY

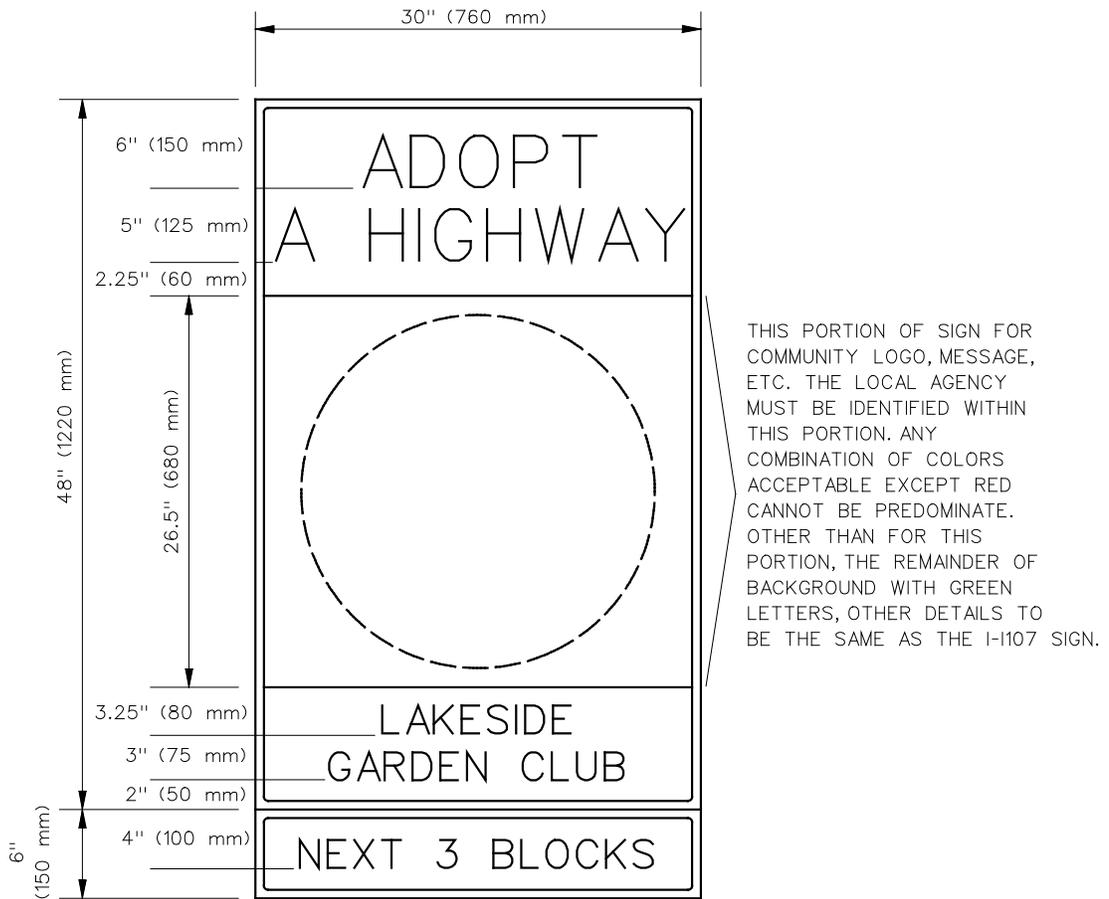
Figure 39-2F



COLOR-CODED COMMUNITY WAYFINDING GUIDE SIGN SYSTEM

Figure 39-2G

I- 1107a SIGN (ALTERNATIVE TO I-1107)



ADOPT-A-HIGHWAY SIGN STANDARD

Figure 39-2H

39-3 MARKINGS

Markings on highways have important functions in providing guidance and information for the road user. Marking types include pavement and curb markings, object markers, delineators, barricades, and islands. Markings are used to convey regulations, guidance, or warnings in ways not obtainable by the use of other devices and to supplement other traffic control devices (e.g., signs, signals).

39-3.01 General Pavement Marking Guidelines

39-3.01(a) General

The designer is responsible for providing the initial placement of pavement markings (e.g., striping, symbols) and the development of the pavement marking detail sheets for insertion into the plans. Prior to final acceptance of a completed roadway project, all pavement markings must be in place.

See *ILMUTCD* and the publications listed in Section 39-6 for specific application criteria. The guidelines in the following sections should be considered when developing pavement marking details for roadway application.

39-3.01(b) Color

Most pavement markings will be either white or yellow conforming to the standard highway color specifications. For example, word and symbol markings, crosswalk lines, parking space lines, lines for lanes in the same direction, and the right edge lines are white. Lines separating lanes in the opposite direction, the left edge lines of divided and one-way roadways, and two-way left-turn lanes are yellow.

39-3.01(c) Orientation and Style

Pavement marking line types vary depending on their application. Line types will vary in thickness and width; they will be oriented in a longitudinal, transverse, or diagonal configuration. Longitudinal lines will be striped as either single or double lines in a solid, broken, or dotted pattern. The normal line is 4 in to 6 in (100 mm to 150 mm) wide. A wide line is at least twice the width of a normal line. A double line consists of two parallel lines separated by a discernible space and indicates maximum or special restrictions. A solid line discourages or prohibits vehicles from crossing. A broken line should consist of 10 ft (3 m) line segments and 30 ft (9 m) gaps. This indicates a permissive condition. A dotted line for line extensions may consist of 2 ft (600 mm) line segments with 2 ft (0.6m) to 6 ft (1.8 m) gaps. A dotted line for adding or dropping lanes may consist of 3 ft (1 m) line segments with 9 ft (2.7 m) gaps. A dotted line provides guidance to the driver.

39-3.01(d) Materials

Paint may be used at all locations to provide good year round visibility. Longer life permanent pavement markings may be used on rural and urban highways. Pavement markings usually will be reflectorized.

The following should be considered when selecting a permanent pavement marking material:

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1. Epoxy. On PCC and bituminous concrete surfaces, epoxy materials may be used for longitudinal lines. This material is generally not suitable for symbols, letters, crosswalks, stop bars, and similar markings because of problems that develop with intermittent application.
2. Thermoplastic. On rural and urban highways with bituminous concrete surfaces, thermoplastic material may be used for longitudinal lines, symbols, letters, crosswalks, stop bars, and similar markings.
3. Preformed Plastic. Preformed pavement markings may be used on new surface construction under the following conditions:
 - a. Local Agency Criteria. If the local agency has a policy for the use of preformed pavement marking on a new asphalt, preformed pavement marking may be specified on any local agency project.
 - b. Construction Work Zone. Preformed pavement marking may be specified on any inlay application, so that the final pavement will be in place when construction is finished.
 - c. Concrete Surfaces. The local agency may specify the use of preformed pavement marking on a new pavement in lieu of paint, epoxy, or thermoplastic.
4. Raised Reflective Pavement Markers. Permanent raised reflective pavement markers may be used in situations where it is desirable to supplement the standard pavement markings. Locations selected for installation of raised pavement markers should either be unlighted or lighted only to the extent that it would not cause the markers to be ineffective.

39-3.02 Longitudinal Pavement Markings

The following sections present typical longitudinal pavement marking applications. Additional guidance for line size, color, and placement can be found in *ILMUTCD*.

39-3.02(a) Centerlines

Centerlines are used to delineate the separation of traffic lanes for vehicles traveling in opposite directions. When used for two-lane, two-way highways, the centerline shall consist of a normal broken yellow line in two direction passing zones. No-passing zones are discussed below. Two solid yellow lines for a centerline separation on two-way roadways with 4 or more travel lanes shall always be used.

Centerline markings should be placed on all paved streets. Centerline markings should also be placed on unpaved rural collectors 18 ft (5.4 m) or more in width with ADT of 3,000 or greater.

39-3.02(b) No-Passing Zones

A no-passing zone is a special type of centerline marking. The centerline marking consists of two normal yellow lines. Where centerline markings are used, a solid yellow line adjacent to the lanes that warrant the no-passing restriction shall be placed

Where the centerline is striped, no-passing lines shall be used on the approaches to highway-railroad crossings. Also, no passing zones should be established at vertical and horizontal curves and elsewhere on two-lane facilities where an engineering study indicates that passing should be prohibited because of limited sight distance or other special conditions. Minimum passing sight distances are provided in *ILMUTCD*. The values presented in *ILMUTCD* should not be confused with the passing sight distances presented in Chapter 28. The values presented in Chapter 28 are geometric design criteria based on an assumption that a passing vehicle will be able to complete its passing maneuver. The minimum passing sight distance criteria presented in *ILMUTCD* are sufficient to allow a passing vehicle to abort its passing maneuver. Where the distance between no-passing zones is less than 400 ft (120m), no-passing markings should connect the zones.

39-3.02(c) Lane Lines

Lane lines are used to delineate the separation of two or more lanes of traffic traveling in the same direction. When used, the lane line will usually consist of a normal broken white line. A solid white line may be used to discourage lane switching (e.g., approaches to signalized intersections).

Lane lines should be used on all paved highways with two or more traffic lanes for travel in the same direction.

39-3.02(d) Edge Lines

Edge lines are used to delineate the edge of traveled way. Left hand edge lines are median lines, except on one-way streets. If used, the right hand edge line shall consist of a solid white line. The left hand edge line of divided and one-way pavements and along medians shall consist of a solid yellow line.

Edge lines should be placed on paved highways that have ADT greater than 1,000. They may be excluded based on engineering judgment if a curb delineates the travel way.

39-3.02(e) Median Markings

If a median island separating travel in the opposite direction is formed by pavement markings, the median should be outlined by a double set of solid yellow lines on each edge of the median.

39-3.02(f) Two-Way Left Turn Lanes

The pavement edge along each side of a two-way left turn lane shall consist of a normal broken yellow line and a normal solid yellow line with the solid line adjacent to the through lane.

39-3.02(g) Transitions

Where transitions are necessary, pavement markings are used to guide the motorist through the transition area. See *ILMUTCD* for the applicable taper rate and length criteria at transitions.

39-3.03 Intersections

The following sections present typical intersection pavement marking applications. See *ILMUTCD* for line size, color, and placement guidelines.

39-3.03(a) Stop Lines

The stop line is a transverse line that is used to indicate where the desired vehicular stopping point is located. A stop line is a solid white line 12 in to 24 in (300 mm to 600 mm) wide provided across the approach lanes. The location of the stop line may be adjusted to fit field conditions. For example, where turning trucks are known to encroach into the opposing lane, the stop line should be placed outside the area of frequent encroachment. On multilane facilities that intersect the crossroad at an angle, it may be appropriate to stagger the stop line for each lane. This consideration is especially important at signalized intersections, which may have substantial clearance times. In the absence of a marked crosswalk, stop lines should not be placed more than 30 ft (9 m) or less than 4 ft (1.2 m) from the nearest edge of the of the intersecting travel way.

39-3.03(b) Crosswalks

Marked crosswalks provide guidance to pedestrians crossing roadways at intersections with traffic signal and stop signs. Marked crosswalks also serve to alert road users of a pedestrian crossing point at other locations. Crosswalks are usually marked with transverse solid white lines between 6 in and 24 in (150 mm and 600 mm) wide. The distance between the lines should not be less than 6 ft (1.8 m).

Crosswalks should be marked at all intersections where there is substantial conflict between vehicular and pedestrian movements and other appropriate points of pedestrian concentration. An engineering study should be used to determine the need for crosswalks at locations away from highway traffic signals or STOP signs (e.g., midblock locations).

39-3.03(c) Lane-Use Control Markings

At multilane approaches to intersections, it is often necessary to mark the intersection approach to designate the permitted movements through the intersection. This is especially important at intersections that have complex geometrics and multi-phase signal operations (e.g., exclusive turn lanes, drop lanes, dual left turn lanes). The markings consist of white words and/or symbols. Where through traffic lanes approaching an intersection become a mandatory turn lane, lane-use arrow markings shall be used and shall be accompanied by standard signs. Also, consider using lane-use control markings in the following locations:

- turn bays,
- approach lanes at major signalized intersections, and

- where an abnormal traffic pattern exists at an intersection approach.

39-3.03(d) Multiple Turn Lanes

At intersections that have multiple turn lanes (e.g., dual left-turn lanes), a series of single dotted lines may be used to guide the turning traffic through the intersection. These lines are white and are typically an extension of the lane line. The radius of the dotted line as extended through the intersection should be sufficient to accommodate the turning radius of the design vehicle.

39-3.04 Miscellaneous Marking Applications

39-3.04(a) School Areas

Pavement markings through school areas should be placed according to the criteria presented in *ILMUTCD*. See the publications in Section 39-6 for additional criteria. Pavement markings for school crossings should be used only with the appropriate signing. Marked crosswalks should be placed at designated school crossings. The word SCHOOL may extend to the width of two approach traffic lanes.

39-3.04(b) Highway-Rail Grade Crossings

Pavement markings in advance of highway rail grade crossings shall be placed according to the criteria presented in *ILMUTCD*. All crossing pavement markings shall be retroreflectorized white and shall consist of an X, the letters RR, and certain traverse lines. See the publications in Section 39-6 for additional design and application guidance. Pavement markings at railroad crossing approaches are not required:

- where the prevailing speed is less than 40 mph (60 km/h),
- in urban areas where an engineering study indicates that other devices can be installed to provide suitable warning and control, and
- where the pavement is a low-type material.

No passing zones at railroad crossings are discussed in Section 39-3.02(b).

39-3.04(c) On-Street Parking

Marking of parking space boundaries encourages more orderly and efficient use of parking. Where used, on street parking should be marked a sufficient distance back from an intersection so as not to obscure, or otherwise diminish, sight distance at the intersection and to minimize interference with the flow of vehicles and pedestrians. Curb markings may be used to delineate no parking areas. Local highway agencies may prescribe the color of the marking. The publications in Section 39-6 provide additional guidance for on-street parking.

39-3.04(d) Bike Facilities

All markings used on bikeways shall be retroreflectorized. Longitudinal lines should be used to define bicycle lanes on roads and streets. If the bicycle lane symbol is used, it shall be placed immediately after an intersection and at other locations as needed.

Where shared use paths are of sufficient width to designate two minimum width lanes, a solid yellow line may be used to separate the two directions of travel where passing is not permitted, and a broken yellow line may be used where passing is permitted. A solid white line may be used on shared-use paths to separate different types of users. *ILMUTCD* provides additional detail concerning the marking of bikeways.

39-3.04(e) Truck-Climbing Lanes

A solid white lane line may be placed between the normal travel lane and the truck-climbing lane. Transition the edge line to the outside edge of the climbing lane.

39-3.05 Object Markers

The use of object markers is intended to identify specific objects (e.g., bridge handrails, abutments, culvert headwalls) wherever the object is located either within or adjacent to the roadway. Obstructions within the roadway shall be marked with a Type 1 or Type 3 object marker. In addition to markers on the face of the obstruction, warning of approach to the obstruction shall be given by appropriate pavement markings. Objects not actually in the roadway are sometimes so close to the edge of the road that they need a marker. If used, the inside edge of the marker shall be in line with the inner edge of the obstruction. The Type 3 object marker is the marker most frequently used on rural roads.

39-4 TRAFFIC SIGNALS

39-4.01 General

A traffic signal is a valuable device for the control of vehicular and pedestrian traffic. Traffic signals assign the right-of-way to the various traffic movements by alternately directing which traffic is to stop and which traffic is to proceed. Traffic signals that are properly located, designed, and operated have the following advantages:

- provide for the orderly movement,
- increase traffic-handling capacity of an intersection,
- reduce frequency and severity of certain type collisions,
- coordinate the near continuous movement of traffic along a given route, and
- interrupt heavy traffic at intervals to allow other traffic to cross.

For information on traffic signal equipment and material specifications, design, and application criteria, review the applicable publications listed in Section 39-6.

39-4.02 Traffic Signal Needs Study

An engineering study of traffic conditions, pedestrian characteristics, and physical characteristics of the location must be performed to determine whether installation of a traffic signal is justified at a particular location. A traffic signal should not be installed unless an engineering study indicates that installing the device will improve the overall safety and/or operation of the intersection.

39-4.02(a) **Signal Warrants**

The investigation of the need for a traffic signal includes an analysis of the applicable factors of the traffic signal warrants contained in *ILMUTCD*. Information should be obtained by means of engineering studies and compared to the requirements of the warrants. For the purpose of comparing intersection conditions to the warrants, lanes added on major streets within 300 ft (90 m) of the intersection should not be considered as approach lanes unless a significant volume of traffic enters the streets within the added lane (e.g., ramp connection). If none of the warrants are satisfied, then a traffic signal should not be considered at the study location. Furthermore, the satisfaction of one or more of the warrants does not in itself justify the installation of a traffic signal.

39-4.02(b) **Other Factors**

Although one or more of the warrants presented in *ILMUTCD* may be satisfied, the results of a thorough engineering and traffic study of the site's physical characteristics and traffic conditions may indicate that the installation of a traffic signal is not the most prudent choice. In addition to the *ILMUTCD* traffic signal warrants, the following factors should be considered:

1. Crash Experience. Consider alternative solutions to crash related problems (e.g., improving sight distance, using advance warning signs or larger signs).

2. Geometrics. The intersection's geometric design can affect the efficiency of the traffic signal. Traffic signal installations at poorly aligned intersections may, in some cases, increase driver confusion and reduce the overall efficiency of the intersection. When practical, properly align the intersection to adequately accommodate turning lanes, through lanes, etc.
3. Costs. The installation and maintenance of traffic signals can be very expensive. A cost effectiveness analysis may be necessary to determine if the benefits from the reduction in crashes and delays will exceed the costs associated with signalization.
4. Location. Consider the intersection relative to the adjacent land use type and density (e.g., urban, suburban, rural) and the potential for future development in the study area. Also, consider the location of the intersection within the context of the overall transportation system (e.g., isolated locations, interrelated operations, functional classification). Usually, isolated locations are intersections where the distance to the nearest signalized intersection or potential future signalized intersection is greater than 0.5 mile (800 m).
5. Provisions for Future Installations. Consider the future needs of the study location. Assess the anticipated traffic growth and future operational requirements of the signalized location during planning and design, as practical, so that later modifications can be readily incorporated and total labor and material costs minimized. Traffic signal equipment should be specified with some degree of operational flexibility to accommodate future needs. This is illustrated by the following examples:
 - a. Turn Lanes. If predicted traffic growth is likely to require a left turn lane in the future, the design should accommodate this future need (e.g., equipment, phasing, circuitry, pole mounting).
 - b. Street Widening. If a street will be widened or an intersection will be reconstructed in the foreseeable future, consider either a temporary signal or, if possible, an installation that conforms to the proposed final layout.
 - c. Interconnection. If a need for signal interconnects or additional phases is foreseen, provisions for these situations should be incorporated in the initial design.

39-4.03 Existing Traffic Signals

If it is obvious that an existing traffic signal meets one or more of the traffic signal warrants, no special documentation will be required to allow the existing signals to remain or be modernized. Otherwise, the existing signals should be removed or retained based on the following, as well as other supporting information:

- percent of warrants met,
- expected development and traffic growth on intersecting streets,
- signal progression with adjacent signals, and

- crash potential due to either retention or removal of the signal.

Every reasonable effort should be made to remove unwarranted signals. However, upon presentation of evidence of strong local objections to removing existing signals and an indication, based on traffic engineering judgment, that they present no unusual safety hazards, the signal may be allowed to remain. All remaining signals will be upgraded, as needed, to comply with *ILMUTCD* requirements.

39-4.04 Pedestrian and School Crossing Signals

A pedestrian crossing signal may be necessary when the traffic volume on the major street is so heavy that pedestrians experience excessive delay in crossing the major street. A school crossing signal may be installed when the school crossing warrant is met. Before a school crossing signal is installed, consideration shall be given to implementation of other remedial measures (e.g., school speed zones, crossing guards). The pedestrian volume and school crossing warrants shall not be applied where the distance to the nearest traffic signal along the major street is less than 300 ft (90 m).

At an intersection, the traffic signal should be traffic actuated and should include pedestrian detectors. At a non-intersection crossing, the traffic signal should be pedestrian actuated.

39-4.05 Signals Near Highway Railroad Crossings

39-4.05(a) General

Where a signalized intersection is located within 200 ft (60 m) of a railroad grade crossing or where traffic frequently queues onto the tracks, the normal sequence of the traffic signals should be preempted by the approach of trains to avoid entrapment of vehicles on the crossings. The primary focus of the design of intersections where a railroad grade crossing is within 200 ft (60 m) should be to provide adequate storage area for vehicles between the track and intersection and to keep vehicles from stopping on the tracks while waiting for a green signal at the intersection. It may not be necessary to follow all of the recommendations contained in this section at crossings where train speeds are low (i.e., 10 mph (15 km/h)) or where train movements are infrequent. The railroad operations at these crossings must be confirmed in writing by the railroad before any exceptions to these guidelines are considered.

39-4.05(b) Traffic Signal Design

Locations where traffic signal and railroad flashing light signal systems are interconnected should be designed differently than the typical intersection. The two signal systems must be designed to operate together to provide a safe system for both the highway users and the railroads. Consider the following:

1. Preemption. Railroad preemption shall have priority over all other types of preemption in the traffic signal controller.
2. Clearance. When the signal is received from the railroad control equipment, the traffic signal controller shall terminate, using the normal clearance intervals, all phases that conflict with the track clear green phase. Any walk or pedestrian clearance intervals in

effect when preemption is initiated should be immediately terminated. The pedestrian clearance may be run concurrently with the vehicular clearance interval for the cross street. However, do not extend the time needed to the cycle for the track clear green phase.

3. Signal Heads. Four or five section signal heads should be installed to allow for a protected left turn phase on the track approach leg of the intersection during the preemption sequence.

39-4.05(c) Pre-Signal

A traffic signal may be required in advanced of the railroad crossing. The following criteria apply to this pre-signal:

1. Need. Pre-signal traffic signal heads should be placed on the near side of the rails to stop vehicular traffic before the railroad crossing at all signalized intersections if the clear storage distance, measured from the stop line to a point 6 ft (1.8 m) from the rail nearest the intersection, is 50 ft (15 m) or less. At all approaches where the crossing is on a state highway or where there are high percentages of multi-unit vehicles, the distance should be increased to 75 ft (23 m).
2. Signal Mounting. Traffic signal heads located on the near side of the tracks should be mounted on the railroad signal structure, if available, or as close to the crossing as practical without restricting visibility of the railroad signs and signals. The use of the railroad structure requires the concurrence of the railroad company and ICC.
3. Signal Phasing. Where pre-signals are used, signal phase sequencing should be designed to avoid left turning vehicles from being trapped either in the area between the intersection and the crossing, or in the intersection.
4. Timed Overlap. A timed overlap must be used to terminate the pre-signal before the far side intersection signal to clear the storage area between the tracks and the intersection with each cycle of the normal traffic signal operation. Vehicles that are required to make a mandatory stop (e.g., school buses, vehicles hauling hazardous materials) must be considered when determining the amount of time for the overlap to ensure they will not be forced to stop in the storage area.
5. Median. If pre-signals are needed on the near side of the tracks, a raised-curb median may be necessary adjacent to the tracks to provide for proper placement of signals.

39-4.05(d) Minimum Preemption Time

The minimum preemption time at the interconnected crossings consists of the following three components:

1. Right-of-Way Maximum Time. This is the maximum worst case time that it will take for the traffic signal to clear to a green light for the track approach. It is IDOT's policy to get to this green as quickly as possible by immediately terminating any pedestrian WALK indications, abbreviating the pedestrian clearance interval, and running it concurrently with the vehicular clearance phase on the cross street. Local agencies should be aware of this abbreviated time to ensure that it does not conflict with designated school routes or other conditions. This time will include a one second delay upon receiving the signal from the railroad to limit the number of false calls received, a one second minimum

green for the through movement, the amber clearance, and any all red time included in the timing sequence.

2. Queue Clear Time. The queue clear green time is the amount of time required to clear a vehicle that is just beyond the tracks to a point either completely through the intersection, for storage areas less than 50 ft (15 m) or to a point where the rear of the vehicle is 6 ft (1.8 m) from the near rail for longer storage areas. This time should be determined by field observations.
3. Separation Time. A separation time is added to ensure that a vehicle is not just clearing the tracks as the train enters the crossing. This is important to keep both the motorist and the train engineer from taking emergency actions. This time has been fixed at 9 seconds.

For additional information on preempting, contact the IDOT Central Bureau of Operations.

39-4.05(e) Coordination

Any proposed changes involving crossings that are interconnected with nearby traffic signal will be subject to the approval of the Illinois Commerce Commission (ICC). Additionally, any new signal that will require interconnect with railroad flashing light signals will also be subject to the review and approval of ICC. Close coordination between the local agency, Central BLRS, the railroad company, and the Illinois Commerce Commission is required to ensure the railroad flashing light signals and the traffic signals are performing as a system. For intersections of two local streets, ICC will be lead agency in coordinating between all parties involved. The IDOT Central Bureau of Operations will be responsible for reviewing the traffic signal design at intersections involving State highways and will submit it to ICC for approval.

39-4.06 Traffic Detectors

The efficient operation of a traffic actuated signal installation depends greatly upon the proper design and placement of traffic detectors. The primary purpose of a traffic detector is to detect the presence of a motor vehicle, bicycle, or pedestrian. There are many types of detector devices acceptable for use on a local highway project. These include the inductive loop detector, the preformed loop detector, the video image detector, and pedestrian push button detector.

39-4.07 Signal Coordination

As traffic volumes increase, installing coordinated signal systems is an important consideration for improving traffic flow. By coordinating two or more traffic signals together, the overall capacity of the facility can be significantly increased. Generally, traffic signals that are within 0.5 mile (800 m) of each other are good coordination candidates. There are several different methodologies available to coordinate traffic signals.

39-4.08 Emergency Vehicle Preemption

An emergency vehicle preemption control may be provided to promptly display a green signal indication at signalized locations ahead of fire vehicles, law enforcement vehicles, ambulances,

and other official emergency vehicles. IDOT approval must be obtained before the preemption control is provided at an intersection with a State highway.

39-4.09 Inspection and Maintenance Considerations

Local agencies should routinely inspect painted steel mast arm poles to determine the extent of corrosion loss and presence of any defects (e.g., cracks, impact damage) that would affect adequacy or longevity. These inspections should consist of the following:

1. Visual Checks. Check for perforations for severe corrosion on the column in the splash zone area, vehicle damage cracks in welds, concrete/grout deterioration, anchor bolt/nut condition, and pole interior condition, if hand holes allow access.
2. Sounding with Hammer. Use a hammer to sound unperforated poles in the splash zone areas, especially near the weld connections. A welder's chipping hammer with round edges or a small ball peen hammer should be used. This will help prevent causing any nicks or dents on the pole that could develop stress risers.
3. Ultrasonic Testing. Use a hand held ultrasonic thickness gauge (e.g., DM-2) to determine variations in the pole's thickness.

Any significant corrosion loss or structural defects should be corrected immediately.

39-5 TEMPORARY TRAFFIC CONTROL

39-5.01 General

Traffic control in work zones will be provided in accordance with *ILMUTCD*. *ILMUTCD*, *BDE Manual*, the *Highway Standards*, and the IDOT Bureau of Operations publication, *Quality Standard for Work Zone Traffic Control Devices* contain traffic control devices and applications for work zones that are approved for use on local agency projects. For additional information on temporary traffic control material specifications, design, and application criteria, review the applicable publications listed in Section 39-6.

39-5.02 Terminology

The following definitions are used to define the time length for work zones:

1. Long-Term Stationary Work Zone. A construction, maintenance, or utility work site that requires traffic control in the same location and where the activity requires longer than 3 days.
2. Intermediate-Term Stationary Work Zone. A construction, maintenance, or utility work site that requires traffic control in the same location and occupies a location from overnight to 3 days.
3. Short-Term Stationary Work Zone. A construction, maintenance, or utility work site that requires traffic control in the same location and where the activity takes from 1 to 12 hours.
4. Short-Duration Work Zone. A construction, maintenance, or utility work site that occupies a location up to 1 hour.
5. Mobile Work Zone. A construction, maintenance, or utility work site that is continuously moving during the period when work is actively in progress.

39-5.03 Work Zone Traffic Control Strategies

39-5.03(a) Objectives

The desired objectives to consider in relocating traffic flow are:

- Remove traffic from the work site. This option usually reduces the construction costs and enhances safety. With this option, sufficient space should be available for the contractor to perform the work with reasonable economy and safety.
- Avoid unreasonable adverse travel and public inconvenience.
- Ensure that only reasonable delays will be caused for emergency vehicles, school buses, mail carriers, etc.
- Maintain reasonable access for local interests (residents, businesses, agriculture, etc.).

39-5.03(b) Work Zone Types

Except for roadway shifts, work sites that are completely off the roadway and do not disrupt traffic are not addressed because generally they will not have a major effect on traffic. The most common projects involving traffic flow through or around a work site include:

- bridge reconstruction, rehabilitation, or replacement,
- major pavement rehabilitation of existing highways,
- pavement removal and replacement,
- horizontal alignment change, and
- vertical alignment change.

The main function of a temporary traffic control is to “relocate traffic flow” so that the construction work can proceed with a minimum interruption and hazard to the workers and to the motorists.

The following presents a description for several work zone applications:

1. Lane Constriction. This work zone type is configured by reducing the width of one or more lanes to retain the number of lanes normally available to traffic. This application is the least disruptive of all work zone types, but it is generally appropriate only if the work area is mostly outside the normal traffic lanes. Note that narrow lane widths may reduce the facility’s capacity, especially where there is significant truck traffic. The use of shoulders as part of the lane width helps reduce the amount of lane width reduction that may be required; however, check the structural adequacy of the shoulders. Where this application is applied to long term work zones, it will require the removal of the current lane markings to avoid motorist confusion.
2. Lane Closure. This work zone type closes off one or more normal traffic lanes. Capacity and delay analyses may be required to determine whether serious congestion will result from lane closures. In some cases, use of the shoulder or median area as a temporary lane will help mitigate the problems arising from the loss in capacity. Upgrading or replacement of an existing pavement or shoulder, or placement of temporary pavement, may be necessary.
3. One-Lane, Two-Way Operation. This work zone type involves using one lane for both directions of traffic. This work zone type is typically used only on bridges or small, short term projects. Flaggers or traffic signals are usually used to coordinate the two directions of traffic.
4. Runaround. This work zone involves the total closure of the roadway (one or both directions) where work is being performed and the traffic is rerouted to a temporary roadway constructed within the highway right-of-way. This application may require the acquisition of a temporary construction easement and usually requires extensive preparation of the temporary roadway. Generally, temporary runarounds are designed for a posted speed reduction of no more than 5 mph to 15 mph below the existing posted speed of the route.

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5. Intermittent Closure. This work zone type involves stopping all traffic in one or both directions for a relatively short period to allow the work to proceed. After a specific time, depending on traffic volumes, the roadway is reopened and all vehicles can travel through the area. This application is usually only appropriate on low-volume roadways or during periods where there are very low volumes (e.g., Sunday morning, nighttime).
6. Use of Shoulder or Median. This work zone type involves using the shoulder or the median as a temporary traffic lane. To use this technique for more than a short period, it will be necessary to evaluate the shoulder and subgrade to verify its adequacy to support the anticipated traffic loads. This technique may be used in combination with other work zone types or as a separate technique.
7. Detour. This work zone type involves total closure of the roadway, in one or both directions, when work is being performed, and rerouting the traffic to existing alternative facilities. This application is particularly desirable when there is unused capacity on roads running parallel to the closed roadway. When considering detours, evaluate the following:
 - a. Nearby Route Detours. A nearby local route may require upgrading (structurally and/or geometrically) or extraordinary maintenance to carry the anticipated temporary increase in traffic and to restore it subsequent to the detour. When investigating the practical use of a nearby facility as a detour route, note that the detour route will only be temporarily serving the through traffic. If the nearby route detour will be an economically reasonable alternative, make every effort to use the existing roadway width, the existing right-of-way, and to minimize any utility adjustments. Additionally, investigate the nearby route to determine the safe detour speed. Additional speed signs and warning devices may be required. Contact other agencies (e.g., State, county, municipalities) having jurisdiction over the nearby route and obtain their concurrence prior to using the route for a temporary detour. Also, contact emergency services, post offices, and public transportation agencies that may be affected by a road closure/detour.
 - b. Location. The beginning and end of all detours should coincide as near as possible with the beginning and end of the construction project. Where practical, avoid long detours that will bypass entire communities.
 - c. Pedestrians. Evaluate pedestrian traffic concerns and methods of eliminating or minimizing any other adverse effects when closing a road. Adverse effects could include inadequate access to buildings, private property, or businesses along the closed road.
 - d. Railroad Crossings. Examine railroad crossings to see if existing protective devices, sight distances, geometrics, and crossing surfaces are adequate for the detoured traffic.
 - e. Wide Load Restrictions. Determine if there will be a need to post advance signs to prohibit wide loads from using the detour.

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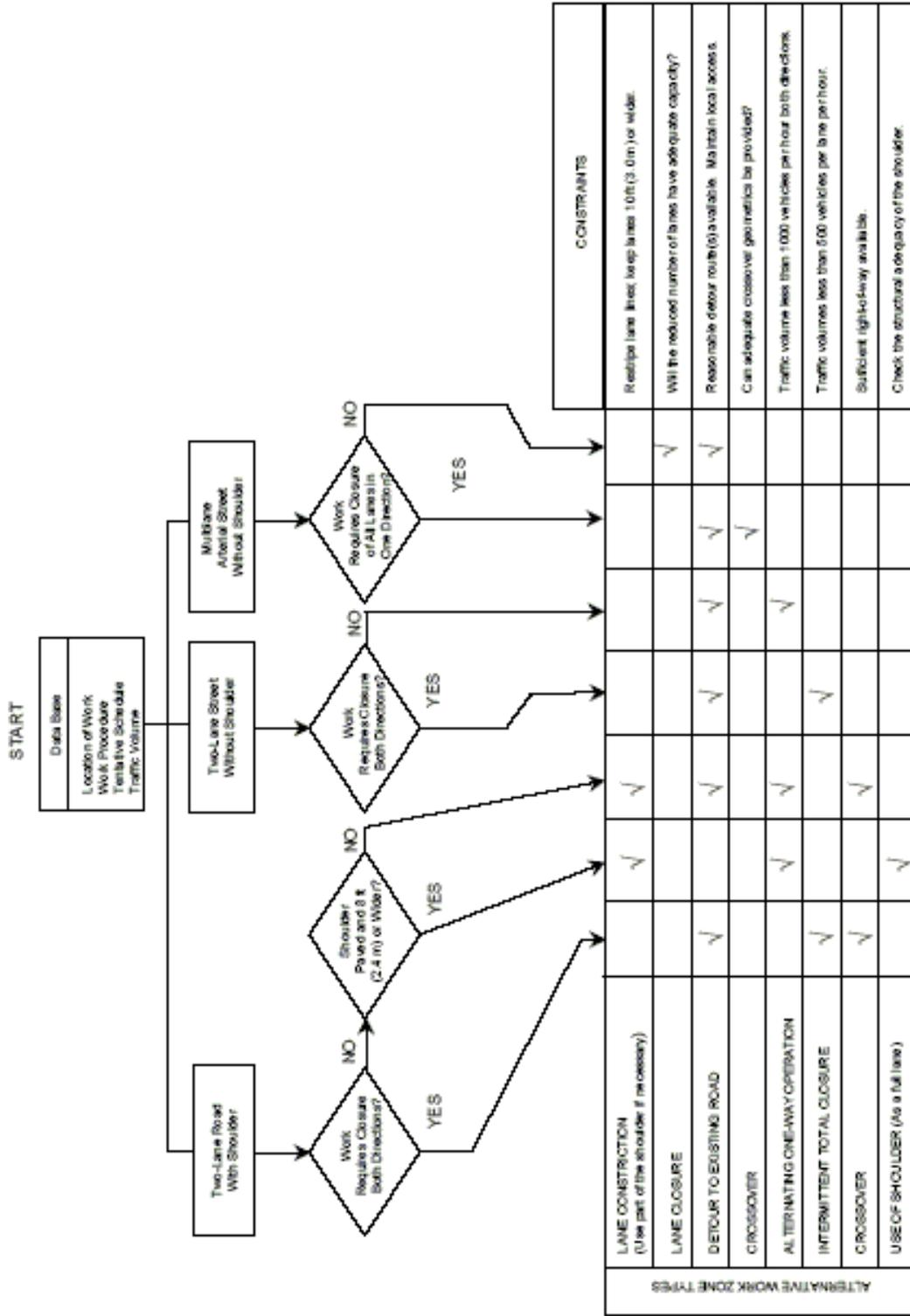
- f. Benefits. Note that improvements to nearby routes provide a permanent benefit for the public, whereas runarounds provide only temporary benefits that cease when the construction project is completed.
8. Roadway Shifts. This work zone type shifts the proposed roadway alignment laterally, (e.g., 50 ft (15 m), 100 ft (30 m)) so that the existing roadway or bridge can be used as the means to maintain traffic flow at the work site. This is an option that is usually only appropriate at horizontal curve locations, or bridge sites where the roadway profile grade line must be raised for hydraulic purposes. Note that additional right-of-way or easements will often be necessary for this work zone type.
9. Work During Non-Peak Hours. When high volume projects do not have reasonable alternatives for 3R type work, consider requiring work during non-peak hours and/or night work.

39-5.03(c) Selection

Selection of the appropriate work zone type represents one of the most significant elements of a traffic control strategy. Other elements of a control strategy that should be considered include length of the work zone, time of work, number of lanes, lane widths, traffic speeds, and right-of-way. Considering these and other factors, reasonable alternatives can be narrowed to a selected few for further review. Typically, only a small number of reasonable work zone alternatives will emerge for a particular project and, in many cases, only one may be practical. Identification of these alternatives at an early stage in the planning process can reduce significantly the analysis effort.

Figure 39-5A provides guidelines for identifying practical work zone alternatives based on roadway type, lane closure requirements, shoulder width, traffic volume, and the availability of right-of-way and detour routes. However, every work zone location will have a wide variation of conditions and an all-inclusive selection matrix is not practical. Other issues to consider include the following:

1. Local Regulations. Many jurisdictions have adopted safety regulations and public convenience policies as safeguards against the unacceptable impacts of work zones. These regulations and policies may impose additional constraints regarding the types of control strategies that can be implemented. Knowing these constraints can help eliminate impractical alternatives from consideration. The public convenience policies or local regulations may specify peak-hour restrictions, access requirements, noise level limitations, material storage and handling, excavation procedures, work zone lengths, and number of traffic lanes that must remain open.
2. Multilane Facilities. Traffic on multilane facilities is usually maintained through the use of lane constrictions or lane closures. Maintaining traffic flow on multilane facilities will generally require different criteria than those used on the rural 2-lane highway system because of the higher traffic volumes.



IDENTIFICATION OF FEASIBLE WORK ZONE TYPES

Figure 39-5A

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3. Bridges. Traffic maintenance for bridges may consist of stage construction (e.g., partial closure), detours, runarounds, or split detours. Proposed designs may be coordinated with the Bureau of Bridges and Structures to determine their feasibility. Additionally, consider the following:
4. Stage Construction (Partial Closure). Stage construction for bridges will generally consist of lane constrictions, lane closures, or one-lane, one-way operations. However, stage construction may increase unit costs, increase the difficulty of reconstructing the bridge, have inherent hazards due to close proximity of traffic to the construction operations, and may generally involve a restricted lateral clearance for vehicles, wide loads, and farm equipment. With lateral restrictions, it is important that such restrictions be adequately marked in advance of the work site. Consider the following factors when determining the feasibility of stage construction for bridges:
 - type, length, and width of present and new structure,
 - number of beams,
 - beam spacing and location in relation to the desirable staging limits,
 - condition of existing substructure and its ability to accept stage construction,
 - lane and shoulder widths required during stage operations (this may require using the shoulder as part of the lane),
 - the use of temporary traffic signals, and
 - costs attributable to staging.

Deck repairs can usually be staged for all structure types. Superstructure and deck replacement; however, is sensitive to the type of structure involved. Existing multi-beam superstructures (e.g., steel I-beams, concrete I-beams) and culverts can usually be adapted to construction staging techniques depending on the number of beams. Other types of structures (e.g., pony trusses, relatively short span structures utilizing low trusses without cross bracing) may be staged, but with greater difficulty and expense. Some structures (e.g., through trusses, through girders) cannot be staged.
5. Runarounds. At locations where a through truss, pony truss, or steel through girder is being replaced, consider moving the truss or girder laterally to temporary abutments and using the structure as a part of the runaround.
6. Split Detours. If significant through traffic is using the road or street, it may be advantageous to provide a marked detour route around the work site and build a low water runaround across a stream for local access. This option is usually applicable only on low volume unmarked rural highways with less than 400 vehicles per day. See Chapter 7 for Section 404 permit requirements.
7. Additional Guidance. For additional guidance in analyzing and preparing a scheme to maintain traffic flow at work sites, see the *IDOT Highway Standards*, *ILMUTCD*, *IDOT Standard Specifications*, Chapter 55 of the *BDE Manual*, and Departmental Policy TRA-1 "Traffic Control Through Construction and Maintenance Areas."

39-5.04 Reduced Traffic Control for Roads Closed to Through Traffic

Where a highway or bridge is closed to through traffic, 430 ILCS 105/2 allows a local agency to specify alternative procedures, if desired, for flagging and controlling the local traffic through the

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work zone. The designer must specify the option for reduced traffic control in the contract documents and provide the average daily local traffic in the contract; otherwise, the contractor will be required to provide the same level of traffic control within the section of road closed to through traffic as would be required for open highway conditions.

IDOT's criteria in the *IDOT Standard Specifications* for reduced traffic control are based on the expected traffic volumes through the work zone. The designer will be responsible for determining these traffic volumes and incorporating this information within the traffic control plans. The estimated traffic volumes may vary at different locations within the work zone or during separate construction phases. For these situations, list the expected traffic volumes for each location and/or phase. This will allow the contractor to adjust the traffic control accordingly. Note that if no action is taken by the designer, the contractor will be required to provide the same level of traffic control within the section of road closed to through traffic as would be required for open highway conditions.

The following alternative procedures have been approved by IDOT and may be used for local agency projects. These alternative procedures are broken into three traffic ranges through the construction zone exclusive of construction vehicles:

- less than 100 ADT,
- 100 to 400 ADT, and
- over 400 ADT.

Consider the following:

1. Flaggers. The *IDOT Standard Specifications* contains provisions for reducing the number of flaggers required where the road is closed to through traffic but only if the expected ADT is shown on the plans or in the Special Provisions to be less than 400. The *IDOT Standard Specifications* allows the contractor to use only one flagger when the ADT is between 100 and 400 and does not require a flagger when the ADT is below 100, unless the contractor's operation encroaches on the open traffic lane.
2. Traffic Control Devices. Signing within the section closed to through traffic may also be reduced from that shown on the applicable *IDOT Traffic Control Standards* when the designer has determined that reduced traffic control is appropriate. When the estimated ADT will be less than 400, only one advance warning sign will usually be necessary. This sign should display a specific message (e.g., RIGHT LANE CLOSED AHEAD), rather than a general message (e.g., MEN WORKING). The flashing light may be omitted from the advance sign. When the estimated ADT is 400 or more, signing should be provided to full open highway requirements, except that the advance signing may be reduced by omitting the first sign in the normal series (e.g., ROAD CONSTRUCTION AHEAD). Barricades, cones, and other traffic control devices should normally conform to full open highway requirements except that when the operating speed of the traffic within the section closed to through traffic will be less than 45 mph (70 km/h), the following taper rates may be used:
 - 40 mph (60 km/h) – 25:1,
 - 45 mph (70 km/h) – 20:1, or
 - 50 mph (80 km/h) – 15:1.

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Special Provisions and/or special details relating to reduced traffic control other than flaggers will have to be developed by the designer on a case-by-case basis and be included in the Traffic Control Plan or the contract plans.

39-5.05 Flaggers

Flaggers must be provided in accordance with the *IDOT Standard Specifications* and any applicable Work Zone Traffic Control Standard. All flaggers engaged in work zone traffic control operations are required to be certified by IDOT, or an agency approved by IDOT.

39-5.06 High-Visibility Safety Apparel

In accordance with OSHA regulations (29 C.F.R. 1926.651(d)) all workers exposed to public vehicular traffic are required to wear ANSI Class 2 garments. *ILMUTCD* also requires flaggers to wear safety apparel meeting the ANSI Class 2 standard. The color shall be either fluorescent orange-red or fluorescent yellow-green with retroreflective material being orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors. Local agencies should be aware that OSHA has the authority to cite agencies if employees are not wearing the specified vest when exposed to vehicular traffic.

39-5.07 Highway Signs

39-5.07(a) General

In construction zones, regulatory signs are used to temporarily override an existing mandate or prohibition (e.g., reduced speed limit). Warning signs are used in advance of the construction area to indicate potentially hazardous conditions, and guide signs are used at various locations to inform drivers of detour routes, destinations, and points of interest. The *IDOT Highway Standards*, the *IDOT Standard Specifications*, and *ILMUTCD* provide the criteria for the design, application, and placement of these signs in construction zones.

39-5.07(b) Speed Limit Signing

Different posted speed limits may apply based on whether the speed limit is within the work zone or if it is within a construction site.

The work zone speed limit will be determined based on the work zone design speed, traffic volumes, construction work type, geometrics, project length, etc. Where there is no lane closure or apparent hazard, maintain the existing speed limit. The speed limit may be reduced from the existing speed limit by 10 mph if an engineering study indicates the reduced speed is necessary. The Work Zone Speed Limit Sign also may be used to reduce the existing speed limit by 10 mph if workers are close to traffic and are not protected by temporary concrete barrier. The need for this sign should be determined by an engineering investigation. The following may be reasons for using the Work Zone Speed Limit Signs:

- narrow pavement lane width,
- high-traffic volumes,

- inadequate sight distance,
- workers on the shoulder, or
- workers in a closed lane adjacent to an open lane.

Note that the work zone speed limit should not exceed the work zone design speed through the construction area.

See the *IDOT Standard Specifications* and *IDOT Highway Standards* for details on sign placement.

39-5.07(c) Guide Signs

The references in Section 39-6 provide the criteria for the design, application, and placement of guide signs. The following provides supplemental information on the use of guide signs in construction zones:

1. Detour Marking. Marked detours should be provided with temporary route markers and destination signs by the local agency in accordance with *ILMUTCD*.
2. Panel Signs. Guide signs are typically warranted in construction zones and on alternative routes where temporary route changes are necessary. For example, the designer may consider using large panel signs or changeable message signs for detours and closures.
3. Other. Standard route markings, street name signs, special information signs, directional, and detour signs may also be warranted based on the particular work on the facility.

39-5.07(d) Portable Changeable Message Signs

Portable changeable message signs (CMS) are very effective in communicating the construction zone information to the general public. The use of CMS will be determined on a project-by-project basis based on road alignment, traffic routing, or other situations requiring advance warning and information. The following are some typical applications where the CMS device may be effectively used in construction zones:

- to provide advance notice of upcoming construction,
- where significant traffic queuing and delays are expected,
- where changes in road alignment or surface conditions are present,
- to provide advance notice of lane and road closures,
- to notify or direct motorists to alternative routing, and
- to provide additional information on high-volume, urban projects.

ILMUTCD provides the design and application criteria relative to CMS.

39-5.07(e) Arrow Panels

In some construction areas, arrow panels are used to supplement conventional traffic control devices. They are used as directional information to assist in merging traffic. The *IDOT Highway Standards* and *ILMUTCD* provide the criteria for the placement, design, and application of arrow boards.

39-5.08 Channelization Devices

The *IDOT Highway Standards*, the *IDOT Standard Specifications*, and *ILMUTCD* provide the criteria for the selection, application, and placement of channelization devices. *ILMUTCD* and the *IDOT Highway Standards* also illustrate typical application diagrams for the use of these devices. There are numerous types of channelization devices available, each having its specific application in construction operations (e.g., runarounds, lane closures, road closures, two-way, two-lane (TWTL) operations). The following channelization devices are typically used in construction zones:

1. Barricades:
 - a. Type I and Type II Barricades. Type I or Type II barricades may be used for channelization. Type II barricades should be used on high speed roads.
 - b. Type III Barricades. Types III barricades are used for road and lane closures.
2. Drums. Drums are most commonly used in a linear series to channelize traffic.
3. Cones. Traffic cones are channelization devices used only during daylight hours.
4. Tubular Markers/Vertical Panels. These devices are used to channelize traffic, to divide opposing lanes of traffic at posted speeds of 40 mph or less, or in lieu of drums where space is limited and speeds are 40 mph or less. Tubular markers and vertical panels have less visible area than other devices. Therefore, only use these devices where space restrictions do not allow for the use of more visible devices.
5. Temporary Concrete Barriers (TCB). Use TCB only where positive protection is desired; do not use based on channelization needs. If used, locate TCB behind and in conjunction with other supporting channelization devices, delineators, and/or pavement markings. Delineators, reflectors, and steady-burning lamps should also be attached to TCB.
6. Delineators. Delineators provide retroreflectivity from headlights and are supplemental devices commonly used to indicate the roadway alignment and the intended path through the construction zone.

These channelization devices are used extensively in work zones to warn drivers of work activities in or near the traveled way, to protect workers in the area, and to guide drivers and pedestrians safely through and around the work zone. Because each construction project differs, the selection, application, and location of these devices should be determined on a project-by-project basis.

39-5.09 Pavement Markings

39-5.09(a) Existing Pavement Markings

Conflicting pavement markings through the work zone area must be obliterated to prevent confusion to vehicles operators. Painting over existing markings is not acceptable.

39-5.09(b) Types of Marking

The *IDOT Highway Standards* and *ILMUTCD* provide the criteria for the selection, application, and placement of pavement markings in work zones. The *IDOT Standard Specifications* provide additional information on pavement markings. The following sections provide supplemental guidelines to these sources. The following types of pavement markings are typically used in work zones:

1. Temporary Paint. Quick drying paint is a low cost, temporary pavement marking that may be used on construction projects. To improve reflectivity, glass beads are required. Generally, do not use temporary paint markings on final pavement surfaces.
2. Temporary Raised Pavement Markers. In high volume locations, the designer may consider using raised temporary pavement markers as a supplemental device to improve delineation through the work zone. Typical locations include lane lines and areas where there are changes in the alignment (e.g., lane closures, lane shifts). For lane lines, temporary raised pavement markers are placed mid-point in the gap. For tapers, lane transitions, etc., space the raised markers at 20 ft (6 m) intervals. Temporary raised pavement markers must be removed prior to placing the next pavement course.
3. Temporary Pavement Marking Tape. Temporary pavement marking tape is an appropriate material choice where there are changes to the traffic pattern during construction (e.g., lane shifts). Temporary tape can be easily and quickly installed and, when necessary, easily removed. One disadvantage is that this tape tends to move and/or breakup under heavy traffic volumes. Black tape may be used to temporarily remove lane lines.
4. Thermoplastic Markings. Thermoplastic markings are generally used in construction zones only if traffic volumes are high and the traffic pattern will continue for a long time (e.g., over one year).

39-5.09(c) Implementation

The application of pavement markings in work zones depends on facility type, project duration, project length, and anticipated traffic volume. Temporary pavement markings and no passing signs are required on all high-type surfaces (e.g. hot-mix asphalt, concrete), except for low volume roadways. Temporary pavement markings should also be considered on low volume roadways.

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1. Lane Markings. At the end of each workday, appropriate temporary pavement marking will be installed between all lanes that are open to traffic. Temporary markings will consist of stripes 4 ft (1.2 m) in length at a maximum spacing of 40 ft (12 m) along the centerline of 2-lane highways and the lane lines on multi-lane highways. Centerlines on two lanes will be yellow and lane lines separating two or more lanes of traffic moving in the same direction will be white. All temporary markings on the final wearing surface will be removed within 5 days after the permanent markings are installed, unless otherwise noted in the plans.
2. Edge Markings. When edge lines on multi-lane highways are obliterated due to resurfacing and operation problems are anticipated or are occurring due to the roadway geometrics, volume of traffic, ambient lighting, or narrow bridge, temporary diagonal lines should be placed on the shoulders beginning at the edge of the traveled way or auxiliary lanes at intervals of 50 ft (15 m) on ramps or 200 ft (60 m) on main lines. The markings will be a minimum of 4 in (100 mm) wide and 2 ft (600 mm) long and will be angle away from the direction of traffic at approximately 45°. The color of the diagonal lines will match the color of the pavement edge lines.
3. Permanent Pavement Markings. Temporary pavement markings should be replaced with standard markings as soon as practical. Usually, it should not be necessary to leave temporary markings in place for more than two weeks after completion of any intermediate or final surface. The time restriction for installation of full standard pavement markings begins at the completion of each intermediate lift or final lift of the resurfacing project. If roto-milling obliterates the markings, the time restriction begins when the entire surface has been milled. These restrictions may be delayed by the contracting agency whenever the contractor cannot apply markings due to unanticipated inclement weather, other than a winter shutdown on the project, strike activities, or other circumstances beyond their control. The standard markings should be installed as soon as practical after construction activities are resumed. Prior to winter, standard edge lines, lane lines, centerlines, and no-passing zone markings must be installed, at a minimum, on any intermediate or final surface that will remain open to traffic during the winter shutdown period.
4. No Passing Signs. No passing zones on 2-lane and 3-lane roadways may be identified by using either the pennant NO PASSING ZONE warning sign or the DO NOT PASS, PASS WITH CARE regulatory sign rather than pavement markings for periods of time up to 3 calendar days after an intermediate or final lift is completed. Signs may also be used in lieu of pavement markings on low volume roads until it is practical and possible to install the final full standard markings.

39-5.10 Traffic Signals

39-5.10(a) Location

The use of temporary traffic signals in work zones will be determined on a project-by-project basis. Use the warrant criteria for permanent installations discussed in Section 39-4 to assist in determining if a temporary traffic signal is warranted. However, use the actual traffic volumes expected during construction for the warrant analysis. Common locations where temporary signal installations may be used include the following:

- intersections where an existing signal must be maintained;

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- existing non-signalized intersections and driveways where construction patterns and volumes now warrant a signal;
- at a temporary haul road or other temporary access points;
- at crossroad intersections where there is an increase in traffic or there is a decrease in capacity due to the construction; and
- at long-term, 1-lane, 2-way traffic operations (e.g., bridge lane closures).

39-5.10(b) Application

Consider the following:

1. Design. Determine the impacts that a construction activity has on existing signal operations and attempt to maximize the level of service. For example, consider:
 - re-timing or re-phasing the signal to compensate for changes in traffic volume, mix, or patterns, and for changes in lane designations or intersection approach geometrics, or
 - physically relocating poles or adjusting signal heads to maintain compliance with *ILMUTCD*.
2. Bridges. The *IDOT Highway Standards* require a temporary signal installation for a bridge lane closure. However, in some situations, the use of a flagger may be more cost effective.

39-6 REFERENCES

For information on traffic control device material specifications, design, and application criteria, review the applicable publications listed below:

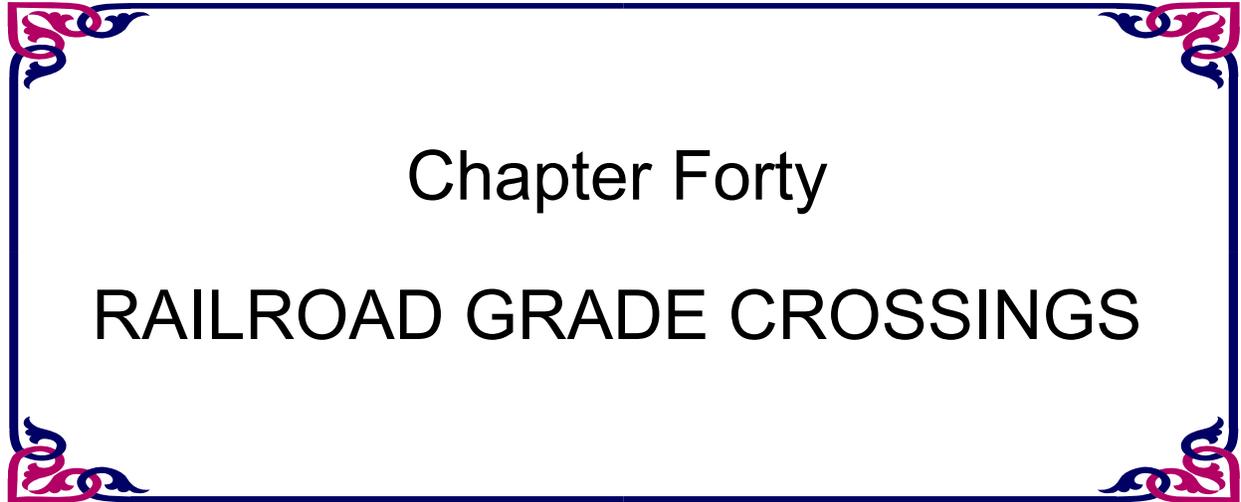
1. *Manual on Uniform Traffic Control Devices (MUTCD)*, FHWA.
2. *Illinois Manual on Uniform Traffic Control Devices (ILMUTCD)*, IDOT.
3. *Signing of Road District and Township Highways*, BLRS.
4. *Policy on Establishing and Posting Speed Limits*, Bureau of Operations, IDOT.
5. *Tourist Oriented Directional Signing Program (TODS)*, IDOT.
6. *Quality Standard for Work Zone Traffic Control Devices*, Bureau of Operations, IDOT.
7. *Bureau of Operations Traffic Policies and Procedures Manual*, IDOT.
8. *Standard Specifications for Road and Bridge Construction*, IDOT.
9. *Highway Standards*, IDOT.
10. *Standard Highway Signs*, IDOT.
11. *Sign Structures Manual*, IDOT.
12. *A Policy on Geometric Design of Highways and Streets*, AASHTO.
13. *Roadside Design Guide*, AASHTO.
14. *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*, AASHTO.
15. *Manual of Steel Construction*, AISC.
16. *Standard Alphabets for Highway Signs and Pavement Markings*, FHWA.
17. *Traffic Engineering Handbook*, ITE.
18. *Manual of Transportation Engineering Studies*, ITE.
19. *Manual of Traffic Signal Design*, ITE.
20. *Equipment and Materials Standards*, ITE.
21. *Preemption of Traffic Signals At Or Near Active Warning Railroad Grade Crossings*, ITE.
22. *Traffic Signal Installation and Maintenance Manual*, ITE.
23. *Traffic Signing Handbook*, ITE.

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24. *Traffic Detector Handbook*, FHWA.
25. *Official Wire and Cable Specifications Manual*, IMSA.
26. *Traffic Control Systems*, NEMA.
27. *Traffic Controller Assemblies*, NEMA.
28. *Highway Capacity Manual*, TRB.
29. National, State, and local electrical codes and manufacturer's literature.



Chapter Forty

RAILROAD GRADE CROSSINGS

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Chapter Forty
RAILROAD GRADE CROSSINGS

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Chapter Forty

RAILROAD GRADE CROSSINGS

As local highways are built and upgraded, it is inevitable that new railroad grade crossings will be required and that existing crossings will need to be modernized to meet current criteria. The geometric design of a railroad grade crossing requires consideration of the horizontal and vertical alignment, sight distance, and cross section of both the highway and the railroad. Other important design elements include the selection of an effective crossing surface that will permit smooth passage of vehicles across the tracks; the provision of signing and pavement marking to give adequate notice of the railroad crossing and visibility to motorists and train operators; and the selection of appropriate warning devices for the crossing environment.

40-1 DESIGN ELEMENTS

40-1.01 Geometric Design

40-1.01(a) General

Geometric design of a railroad grade crossing will generally be governed by the railroad profile and grade, which can be varied less easily than that of the roadway. The safety and function of the roadway, however, should not be compromised for the sake of accommodating a grade crossing in the shortest possible length or with the lowest cost. Avoid abrupt changes in roadway alignment and grade to meet the railroad. Design the grade crossing to provide as flat a roadway grade as practical through and at either side of the crossing to facilitate vehicle stops and starts if necessary.

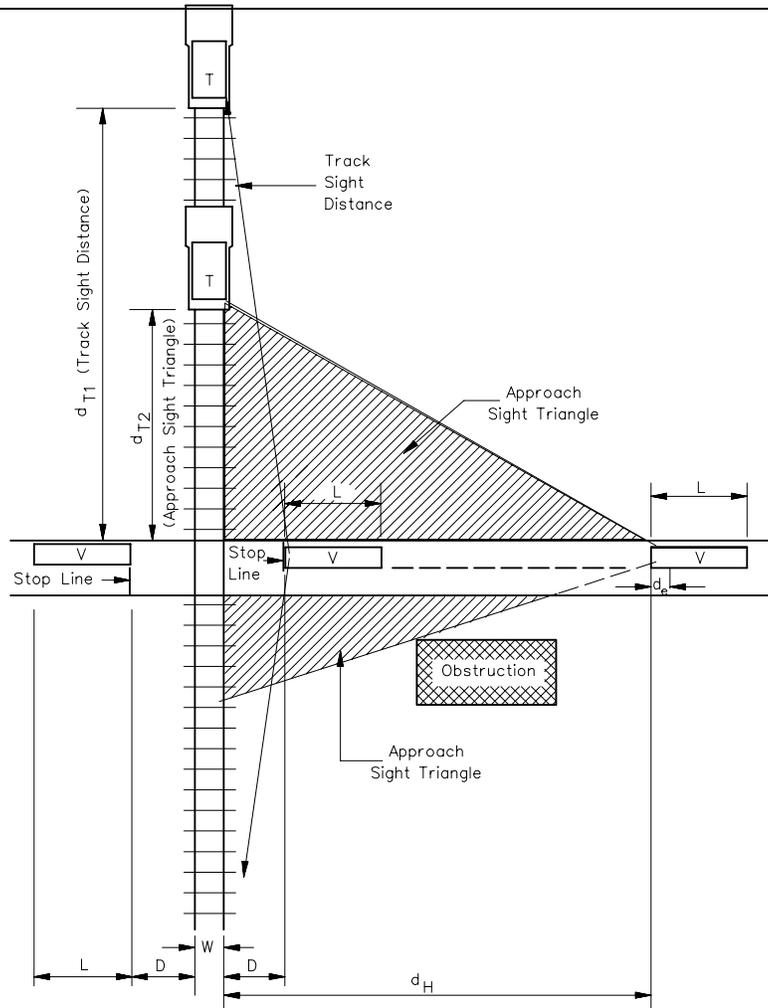
The general geometric design requirements for the design of grade crossings are the same as those for other intersections, as described in Chapter 34.

40-1.01(b) Sight Distance

Figures 40-1A and 40-1B provide the design criteria for sight distance at railroad crossings.

FHWA publication *Railroad-Highway Grade Crossing Handbook* contains guidance on sight distance evaluations for grade crossings, as does AASHTO's *A Policy on the Geometric Design of Highways and Streets*.

The number and nature of any obstructions lying within the sight triangles of drivers using a grade crossing will aid in determining the level of warning device required for the crossing (i.e., the more numerous and the more obstructive the objects, the greater the need for advance warning signs).



where:

- d_H = sight distance leg along the highway allowing a vehicle to cross tracks safely even through a train is observed at a distance d_T from the crossing or to safely stop the vehicle without encroachment of the crossing area, ft (m)
- d_{T1} = sight distance leg along the railroad tracks for stopped vehicle, ft (m)
- d_{T2} = sight distance leg along the railroad tracks for approaching vehicle, ft (m)
- D = distance from the stop line or front of the vehicle to the nearest rail (assumed to be 15 ft (4.5 m))
- L = length of vehicle (assumed to be 65 ft (20 m))
- W = distance between outer rails; for a single track, 5 ft (1.5 m)
- D_e = distance from the driver to the front of the vehicle (assumed to be 10 ft (3.0 m))

See Figure 40-1B for values of d_H , d_{T1} , and d_{T2} .

MEASURING SIGHT DISTANCES AT RAILROAD CROSSINGS

Figure 40-1A

The intersection angle of the grade crossing should be as close to a right angle as is practical for the location so that sight distances for both the road user and the train operator will be optimized. Where practical, avoid locating driveways and other road intersections within the sight triangle. Obstructions (e.g., trees, utility poles, signs) should be removed or located so that the visibility of warning and other informational signs is not diminished. Outside of municipalities, a minimum distance of 300 ft (100 m) along the highway on either side of a grade crossing should be kept clear of all removable obstructions (605 ILCS 5/9-112).

40-1.01(c) Horizontal Alignment

Avoid locating a grade crossing on a horizontal curve of either the highway or the railroad to reduce the tendency for the driver to be distracted by having to negotiate the curve. Intersecting curves with conflicting superelevations also present maintenance difficulties. It is often not practical to achieve the intersection of two tangents. Instead, consider other design elements that would compensate for the reduced visibility and maintenance difficulties (e.g., signing, pavement marking, other warning devices, appropriate types of crossing surfaces), as discussed in later Sections of this Chapter.

40-1.01(d) Vertical Alignment

Unless the Illinois Commerce Commission (ICC) otherwise specifically orders, at a minimum, the gradeline of highway approaches to grade crossings hereafter established or substantially reconstructed must be as follows:

- from the outer rail of the outermost track coincident with a tangent to the tops of the rails for about 24 in (600 mm), then, for a distance of 25 ft (7.5 m) ascending or descending at a grade cannot deviate more than 1% from the tangent, then to the right-of-way line (and as far beyond as the ICC's control may extend in any case) at a grade not to exceed 5.0%; and
- where superelevated track or tracks make strict compliance with this Section impractical, the grade of approaches shall be constructed so as to provide the best vertical alignment under the circumstances with due regard to surface regularity.

The width, transverse contour, type of surface or pavement, and other characteristics of each approach to a grade crossing must be suitable for the highway and shall, in every case, conform to the requirements of good practice.

When the approach grades are funded with Grade Crossing Protection Funds or other State or Federal funds, the vertical alignment shall be designed in accordance with Chapter 30. At locations where it is not feasible to improve the vertical profile according to criteria in Chapter 30, IDOT will consider granting a variance to the vertical alignment.

Vertical curves should be long enough to ensure an adequate view of the crossing and meet geometric requirements for the design speed of the roadway. In order to minimize pavement drainage problems, avoid locating crossings at or near the low point of sag vertical curves. Where grade crossings are located on a significant highway downgrade, consider ways to collect or divert the surface drainage in order to avoid excessive moisture infiltration into the railroad track ballast.

Ensure that the width, transverse contour, type of surface, and other characteristics of each approach to a grade crossing are suitable for the highway and conform to the requirements of good practice.

40-1.01(e) Cross Section

Design all new grade crossings to be at least as wide as the approach roadway, including shoulders. Provide a minimum width of 20 to 22 ft (6.0 m to 6.6 m); see criteria in Chapter 32.

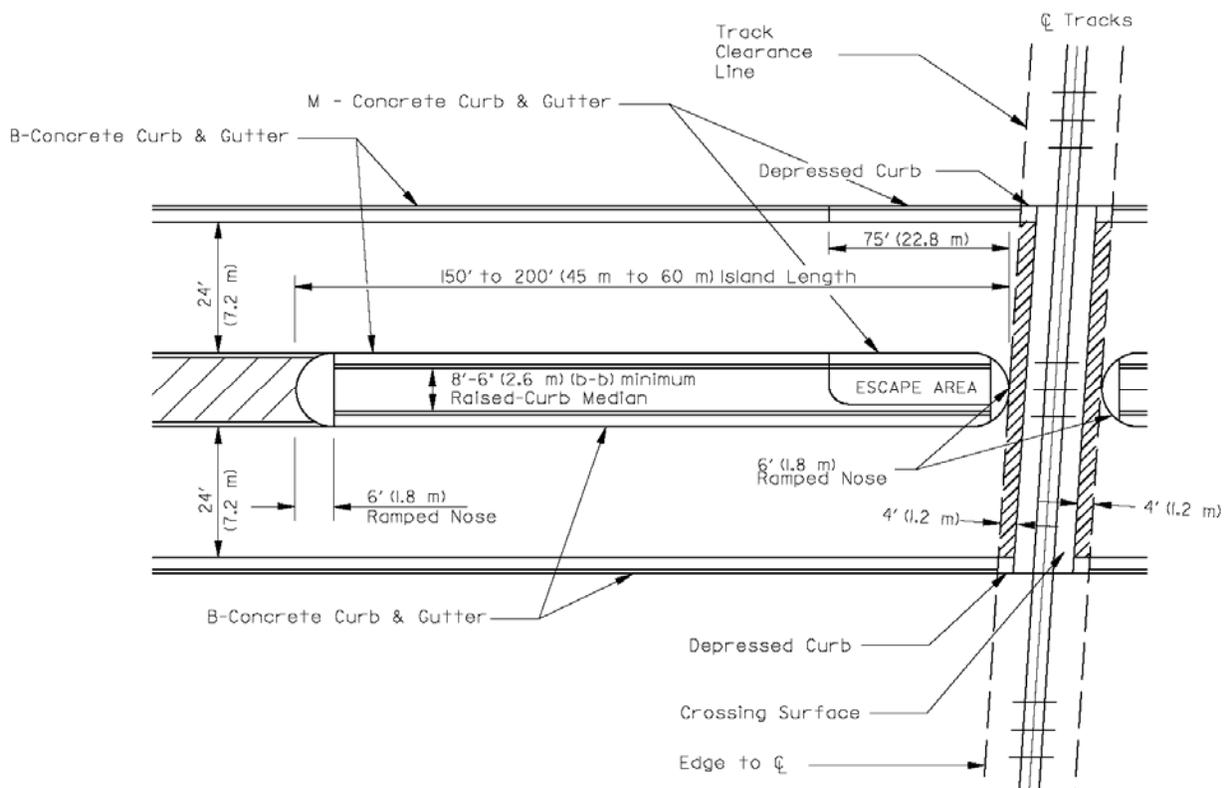
Where approach pavement to a single-track grade crossing features a barrier curb, extend the width of the grade crossing to the back of the curb. Additional width may be needed for sidewalks adjacent to the curb. Where two or more adjacent tracks are traversed by the grade crossing, extend the crossing width 3 ft (900 mm) outside the curb face.

Whatever the configuration of the pavement cross slope in the approaches to the grade crossing, the cross slope through the crossing plus 2 ft (600 mm) on either side should be as close to tangent as can reasonably be accommodated. A transversely sloping pavement surface intersecting with level railroad tracks will result in a rough crossing surface, which may divert driver attention from the safe negotiation of the crossing to finding the smoothest route through the crossing. The transition from the normal crown or superelevated pavement cross section to the level cross section should be accomplished far enough in advance that the transition is smooth, yet should be short enough to minimize the unfavorable drainage conditions created by the flat grade.

Coordinate the design of drainage features at the roadside adjacent to the grade crossing (e.g., ditches, curb inlets) with the railroad. Check that the internal drainage features of the railroad cross section as well as external drainage along the railroad right-of-way do not conflict with roadway drainage features.

40-1.01(f) Medians

Where median-mounted warning devices will be installed, and other than an earth median is adjacent to a grade crossing, the median should have a barrier curb with a minimum median width of 8.5 ft (2.6 m) [10 ft (3.0 m) desirable] back-to-back of curb. Depress all medians and curbs on approaches to the crossing to the level of the pavement edge or gutter flag within the track clearance line. The track clearance line runs parallel to the track at a distance of 8 ft (2.4 m) from the centerline of the nearest track; see Figure 40-1C.



Notes:

1. Where a raised-curb, flush, or traversable type median is used on the roadway, provide B-6 or B-9 (B-15 or B-22) raised-curb median on crossing approaches and provide M-2 or M-4 (M-5 or M-10) raised-curb median on crossing departures adjacent to each side of the railroad track(s).
2. In addition to deterring vehicular movements over the track(s) in the median area, the raised-curb median provides a space for mounting railroad warning device units, if required.
3. If the railroad tracks are located close to a cross street and lie within the left-turn lane of the intersection, this situation will require a special design and the use of barrier type curb along the median adjacent to the turn lane.
4. The median should have a minimum width of 8.5 ft (2.6 m) [10 ft (3.0 m) desirable] back-to-back of curb.

TYPICAL MID-BLOCK MEDIAN TREATMENT ADJACENT TO RAILROAD CROSSINGS
(Multilane Urban and Suburban Highways)

Figure 40-1C

In addition to deterring vehicular movements over the track(s) in the median area, the raised-curb median provides a location for mounting railroad warning device units, if required.

40-1.01(g) Sidewalk and Bicycle Grade Crossings

Sidewalks and bicycle crossings with the railroad are more sensitive to the skew angle than the main highway because of the possibility of bicycle or wheelchair wheels being trapped in the rail flangeway. See Section 42-3.04 for information on sidewalk and bicycle grade crossings.

40-1.01(h) Grade Separations

Determine whether existing or proposed grade crossings should be eliminated and/or replaced with a grade-separation structure using the following criteria:

- Provide grade separation when the expected crash frequency (ECF) for grade crossing gates exceeds 0.02 and the benefit-cost ratio exceeds 1.0. Section 40-2.03 of this Chapter provides the steps used to determine the benefit-cost ratio and ECF. The ECF must be computed for existing and future conditions to determine the benefit-cost.
- Provide grade separation where an expressway in a rural area is constructed or reconstructed across the railroad.

40-1.02 Grade Crossing Surfaces

40-1.02(a) Local Agency/Railroad Coordination

The local agency determines the alignment of the roadway portion of the crossing and determines acceptable crossing surface types when the highway authority is funding the crossing surface. The railroad must select from the IDOT-approved list of surfaces for the crossing and is responsible for maintenance of the crossing within railroad right-of-way.

For both upgrades to existing crossings and the construction of new crossings, contact the railroad early in the process of planning and design. Long approval times are typical for any work within railroad right-of-way.

40-1.02(b) Crossing Surface Types and Applications

Where a road improvement involves construction on one or both sides of an existing rail-highway grade crossing, or where the crossing is located beyond the limits of the improvement, but within the stopping sight distance for the highway design class, ensure the crossing is surfaced with material suitable for the highway traffic. Ensure the width of the crossing conforms to the traveled way surface width plus the usable shoulder. If the roadway approaches are widened, it may be necessary to relocate existing warning devices further away

from the edge of roadway. Additionally, in these situations, it may be necessary to provide longer gate arm lengths.

The available grade crossing surfaces are shown in Figure 40-1D along with the relative durability of each type. The useful service life or durability for each type shown varies with the level of both vehicular traffic and railroad traffic, as well as with other factors (e.g., frequency of maintenance, number of parallel tracks in a crossing).

The perception of acceptable performance is likely to vary with several factors, including the level of service anticipated for a particular roadway (e.g., collector versus arterial); and the roadway design speed, which affects the speed at which vehicles approach and attempt to traverse the crossing.

40-1.02(c) Crossing Surface Selection Guidelines

The installation cost of the crossing surface types listed in Figure 40-1D tends to increase with increased durability. An additional economic consideration, however, is ease of maintenance. Several high-type crossing surfaces (e.g., rubber, steel, PC concrete) are available in prefabricated panels or sections, which are easily installed and which permit easy removal and replacement for track maintenance work. The ability to re-use existing materials may offset the higher initial costs for crossings that are expected to require frequent maintenance (e.g., high volume crossings). In general, grade crossings with high vehicular traffic and/or rail traffic justify crossing surfaces with a longer design life.

In general, the following is recommended:

- Where the roadway traffic equals or exceeds 1000 ADT, use prefabricated rubber or concrete surface materials.
- For ADT less than 1000, timber and/or asphalt crossings may be used.

A more detailed method to determine an appropriate crossing surface based on life-cycle cost analysis and rail and road traffic volumes is described in NCHRP 250, *Highway-Rail Grade Crossing Surfaces*.

In addition, the Railway Progress Institute has developed selection factors for acceptable grade crossing surfaces.

Crossing surfaces that are funded with State or Federal funds must be from IDOT's approved crossing surface list. The most recently approved crossing surface list can be obtained by contacting the Central BLRS.

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RAILROAD GRADE CROSSINGS

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Crossing Surface	Durability	Primary Failure Mode(s)
Asphalt	Low	Poor impact performance, long-term settlement
Asphalt with Timber Flangeway Guard	Low	Wood abrasion, rot, settlement, poor asphalt impact performance
Asphalt with Rail Flangeway Guard	Low	Poor impact performance, long-term settlement
Timber Panels	Moderate	Wood abrasion, rot, fastenings loosen under impact
Rubber and Timber	Moderate	Wood rot
Metal Panels	High	Abrasion, brittle failure
Rubber: Longitudinal Shim	High	Shims splitting, snowplow damage, fastenings loosen under impact
Rubber: Lateral Shim	High	Shims splitting, snowplow damage, fastenings loosen under impact
Rubber: Full-depth	High	Abrasion, rubber separation
Concrete (cast-in-place and pre-cast)	High	Surface abrasion, cracking

GRADE CROSSING SURFACE TYPES**Figure 40-1D****40-1.02(d) Removing Bituminous Material and Foreign Objects from Rails**

Where it is necessary to cross a railroad track while applying bituminous materials, ensure that bituminous material is not applied on the rails. If at all practical, notify the railroad company when the work is to be done in order to have a railroad representative present to inspect and, if necessary, assist in cleaning off the rails should some bituminous material be inadvertently sprayed on them.

Likewise, remove any road building material or objects that might drop onto the rails by the operation of road building equipment immediately from the flangeways to avoid a possible train derailment.

40-1.03 Signing and Pavement Markings**40-1.03(a) General**

Advance warning signs and pavement markings should be provided by the local agency to meet the minimum requirements defined in the *ILMUTCD*.

40-1.03(b) Supplemental Signing and Pavement Markings

Supplemental signing and/or pavement markings is required where a railroad grade crossing is located less than 80 ft (25 m) before an intersection with a State or local road, as measured from the stop line at the intersection to the closest rail on the crossing. These situations are shown in the *ILMUTCD*.

40-1.03(c) Exempt Railroad Crossings

625 ILCS 5/11-1202 allows abandoned, industrial, or spur track railroad grade crossings to be designated as exempt by the Illinois Commerce Commission.

Exempt crossings must be signed according to the *ILMUTCD* before officially being considered exempt. Signs for exempt railroad crossings are intended to inform drivers of vehicles carrying passengers for hire, school buses carrying children, or vehicles carrying flammable or hazardous materials that a stop is not required at the designated grade crossing.

40-2 WARNING DEVICES

40-2.01 Protection of Railroad Crossings

Ensure that the type of protection provided at rail-highway grade crossings located within or adjacent to a highway improvement or beyond the limits of the improvement but within the stopping sight distance is placed according to the following guidelines:

1. Crossbuck Supports. The railroad will place the crossbucks' supports 8 ft-1 in (2.46 m) from the edge of the traveled surface where curb and gutter is not installed, and 4 ft-1 in (1.24 m) from the face of the curb where this type of construction is employed.
2. Railroad Crossing Signals. The railroad will install railroad crossing signals with the concrete bases essentially flush with the surface. Except where a barrier curb exists adjacent to the traveled way, the center of the signal mast must not be closer than 8 ft-1 in (2.46 m) from the edge of the final finished surface of the highway. Where a barrier curb is used, the center of the signal mast must not be closer than 4 ft-1 in (1.24 m) from the face of the curb.

40-2.02 Selection Guidelines

Warning devices are required at all highway-railroad crossings where grades are not separated. Select the type of warning device according to the following:

1. General. At a minimum, provide reflectorized crossbucks, pavement markings where possible, and advance warning signs as indicated in the *ILMUTCD* at all crossings.
2. Expected Crash Frequency. Use Equation 40-2.1 and the factors in Figure 40-2A to determine the expected crash frequency.

$$ECF = A \times B \times T \quad \text{(Equation 40-2.1)}$$

Where:

- ECF = Expected Crash Frequency
- A = Traffic factor, see Figure 40-2A
- B = Component factor, see Figure 40-2A
- T = Current number of trains per day

A Factors

VEHICLES PER DAY (10-YR ADT)	FACTOR
250	0.000347
500	0.000694
1000	0.001377
2000	0.002627
3000	0.003981
4000	0.005208
5000	0.006516
6000	0.007720
7000	0.009005
8000	0.010278
9000	0.011435
10000	0.012674
12000	0.015012
14000	0.017315
16000	0.019549
18000	0.021736
20000	0.023877
25000	0.029051
30000	0.034757

B Factors — Basic Values for Railroad Protection Devices

Components	Basic Value Adjustments
Crossbucks, traffic volume less than 500 vehicles per day	3.89
Crossbucks, urban	3.06
Crossbucks, rural	3.08
Wigwags	0.61
Flashing lights, urban	0.23
Flashing lights, rural	0.93
Gates, urban	0.08
Gates, rural	0.19

CRASH FREQUENCY FACTORS
(Highway-Railroad Grade Crossings)

Figure 40-2A

* * * * *

Example 40-2(1)

Given: Urban Area
Crossbuck Protection
Current ADT = 5000 Vehicles Per Day
Current Train Traffic = 5 Trains Per Day

Problem: Determine the appropriate warning devices that should be used at this crossing.

Solution: First determine the expected crash frequency of the existing crossbuck protection.

Expected Crash Frequency:

$$\begin{aligned} ECF &= 0.006516 \times 3.06 \times 5 && \text{(Equation 40-2.1)} \\ ECF &= 0.10 \\ ECF &= 1 \text{ crash every ten years} \end{aligned}$$

Crash frequency is greater than 0.02 indicating the need for higher type device.

* * * * *

3. Cantilevered Flashing Signals. Use cantilevered flashing signals, in addition to other warning devices, on multilane highways that qualify for active warning devices and where there is the possibility of a truck blocking the view of the roadside signals. Also, consider providing cantilever signals at high-frequency crash locations that possibly could be improved by more visible signals and to improve visibility for motorists due to certain geometric factors (e.g., crossings, horizontal curves, sag vertical curves). Cantilever signals may be considered where the vertical and/or horizontal alignment prevents the motorist from seeing the signals at an adequate distance.

4. Gates and Flashing Signals. Provide flashing signals and gates where one or more of the following conditions are met:

multiple mainline railroad tracks;

multiple tracks at or in the vicinity of the crossing, one of which may be occupied by a train or locomotive that obscures the movement of another train approaching the crossing from view;

high-speed train operation combined with limited sight distance at either single or multiple track crossings;

a combination of high speeds and moderately high volumes of highway and railroad traffic;

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40-2(4)

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either a high volume of vehicular traffic, high number of train movements, substantial numbers of school buses or trucks carrying hazardous materials, unusually restricted sight distance, continuing crash occurrences, or any combination of these conditions;

the expected crash frequency for flashing lights exceeds 0.02 and the benefit-cost ratio equals or exceeds 1.0 (the method for determining the benefit-cost ratio is shown in Section 40-2.03); and/or

a diagnostic team recommends them.

Gates are not required in individual cases where a diagnostic team justifies that gates are not appropriate.

5. Higher-Type Warning Device. Provide a higher type of warning device than may be justified under any of the preceding criteria if there is continuing or potential crash occurrence due to:

unusual track or roadway geometrics;

restricted sight distance; and/or

other unusual conditions (e.g., where the potential exists for exceptional crash consequences to a large number of rail or highway passengers, or where there is the potential for a crash involving hazardous materials).

In other instances, a lower level device may be justified if concurred with by a diagnostic team.

Where the distance measured along the centerline of the highway between two regularly used adjacent tracks is less than 100 ft (30 m), consider the crossing as a multiple track crossing and install warning devices accordingly. Where the distance is 100 ft (30 m) or greater, consider each crossing as individual crossings and signalize each according to the preceding criteria.

40-2.03 Benefit-Cost Ratio Analysis

Use the following procedure to find the benefit-cost ratio for the installation of warning devices at railroad crossings:

Step 1. Calculate the Present ECF. Calculate the expected crash frequency for the current installation (see Equation 40-2.1).

Step 2: Calculate the Future ECF. Calculate the expected crash frequency for the proposed installation (see Equation 40-2.1).

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RAILROAD GRADE CROSSINGS

40-2(5)

Step 3: Calculate the Annual ECF Savings. Calculate the annual savings in the expected crash frequency by subtracting the future ECF from the present ECF (Step 1 - Step 2).

Step 4: Calculate the Benefit. Calculate the benefit by multiplying the annual savings by the cost of crash, Z, where Z equals the ratio of deaths and injuries per crash (average for latest 3 years in Illinois) x cost per crash (Z x Step 3). Use the National Safety Council crash cost data which are documented, periodically updated, and revised annually by BDE.

Step 5: Calculate the Annual Cost. Calculate the annual cost of the proposed installation by either of the following equations:

$$\text{Annual Cost} = U + V \quad (\text{Equation 40-2.2})$$

Where:

- U = Cost of flashing lights divided by expected life (assume 20 to 30 years)
- V = Yearly maintenance cost of flashing lights

or:

$$\text{Annual Cost} = Y + W \quad (\text{Equation 40-2.3})$$

Where:

- Y = Cost of gates divided by expected life
- W = Additional annual cost to maintain gates instead of flashing lights

or:

$$\text{Annual Cost} = L + M \quad (\text{Equation 40-2.4})$$

Where:

- L = Cost of grade separation divided by expected life
- M = Additional annual cost to maintain grade separation instead of gates

Step 6: Calculate the Benefit-Cost Ratio. Calculate the Benefit-Cost Ratio by dividing the benefit by the annual cost (Step 4/Step 5).

40-2.04 Circuitry Devices

Refinements to activation circuitry should be recommended when the credibility of the warning devices could be beneficially increased. This includes developing the signal "lead time" based

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on train speeds or installing motion detectors, or constant warning time devices (predictors). These are described as follows:

1. Grade Crossing Predictors. Grade crossing predictors (GCP/constant warning time) circuitry should be considered for upgrade improvements to existing active warning devices and new installations when the train speed exceeds 10 mph (16 km/h) and:
 - there are switching moves on the approach circuits,
 - where trains operate at variable speeds on the line, or
 - there is an unusual track and crossing geometry.

Grade crossing predictors also deal with trains stopping in the approach circuits and they provide uniform warning time for temporary reductions in train speed.

2. Motion Detectors. Consider motion detectors where:

Gates. Where gates are present, provide motion detectors where there:

- is stopping or other lengthy occupancy of the approach circuits,
- are new gate installations,
- is upgrading of crossings with flashing signals to gate installations, or
- are major control circuitry changes required at existing installations.

Flashing Signals. For flashing signals, provide motion detectors where there:

- is stopping or other lengthy occupancy of the approach circuits,
- are new flashing signal installations, or
- are major control circuit changes required by changes in or additions to flashing signals.

Note that the cost differential between grade crossing predictors (GCP/constant warning time) and motion detector circuitry is minor in comparison to the total installation cost. In addition, grade crossing predictor (GCP/constant warning time) circuitry can be adjusted to a wider, more variable set of train traffic conditions. When contemplating circuitry improvements, it is best to contact the railroad to make an accurate assessment of train traffic and a more informed decision on circuitry improvements.

See Chapter 39 for information on coordinating railroad and highway traffic signals.

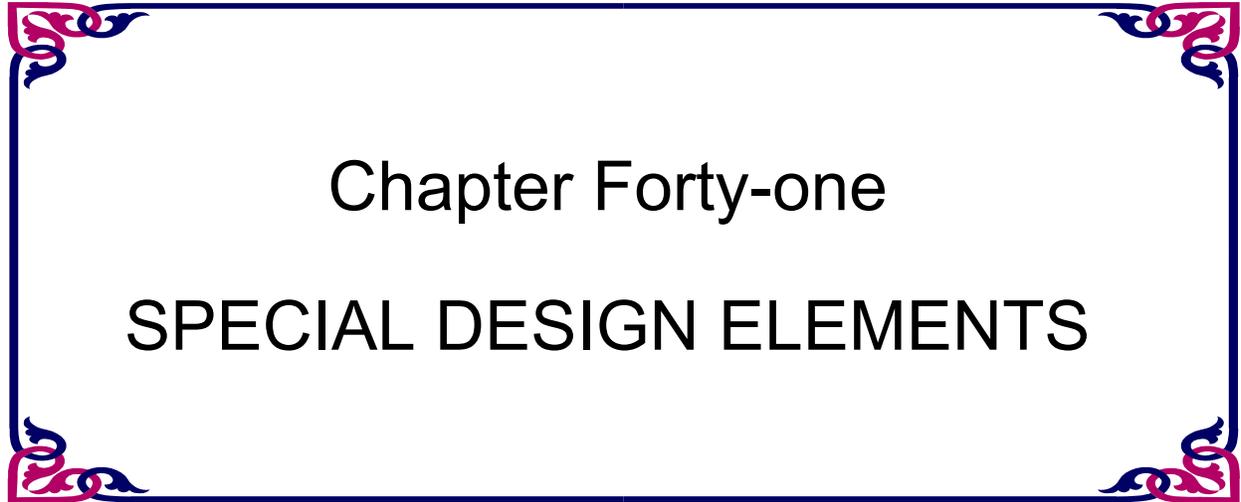
40-2.05 Barrier Systems

The following will apply to barrier systems around warning devices:

1. General. Do not provide barrier systems (e.g., guardrail, impact attenuators) at railroad grade crossings except in extraordinary circumstances. In most cases, the roadside barrier presents more of a hazard than the railroad warning device. Also, it may block a lateral escape route in advance of the signal. Extraordinary circumstances that may justify the use of a roadside barrier in the vicinity of a railroad crossing warning device include:
 - locations where the approach roadway is on a fill with side slopes steeper than 1V:3H and greater than 10 ft (3.0 m) in height,
 - locations with a high crash history involving a warning device where a benefit-cost analysis demonstrates a roadside barrier is warranted, and
 - locations where there will be a temporary delay in the relocation of warning devices for the widening of a highway.
2. Installation. See Chapter 35 of this *Manual* and the *IDOT Highway Standards* for the installation of guardrails at crossings.
3. Special Conditions. In industrial or other areas involving low-speed highway traffic and where warning devices are vulnerable to damage by turning truck traffic, ring-type guardrail may be installed to provide protection for warning devices. Substitute shielding devices (e.g., concrete, railroad ties, and railroad rails) are not permitted.
4. Signals. Do not use breakaway or frangible bases for cantilever signal supports.
5. Maintenance of Barriers. The local agency will maintain all longitudinal guardrail and impact attenuators. The railroad will be responsible for maintaining the ring-type guardrail.
6. Approval. Approval for the erection of any roadside barrier by the railroad must be obtained from the local agency having jurisdiction of the road.

40-3 REFERENCES

1. *A Policy on Geometric Design of Highways and Streets*, AASHTO, 2004.
2. *Railroad-Highway Grade Crossing Handbook, Second Edition*, FHWA, 1986.
3. NCHRP 250, *Highway-Rail Grade Crossing Surfaces*, Transportation Research Board, 1998.
4. *Bureau of Design and Environment Manual*, IDOT.
5. *92 Illinois Administrative Code*, Part 1535.
6. *Illinois Manual on Uniform Traffic Control Devices*, IDOT.



Chapter Forty-one

SPECIAL DESIGN ELEMENTS

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Chapter Forty-one
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Chapter Forty-one

SPECIAL DESIGN ELEMENTS

41-1 CUL-DE-SACS, TURNAROUNDS, AND ALLEYS

41-1.01 Cul-de-Sacs and Turnarounds

A local street, open at one end only, should have a special turning area at the closed end. This turning area may be an "L," "T," or circular shape cul-de-sac with dimensions as appropriate for the type of vehicles expected. The commonly used circular form should have a minimum outside radius of 30 ft (10 m) in residential areas and 50 ft (15 m) in commercial and industrial areas.

A dead-end street narrower than 40 ft (12 m) should be widened to enable passenger vehicles, delivery trucks, and emergency vehicles to make U-turns or at least turn around by backing only once. Typically, the design is circular pavement, symmetrical about the centerline of the street, sometimes with a central island, as shown in Figure 41-1A(a), which also shows minimum dimensions for the design vehicles. Although this type of cul-de-sac operates satisfactorily, improved operation is obtained if the design is offset so that the entrance-half of the pavement is in line with the approach-half of the street, as shown in Figure 41-1A(d). One steering reversal is avoided on this design. Where a radius of less than 50 ft (15 m) is used, provide mountable curbs on the island to permit maneuvering of an occasional oversized vehicle.

An all-paved plan, as opposed to an island configuration, with a 30 ft (10 m) outer radius, shown in Figure 41-1A(e), requires little additional paving. If the approach pavement is at least 30 ft (10 m) wide, the result is a cul-de-sac where passenger vehicles can make the customary U-turn and SU design trucks can turn by backing only once. A radius of about 40 ft (12 m) enables a WB-50 (WB-15) vehicle to turn around by maneuvering back and forth.

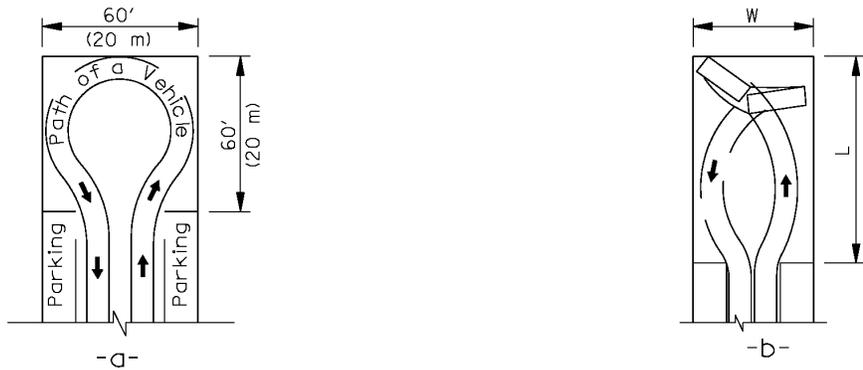
Other variations or shapes of cul-de-sacs that include right-of-way and site controls may be provided to permit vehicles to turn around by backing only once. Several types (e.g., Figures 41-1A(f), (g), and (i)) may also be suitable for alleys. The geometry of a cul-de-sac should be altered if adjoining residences also use the area for parking.

Generally, streets with cul-de-sacs should not be greater than 1,000 ft (300 m) in length.

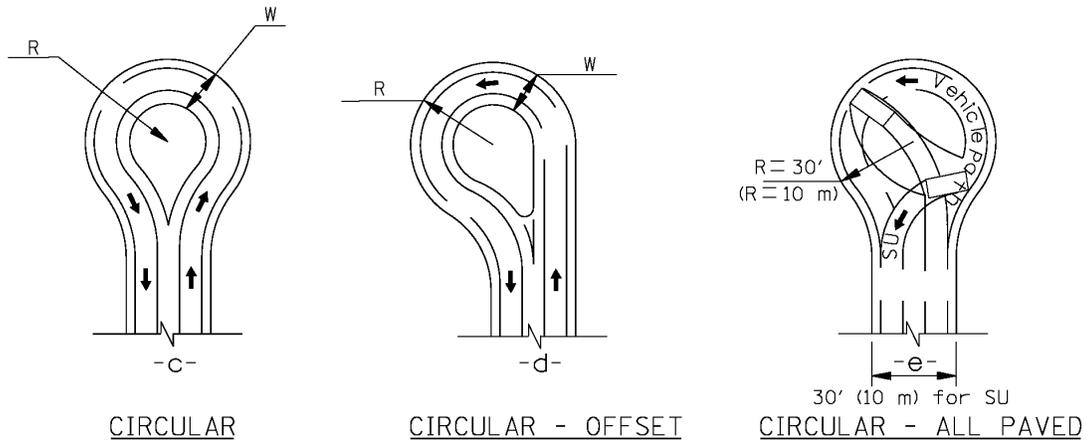
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Design Vehicle	W	L
P	30 ft (10 m)	60 ft (20 m)
SU	50 ft (15 m)	100 ft (30 m)

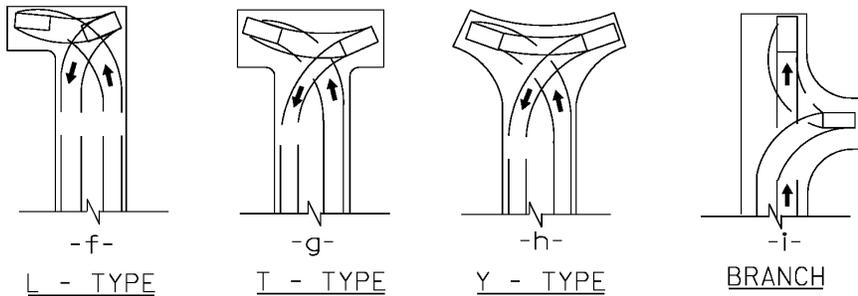


CIRCULAR

CIRCULAR - OFFSET

CIRCULAR - ALL PAVED

Design Vehicle	R	W
P	30 ft (10 m)	18 ft (6 m)
WB-40 (WB-12)	42 ft (13 m)	25 ft (8 m)
SU & WB-50 (WB-15)	47 ft (15 m)	30 ft (10 m)



L - TYPE

T - TYPE

Y - TYPE

BRANCH

CUL-DE-SACS

Figure 41-1A

41-1.02 Alleys

41-1.02(a) General

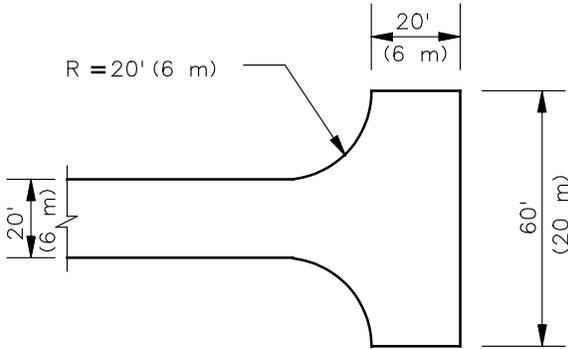
Alleys can assist site designers by allowing narrower lots and enhance safety by eliminating front driveways and the associated backing movements across sidewalks and into the street.

Alleys should be aligned parallel to, or concentric with, the street property lines. It is desirable to situate alleys in a manner that both ends of the alley are connected either to streets or to other alleys. Where two alleys intersect, a triangular corner cutoff of not less than 10 ft (3 m) along each alley property line should be provided to allow for a turning vehicle and to provide sight distance. Alleys without a connection to a street or another alley should include a turning area at the end of the alley as shown in Figure 41-1B. Figure 41-1B also may be suitable for application on some very low volume roads as well.

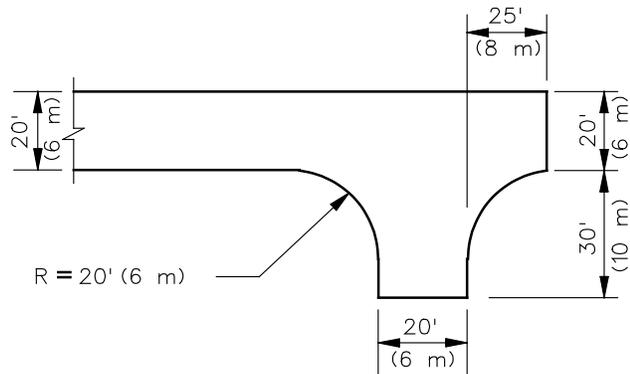
41-1.02(b) Design Criteria

Policies for the construction and maintenance of alleys are the same as for streets with the following exceptions:

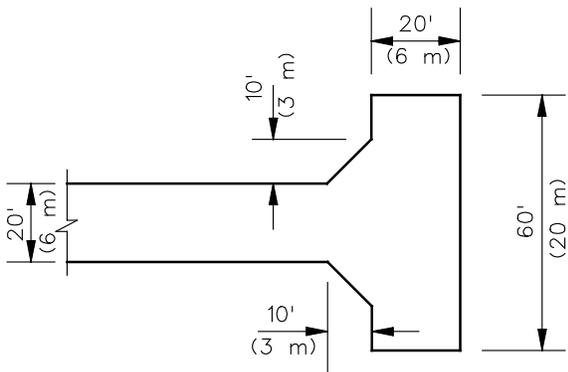
- Right-of-Way Width. The minimum right-of-way width is 16 ft (5 m).
- Surface Width. The minimum surface width is 10 ft (3 m).
- Horizontal Alignment. Use horizontal alignment criteria as necessary.
- Vertical Alignment. Alleys should have grades that meet the existing grades of the abutting land parcels to the extent practical. The longitudinal grade should not be less than 0.2%.
- Pavement Slope. Alley cross sections may be V-shaped with transverse slopes of 2.5% toward a center V-shaped gutter. Runoff is thereby directed to a catch basin in the alley or to connecting street gutters.
- Minimum Curb Radii. The radius of alley returns should be made as large as practical. Residential areas should have a minimum curb radius of 5 ft (1.5 m) and industrial and commercial areas should have a minimum radius of 10 ft (3 m).



STANDARD TURNING AREA



TURNING AREA



STANDARD CUT CORNERS

ALLEY TURNAROUNDS

Figure 41-1B

41-2 DRIVEWAYS

41-2.01 General

Driveway design considerations that are related to access management include turning radius or flare, width, number of lanes, throat length, auxiliary turn lanes, and directional controls. Driveway location issues include the need to locate and design driveway connections so that the driver of an exiting vehicle has an unobstructed intersection sight distance and motorists on the roadway have adequate stopping sight distance.

Additional considerations relate to functional area of the intersection and corner clearance, the influence area of an adjacent driveway, and corner clearance as well as driveway offsets and alignment. The functional area extends both upstream and downstream from the physical intersection area and includes the longitudinal limits of auxiliary lanes. The influence area associated with a driveway includes:

- the impact length (e.g., the distance approaching a driveway that vehicles begin to be affected),
- the perception-reaction distance, and
- the vehicle length.

It is important to avoid locating driveways along acceleration or deceleration lanes and tapers at street intersections or interchanges to minimize the potential for vehicular weaving conflicts.

From an operational and safety perspective, the appropriate width and radius of a driveway are a function of the volume of traffic served as well as the need to provide for efficient movement of vehicles off major thoroughfares. If driveways are too narrow or have inadequate turning radius, vehicles will be unable to maneuver quickly and comfortably off of the roadway and onto the site. Excessive radii and widths could pose safety hazards for pedestrians, bicycles, and vehicles on site.

The length of driveways or “throat length” is also important to avoid on-site circulation hazards and congestion at the entrance as it handles anticipated storage of entering and exiting vehicles that could conflict with the through movement on the abutting roadway. Criteria for the throat length vary according to the projected volume of the driveway and whether it is the principal access or a secondary driveway.

Other considerations in the construction of driveways include the following:

- joint and cross access of adjacent developments,
- out parcel requirements, and
- redevelopment and change in use of property.

41-2.02 Design Criteria

Figures 41-2A and 41-2B provide the design criteria for driveways. Additionally, consider the following:

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1. Widths. Residential driveway widths typically should be at least 12 ft (3.6 m) and should not exceed 24 ft (7.2 m). Commercial/industrial driveway widths vary from 24 ft (7.2 m) for low volume activity to a maximum of 35 ft (10.7 m) for undivided design, high volume activity. Field entrances should be constructed wide enough to accommodate the farm equipment using the entrance.
2. Radii. A right-turn radius is on the side of a driveway exposed to enter or exit by right-turning vehicles. In many cases, a straight-line flare is constructed within the right-of-way in place of a radius, especially when a depressed curb is placed across the entrance. For high volume commercial entrances and entrances used by large trucks, use a radius which will accommodate trucks.
3. Driveway Spacing. Minimum driveway spacing is measured along the curb or edge of shoulder from the roadway end of the curb radius or flare. For individual residential properties, a suggested limitation on the number of driveways is:
 - a. 1 driveway for less than 100 ft (30 m) of frontage,
 - b. 2 driveways for 100 ft to 200 ft (30 m to 60 m) of frontage,
 - c. 3 driveways for 201 ft to 500 ft (61 m to 150 m) of frontage, and
 - d. 4 driveways for over 500 ft (150 m) of frontage.

Commercial properties should generally be limited to one driveway location.

The distance from any adjacent crossroad and from the property line should be considered in determining the location for a driveway.

Existing driveways will usually be allowed to remain at their present location.

4. Angle. For two-way driveways, the centerline should generally be at a right angle to the roadway. Angles less than 60° should only be used for one-way driveways. The minimum angle is measured from the edge of traveled way.
5. Grades. The driveway should slope away from the pavement to the edge of the shoulder.
6. Sight Distance. Driveways should be located to provide adequate sight distance.
7. LPA Access Policy. The location and design of a driveway should also meet any minimum criteria established by a LPA in an adopted entrance access policy.
8. Additional Guidance. For additional guidance on driveways, the designer should review the following publications:
 - a. *IDOT Policy on Permits for Access Driveways to State Highways*,
 - b. *ITE Guidelines for Driveway Design and Location*, and
 - c. *TRB Access Management Manual*.

41-2.03 Entrances at Bridges

When driveways are within close proximity to structures, close or relocate the entrances from within the bridge approach area to outside the length of need for the guardrail wherever practical.

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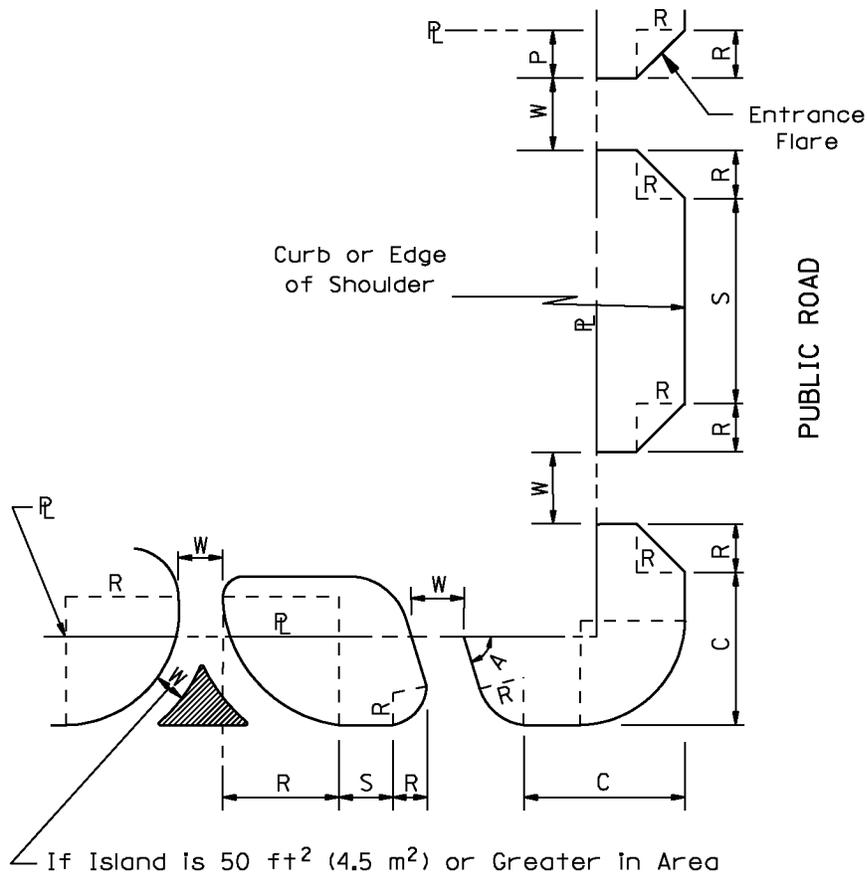
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	Dimension Reference (See Figure 41-2B)	Non-Commercial Rural	Non-Commercial Urban	Commercial/Industrial Rural	Commercial/Industrial Urban	High-Volume Commercial/Industrial
Throat Width	W	12 ft – 24 ft ⁽¹⁾ (3.6 m – 7.2 m)	12 ft – 24 ft ⁽¹⁾ (3.6 m – 7.2 m)	24 ft – 35 ft ⁽²⁾ (7.2 m – 10.7 m)	24 ft – 35 ft ⁽³⁾ (7.2 m – 10.7 m)	24 ft (7.2 m) with median
Return Radii ⁽⁸⁾	R	10 ft – 40 ft (3 ft – 12 m)	5 ft – 25 ft (1.5 m – 7.5 m)	10 ft – 50 ft (3 m – 15 m)	10 ft – 40 ft (3 m – 12 m)	25 ft – 60 ft (7.5 m – 18 m)
Angle	A	60° – 90°	45° – 90° ⁽⁵⁾	45° – 90° ⁽⁵⁾	45° – 90° ⁽⁵⁾	45° – 90° ⁽⁵⁾
Spacing (minimum)	P (From Property Line to Beginning of Flare)	0 ft (0 m)	0 ft (0 m)	5 ft (1.5 m) ⁽⁴⁾	3 ft (1 m)	10 ft (3 m)
	C ⁽⁹⁾ (From Street Corner)	50 ft (15 m)	30 ft (9 m) ⁽⁶⁾	50 ft (15 m)	30 ft (9 m)	100 ft (30 m)
	S (Between Driveways)	0 ft (0 m)	0 ft (0 m)	0 ft (0 m)	0 ft (0 m)	440 ft to 660 ft (135 m to 200 m)
Island Width (minimum)		N/A	N/A	10 ft (3 m)	6 ft (1.8 m)	4 ft – 18 ft (1.2 m – 5.4 m)
Island Radius (minimum)		N/A	N/A	5 ft (1.5 m)	5 ft (1.5 m)	N/A
Gradient ⁽⁷⁾		15%	10% Des. 15% Max.	6% Des. 10% Max.	5% Des. 10% Max.	5% – 8%

- Notes:
- (1) Minimum is 16 ft (4.8 m) for field entrances.
 - (2) Maximum is 60 ft (18 m), located 6 ft (1.8 m) from edge of traveled way (ETW).
 - (3) Maximum is 85 ft (26 m) at curb.
 - (4) Located 6 ft (1.8 m) from edge of traveled way (ETW).
 - (5) Use a minimum of 45° for one-way drives and 60° for two-way drives.
 - (6) This distance is the undisturbed length of curb between driveway flare and intersecting street flare.
 - (7) Maximum breakover is 12%.
 - (8) Straight line flare may be used in place of radius.
 - (9) Measured from edge of cross-street pavement, not end of radius.

DESIGN CRITERIA FOR DRIVEWAYS

Figure 41-2A



PUBLIC ROAD

- Key:
- R = Driveway radius (flare may be used in place of radius)
 - W = Driveway width
 - PL = Property line
 - C = Corner clearance (includes corner radius)
 - A = Driveway angle of intersection
 - S = Spacing between two driveway radius points
 - P = Spacing between driveway and property line radius point

Note: To ensure that a private drive does not infringe upon the access rights of an adjacent property owner, R must not extend beyond the property line as measured perpendicular to the highway from where the property corner meets the highway line unless there is an agreement between property owners permitting a shared drive.

DRIVEWAY MEASUREMENTS

Figure 41-2B

41-3 OFF-STREET PARKING

A proposed highway project may incorporate some form of off-street parking. Typical applications may include providing off-street parking to replace on-street parking that will be removed as part of a proposed project or the construction of a park-and-ride lot for commuters. Public parking built with federal, State, or MFT funds administered by IDOT must be generally available to the public and may not contain individually reserved parking spaces.

For information regarding off-street parking for individuals with disabilities, see Section 41-6.

41-3.01 Park-and-Ride Lots

The following provide general considerations for park-and-ride lots:

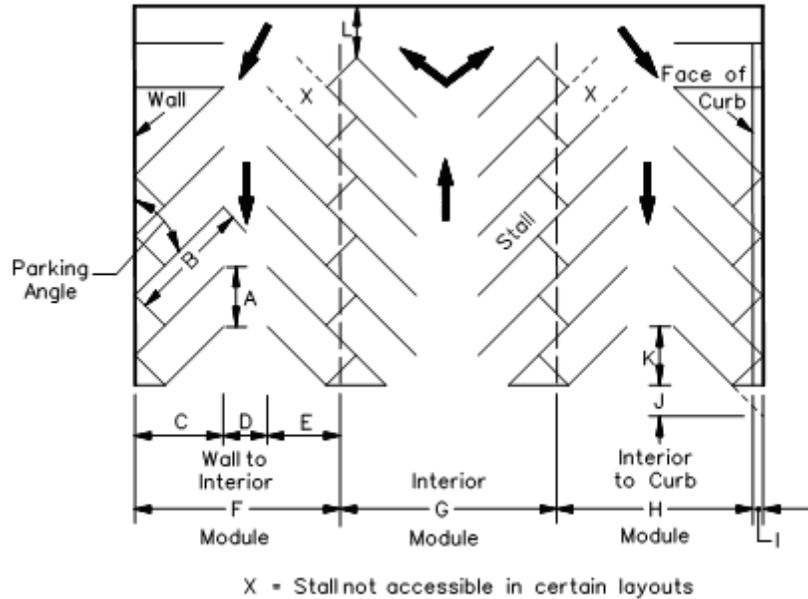
1. Location. Park-and-ride lots may be located in either rural or urban areas to accommodate car pooling or to provide access to transit terminals. By locating these lots outside of the downtown area, congestion is reduced, parking lot property costs are decreased, and accessibility is improved. Determine the general location and size of the park-and-ride lots. Guidance for site selections can be found in the *AASHTO Guide for the Design of Park-and-Ride Facilities*. Some of the factors that affect the location of a parking facility include:
 - site availability,
 - accessibility,
 - visibility,
 - demand,
 - congestion,
 - capacity,
 - design, and
 - land use.
2. Layout. Consider the following when laying out a park-and-ride facility:
 - entrances and exits, including:
 1. location,
 2. spacing,
 3. traffic signals,
 4. storage, and
 5. design;
 - drop-off/pick-up zones (kiss-and-ride),
 - bus loading,
 - traffic circulation,
 - pedestrian and bicyclist considerations, and
 - accessibility for individuals with disabilities.

For more detailed information on park-and-ride lots, see Section 58-2 of the *BDE Manual*.

41-3.02 Design Elements

Consider the following elements in the design of off-street parking lots:

1. Parking Lot Dimensions. Parking stall dimensions vary with the angle at which the parking space is arranged relative to the aisle. Figure 41-3A provides the design dimensions for 9 ft x 18.5 ft (2.7 m x 5.6 m) parking stalls and shows how stalls may be combined into a parking lot. From a traffic operations standpoint, one-way aisles are desirable and should be designed to provide counterclockwise circulation. When determining parking stall widths, consider the following:
 - Typical stall widths (measured perpendicular to the vehicle when parked) range from 8.5 ft to 9.5 ft (2.6 m to 2.9 m).
 - The recommended minimum stall width for self parking of long term duration is 9.5 ft (2.9 m).
 - For higher turnover self parking, a stall width of 9 ft (2.7 m) is recommended.
 - Stall widths at parking facilities, where the loading of large packages into vehicles is prevalent, should desirably be 9.5 ft (2.9 m) or even 10 ft (3.0 m) in width.
2. Bus Loading Areas. Bus loading and unloading areas located adjacent to park-and-ride lots should be designed to provide for continuous counterclockwise circulation and for curb parking without backing maneuvers. The through traffic lanes and the curb loading area should each be 12 ft (3.6 m) wide. Section 41-4.02 provides details of bus loading areas.
3. Sidewalk Dimensions. All sidewalks should be at least 5 ft (1.5 m) wide. In loading areas, the width should be 12 ft (3.6 m) or the adjacent sidewalk width plus 7 ft (2.1 m) whichever is greater. The accessibility criteria for individuals with disabilities must be met for all new lots; see Section 41-6.
4. Cross Slope. To provide proper drainage, the minimum cross slope on a parking lot should be 1.0%. At a maximum, the cross slope should not exceed 5.0%. Desirably, design the lot to direct the drainage runoff into existing drainage systems. If water impoundment cannot be avoided along pedestrian routes, bicycle routes, and standing areas, provide drop inlets and underground drainage. In parking areas, design the drainage to avoid standing water. The detailed drainage design for the lot should be prepared using *IDOT Drainage Manual* to determine design frequency, pavement discharge, and capacity of drainage inlets.
5. Pavements. For information on pavement designs, see Chapter 44.
6. Lighting. Desirably, the lot should be lighted for pedestrian safety and lot security. Ensure provisions are considered for lighting supports and power lines. Section 41-7 provides information on the design of lighting.
7. Bicycle and Motorcycle Storage. Provide bicycle stalls that allow the use of locking devices. Bicycle stalls are typically 2 ft by 6 ft (600 mm by 1.8 m). Motorcycle stalls are 3 ft by 6 ft (1 m by 1.8 m).
8. Traffic Control Devices. Provide signs and pavement markings to direct drivers and pedestrians to appropriate loading zones, parking areas, bicycle facilities, accessibility parking, and entrances and exits.



Parking Layout Dimension for 9 ft x 18.5 ft (2.7 m x 5.6 m) Stalls at Various Lengths

Design Feature	Notation	Parking Angle							
		45° (ft)	45° (m)	60°(ft)	60° (m)	75° (ft)	75° (m)	90° (ft)	90° (m)
Stall width, parallel to aisle	A	12.7	3.9	10.4	3.2	9.3	2.8	9.0	2.7
Stall length of line	B	25.0	7.6	22.0	6.7	20.0	6.1	18.5	5.6
Stall depth to wall	C	17.5	5.3	19.0	5.8	19.5	5.9	18.5	5.6
Minimum aisle width between stall lines	D	12.0	3.7	16.0	4.9	23.0	7.0	26.0	7.9
Stall depth, interior	E	15.3	4.7	17.5	5.3	18.8	5.7	18.5	5.6
Module, wall to interior	F	44.8	13.7	52.5	16.0	61.3	18.7	63.0	19.2
Module, interior	G	42.6	13.0	51.0	15.5	61.0	18.6	63.0	19.2
Module, interior to curb face	H	42.8	13.1	50.2	15.3	58.8	17.9	60.5	18.4
Bumper overhang (typical)	I	2.0	0.6	2.3	0.7	2.5	0.8	2.5	0.8
Offset	J	6.3	1.9	2.7	0.8	0.5	0.2	0.0	0.0
Setback	K	11.0	3.4	8.3	2.5	5.0	1.5	0.0	0.0
Cross aisle, one-way	L	14.0	4.3	14.0	4.3	14.0	4.3	14.0	4.3
Cross aisle, two-way	—	24.0	7.3	24.0	7.3	24.0	7.3	24.0	7.3

- Notes:
1. See Section 41-6 for criteria on the number and dimensions of parking spaces for individuals with disabilities.
 2. If a special section is designated for subcompact vehicles, these stalls can be 8 ft x 15 ft (2.5 m x 4.6 m) for a 90° angle.
 3. Stalls should be wider for commercial parking.
 4. The designer should consider bumper overhang when placing lighting, railing, etc. Therefore, these appurtenances should be placed beyond dimension "I" in the figure.
 5. Two-way traffic in aisles may only be used with a 90° parking angle. Use an aisle width of 26 ft (7.9 m).

**PARKING LOT LAYOUT DIMENSIONS
(9 ft x 18.5 ft (2.7 m x 5.6 m) Stalls)**

Figure 41-3A

9. Fencing. The need for fencing around a parking lot will be determined on a case-by-case basis.
10. Landscaping. In some locations, consider landscaping to minimize the visual impact of the parking lot. This may include providing a buffer zone around the perimeter of the lot or improving the aesthetics of the lot itself. Desirably, include a 10 ft to 20 ft (3.0 m to 6.0 m) buffer zone around the lot to accommodate vegetation screens. Also, raised-curb islands and parking lot separators provide suitable locations for shrubs and trees. Landscaping should include low maintenance vegetation that does not cause visibility or security problems.
11. Accessibility. See Section 41-6 for accessibility requirements.
12. Snow Removal. To assist with snow removal and storage, the design should include a 10 ft to 20 ft (3.0 m to 6.0 m) snow shelf around the perimeter of the lot on at least two sides. This area can coincide with the buffer zone around the lot, provided that the entire area is not filled with shrubs or trees. Place any fencing outside the area of the snow shelf. Providing painted islands rather than raised-curb islands can also make it easier to plow snow from the parking lot.

41-3.03 Parking Garages

Design and layout of parking spaces in parking garages can be found in the *ITE Traffic Engineering Handbook*, *ITE Guidelines for Parking Facility Location and Design*, *American Planning Association Aesthetics of Parking*, and other documents.

41-4 PUBLIC TRANSIT FACILITIES

41-4.01 General

The requirements for public transit should be considered early in the development of an urban highway improvement program, and should not be delayed until construction has been completed. Information gathered during the planning process on the routing of transit vehicles (e.g., turns, transfer points), and the volumes of buses (e.g., average or minimum headways) should be considered in the design.

Design and operational features of the highway that are affected by public transit facilities include:

- locations of bus stops,
- design of bus stops (e.g., turnouts),
- reservation of bus lanes, and
- special traffic control measures.

Generally, the municipality or local transit authority will determine the location of the bus stop or bus turnout. However, the designer usually has some control over the best placement of a bus stop or turnout location when considering layout details, intersection design, and traffic flow patterns.

41-4.02 Bus Loading Areas

Bus loading and unloading areas are usually located adjacent to park-and-ride lots. Figure 41-4A provides criteria for the recommended lengths of bus loading areas.

41-4.03 Bus Stops

If local bus routes are located on an urban or suburban highway, the designer should consider their impact on normal traffic operations. The stop-and-go pattern of local buses will disrupt traffic flow, but certain measures can minimize the disruption. The location of bus stops is particularly important. These are determined not only by convenience to patrons, but also by the design and operational characteristics of the highway and the roadside environment. If the bus must make a left turn, for example, do not locate a bus stop in the block preceding the left turn.

There are three basic bus stop designs — far-side or near-side of an intersection, and mid-block. Consider the following:

1. Far-Side Stops. For capacity and other reasons, far-side stops are generally preferred to near-side or mid-block bus stops.
2. Near-Side Stops. Near-side stops must be used where the bus will make a right turn at the intersection.
3. Mid-Block Stops. Mid-block bus stops may be considered where right turns at an intersection are high (250 in peak hour) and far-side stops are not practical.

Figure 41-4B provides the recommended distances for the prohibition of on-street parking near bus stops. Section 41-6 provides accessibility requirements.

41-4.04 Bus Turnouts

Providing bus turnouts can reduce interference between buses and other traffic significantly. Turnouts remove stopped buses from the through lanes and provide a well defined user area for bus stops. Consider bus turnouts where the following conditions exist:

- The street provides arterial service with higher speeds (e.g., posted speeds of 35 mph or greater).
- Bus volumes are 10 or more during the peak hour.
- Passenger volumes exceed 20 to 40 boardings an hour.
- The average bus dwell time generally exceeds 30 seconds per stop.
- During peak hour traffic, there are at least 250 vehicles per hour in the curb lane.
- Buses are expected to layover at the end of the trip.
- Potential vehicular/bus conflicts warrant the separation of transit and other vehicles.
- There is a history of traffic crashes and/or crashes involving pedestrians that can be resolved by a bus turnout.
- Right-of-way width is sufficient to prevent adverse impact on sidewalk pedestrian movements.
- Curb parking is prohibited, at least during peak hours.
- Sight distances prevent traffic from stopping safely behind the bus.
- Appropriate bus signal priority treatment exists at the intersection.
- Other improvements (e.g., widening) are planned for the major roadway.

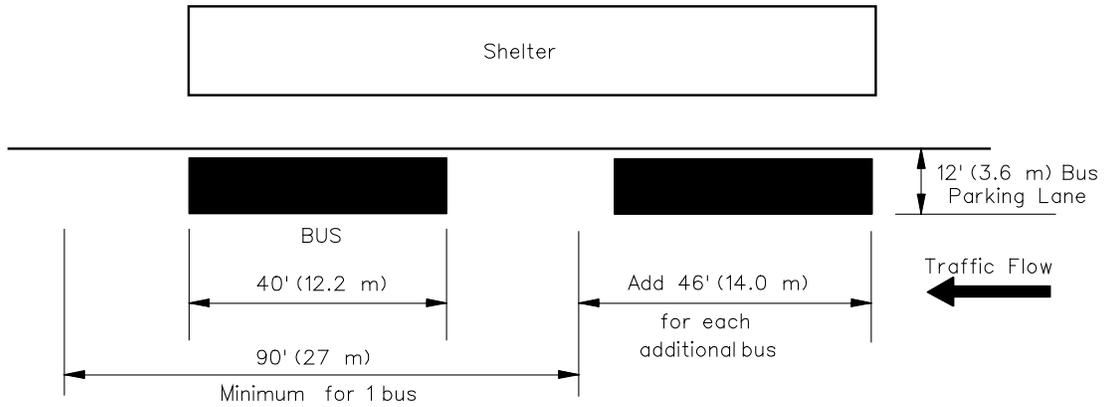
Desirably, the total length of a bus turnout will allow for an entrance taper, a deceleration length, a stopping area, an acceleration length, and an exit taper. Figure 41-4C illustrates the design details for bus turnouts. Providing separate deceleration and acceleration lengths is desirable in open suburban area and on rural arterials and may be provided wherever feasible. However, common practice is to accept deceleration and acceleration in the through lanes and only build the tapers and stopping area. Additionally, consider the following:

1. Far-Side Turnouts. Typically, far-side intersection placement is desirable. Placing turnouts after signal controlled intersections allows the signal to create gaps in traffic.
2. Near-Side Turnouts. Avoid using near-side turnouts because of conflicts with right turning vehicles, delays to transit services as buses try to re-enter the traveled way, and obstructions to traffic control devices and pedestrian activities.
3. Mid-Block Turnouts. Only use mid-block turnouts in conjunction with major traffic generators.

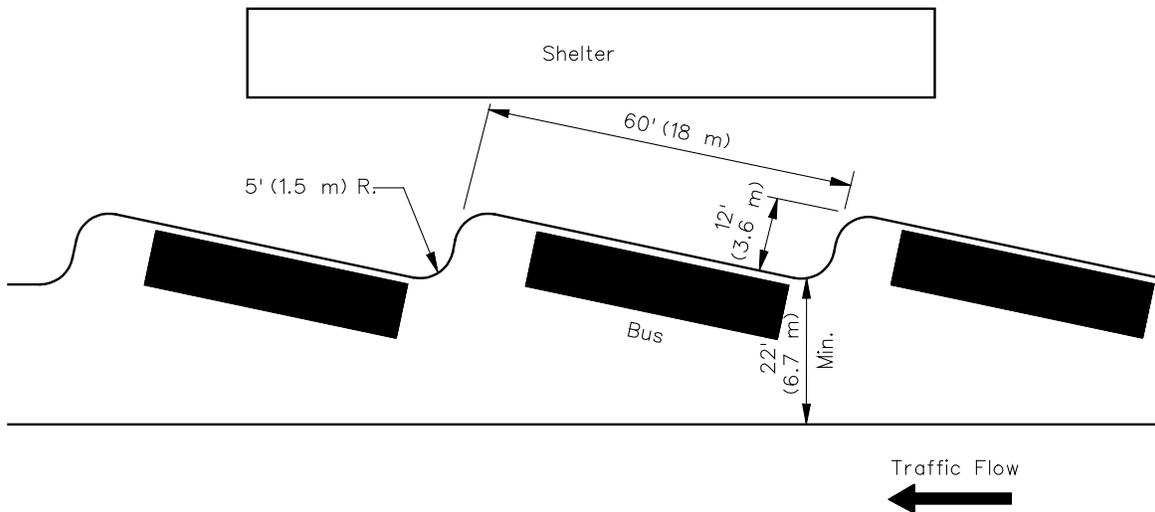
4. Tapers. Figure 41-4C provides information on taper lengths that may be used for entrance and exit tapers. To improve traffic operations, use short horizontal curves (100 ft (30 m) radius) on the entry end and 50 ft to 100 ft (15 m to 30 m) curves on the re-entry end. Where a turnout is located at a far-side or near-side location, the cross street area can be assumed to fulfill the need for the exit or entry area, whichever applies.

41-4.05 Bus Shelters

Generally, the municipality or the local transit authority will determine the need for and location of bus shelters. The local transit authority will determine the design of a bus shelter. The designer should ensure that the shelter does not restrict vehicular sight distance, pedestrian flow, or accessibility for individuals with disabilities. Pedestrian shelters are desirable when loading areas for buses and trains are provided. Their inclusion will be determined on a case-by-case basis. The shelter should provide approximately 5 ft² (0.5 m²) of covered area per person. At least, the shelter should provide lighting, benches, and trash receptacles. Routing information signs and a telephone should also be considered. Section 41-6 provides accessibility requirements.

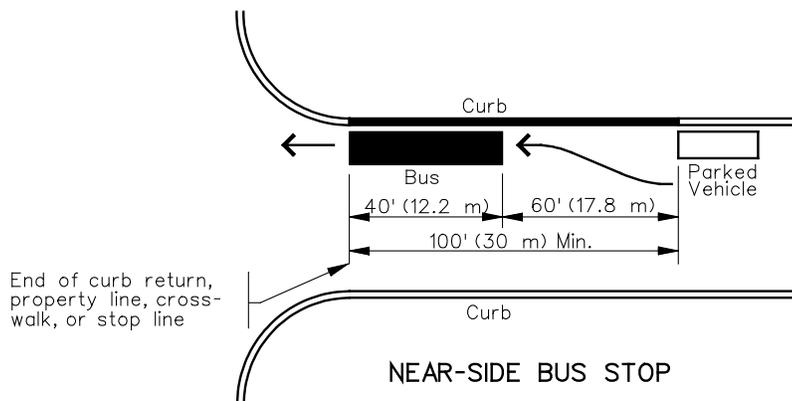
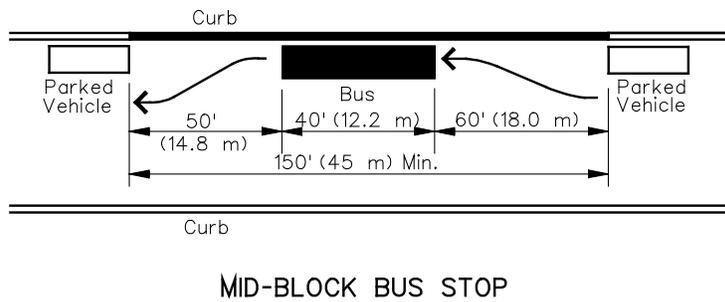
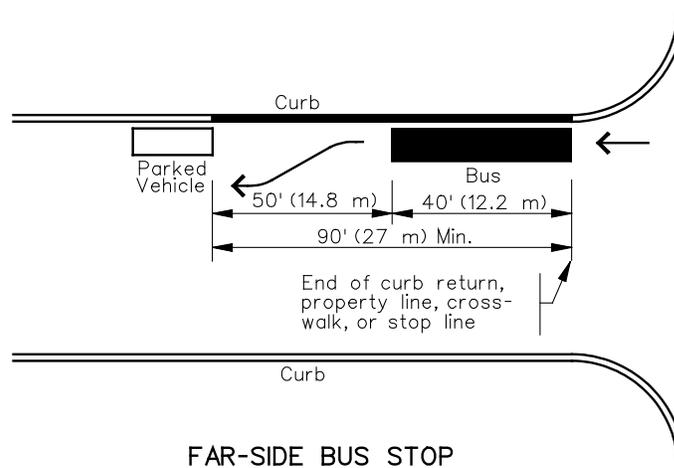


PARALLEL PARKING



SHALLOW SAWTOOTH PARKING
RECOMMENDED LENGTHS FOR BUS-LOADING AREAS
(Park-and-Ride Lots)

Figure 41-4A



- Notes:
1. Where articulated buses are expected to use these stops, add an additional 20 ft (6 m) to the bus distances.
 2. Provide an additional 50 ft (15 m) of length for each additional bus expected to stop simultaneously at any given bus stop area. This allows for the length of the extra bus (40 ft (12.2 m)) plus 10 ft (2.8 m) between buses.

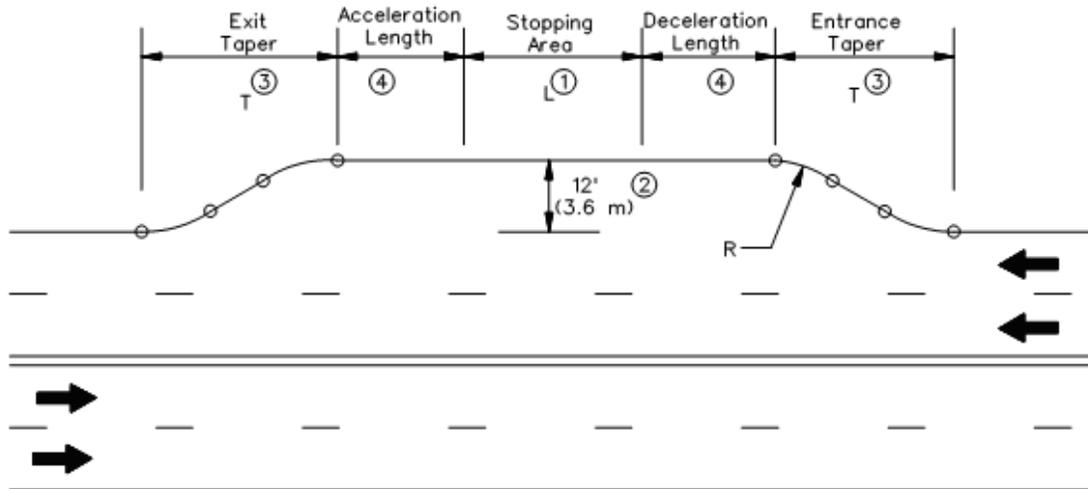
ON-STREET BUS STOPS

Figure 41-4B

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- Notes:
1. Stopping area length consists of 50 ft (15 m) for each standard 40 ft (12.2 m) bus and 70 ft (21 m) for each 60 ft (18.3 m) articulated bus expected to be at the stop simultaneously.
 2. Bus turnout width is desirably 12 ft (3.6 m). For posted speeds under 30 mph, a 10 ft (3.0 m) minimum bay width is acceptable. These dimensions do not include gutter width.
 3. Suggested taper lengths are listed below. A minimum taper of 5:1 may be used for an entrance taper from an arterial street for a bus turnout while the merging or re-entry taper should not be sharper than 3:1.
 4. The minimum design for a bus turnout does not include acceleration or deceleration lengths. Recommended acceleration and deceleration lengths are listed below.

Design Speed	Entering Speed*	Acceleration Lengths	Deceleration Lengths **	Suggested Taper Lengths
US CUSTOMARY				
30 mph	20 mph	50 ft	120 ft	150 ft
35 mph	25 mph	250 ft	185 ft	170 ft
40 mph	30 mph	400 ft	265 ft	190 ft
45 mph	35 mph	700 ft	360 ft	210 ft
50 mph	40 mph	975 ft	470 ft	230 ft
METRIC				
40 km/h	25 km/h	15 m	35 m	40 m
50 km/h	35 km/h	60 m	45 m	45 m
60 km/h	45 km/h	105 m	70 m	50 m
70 km/h	55 km/h	200 m	105 m	60 m
80 km/h	65 km/h	310 m	145 m	70 m

* Desirably, the bus speed at the end of taper should be within 10 mph (15 km/h) of the design speed of the traveled way.

** Based on a 2.5 mph/sec (4.0 km/h/s) deceleration rate.

TYPICAL BUS TURNOUT DIMENSIONS

Figure 41-4C

41-5 PEDESTRIAN ACCOMMODATIONS

41-5.01 General

Consider the travel needs of all users of a transportation corridor when planning transportation improvements. Pedestrian accommodations are an integral part of urban and suburban transportation corridors. They facilitate pedestrian travel and access to public transportation, thereby contributing to alleviation of urban traffic congestion. The most pressing need for pedestrian accommodation is at points of community development that result in pedestrian concentrations near or along the highway, (e.g., schools, public transportation stations and stops, local businesses, industrial plants, hospitals, churches, shopping centers, parking lanes). Accommodations can include sidewalks, elevated walkways, grade separated structures, stairs, curb ramps, and traffic signal devices. If during the planning phase of a project, pedestrian travel in the vicinity of the project is determined to be sufficient to warrant consideration, provide appropriate accommodations.

Pedestrian accommodations will be considered appropriate if they are not already available and any of the following conditions exist:

- there is current evidence of frequent pedestrian activity,
- there is a history of pedestrian related crashes,
- the roadway improvement will create a safety impediment to existing or anticipated pedestrian travel (e.g., adding lanes so that the improvement itself acts as a barrier to pedestrian traffic),
- there is urban or suburban development that would attract pedestrian travel along the route to be improved,
- pedestrian attracting development is expected along the route within 5 years of project completion, either as documented in a local plan or anticipated as a factor of similar development history, and/or
- the roadway provides primary access to a school, park, recreation area, or other significant destination, or across a natural or man-made barrier.

41-5.02 Design

Design criteria for sidewalks are in Section 31-2.02. Facilities intended to also accommodate bicycle travel should follow the guidance in Chapter 42. Policies and guidelines for sidewalk/curb ramps for individuals with disabilities are addressed in Section 41-6.

Project limits may be extended beyond highway improvements for reasonable distances to include necessary pedestrian facilities at nearby intersections, to provide access to public transportation facilities, or to avoid short sidewalks gaps.

41-5.03 Older Pedestrians

Older and impaired pedestrians may be affected by limitations in sensory, perceptual, cognitive, or motor skills. The following measures may be considered at the discretion of the designer to aid older and impaired pedestrian road users:

- Assume a lower walking speed. To accommodate the shorter stride and slower gait of less capable (15th percentile) pedestrians, and their exaggerated “start up” time before leaving the curb, pedestrian control-signal timing based on an assumed walking speed of 2.8 ft/s (0.85 m/s) is recommended.
- Provide median refuge islands of sufficient width at wide intersections.
- Consider the traffic control system in the context of the geometric design to ensure compatibility and to provide adequate advance warning or guide signs for situations that could surprise or adversely affect the safety of older pedestrians.
- Use properly located signals with large signal indications.
- Provide enhanced markings and delineation.
- Consider increasing sign letter size and retroreflectivity to accommodate individuals with decreased visual acuity.
- Use repetition and redundancy in design and in signing.

41-5.04 Overpasses

Because of the high costs associated with grade separated facilities, overpasses should be incorporated into the early stages of planning where new developments are intended to generate substantial volumes of pedestrians. Overpasses are considered to be the most beneficial under the following conditions:

- where there is moderate to high pedestrian demand to cross a freeway or expressway,
- where there is a large number of young children (e.g., schools) who must regularly cross a high speed or high volume roadway,
- on streets having high vehicle and high pedestrian crossing volumes and an extreme hazard for pedestrians exists (e.g., on wide streets with high speed traffic and poor sight distance), and
- where one or more have the conditions stated above in conjunction with a well-defined pedestrian origin and destination (e.g., a residential neighborhood across a busy street from a school, a parking structure affiliated with a university, an apartment complex near a shopping mall).

Overpasses and underpasses will be evaluated on a case-by-case basis considering the type of pedestrian travel, travel generators (e.g., schools, factories, stadiums, parks, transit terminals, shopping districts), the amount of anticipated non-motorized traffic, and the safety impacts of not providing the accommodations. Consider the following when evaluating and/or designing a pedestrian overpass:

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1. Trip Length. Anticipated pedestrian trip length to generators should be 1 mile (2 km) or less and the adverse travel distance alleviated by construction to the facility should be greater than 0.5 miles (1 km).
2. Walkways. Walkways for pedestrian separation should have a minimum width of 8 ft (2.4 m). Greater widths may be needed where there are exceptionally high volumes of pedestrian traffic (e.g., downtown areas, near sports stadiums).
3. Protective Screens. Consider including a protective screen in the design of a pedestrian overpass. The screen is intended to prevent objects dropping into the path of traffic moving under the structure. Locations where screens should be considered include the following:
 - on an overpass near a school, playground, or elsewhere where it would be expected that the overpass would be frequently used by children unaccompanied by adults,
 - on all overpasses in large urban areas used exclusively by pedestrians and not easily kept under surveillance by police, and
 - on an overpass where the history of incidents on nearby structures indicates a need for screens.
4. Accessibility Considerations. When deciding where to locate a pedestrian crossing, the highway and structure designers must coordinate their efforts to properly address the accessibility considerations. All current and future pedestrian access routes (PARs) must be identified. If existing routes are inaccessible, the designer must evaluate the likelihood that the routes will be made accessible in the future. This may be done as part of the project under design. The evaluation may lead to the decision to relocate the pedestrian overpass or underpass to another site where accessibility can be more easily provided.

The proposed design must meet the *ADA Standards* criteria for stairs, ramps, curb ramps, and PARs; see Section 41-6.

Additional guidance on pedestrian overpasses can be found in FHWA-RD-84/082 *Warrants for Pedestrian Over and Underpasses*.

41-6 REQUIREMENTS FOR ACCESSIBLE PUBLIC RIGHTS-OF-WAY

41-6.01 General

Many highway elements can affect the accessibility and mobility of individuals with disabilities. These include sidewalks, curb ramps, parking spaces, buildings at transportation facilities, overpasses or underpasses, temporary traffic control, and landscaping or streetscaping. According to the *Americans with Disabilities Act (ADA)*, 42 U.S.C. §12181 - 12189 and the *Illinois Environmental Barriers Act*, 410 ILCS 25/1 *et seq*, public highway right-of-way shall be made accessible to all users. Local Public Agencies (LPAs) are required to perform a self-assessment to determine barriers to accessibility within the public highway right-of-way.

Currently, a national uniform design guideline for public highway right-of-way has not been adopted by the United States Department of Justice and Federal Highway Administration (FHWA). However, the *Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG)* has been introduced by the United States Access Board through the federal rule-making process. Furthermore, FHWA has issued guidance that PROWAG may be used in order to comply with accessibility requirements. Therefore, the Department recommends that LPAs use the latest revision of PROWAG available at www.access-board.gov, when constructing or altering facilities within the highway public right-of-way.

Figure 41-6A provides a reference to criteria contained in PROWAG unless otherwise noted. The *ADA Standards for Accessible Designs (ADAAG)*, the *Illinois Accessibility Code (IAC)*, the *Uniform Federal Accessibility Standards (UFAS)*, the *ILMUTCD*, and the *American National Standards Institute (ANSI)* should also be consulted as needed. Where LPA policies or local codes require criteria that exceed PROWAG, then the local criteria should be used.

41-6.02 Equivalent Facilitation

The use of alternative designs, products, or technologies, that result in substantially equivalent or greater accessibility and usability than the requirements in PROWAG, is permitted. However, the LPA should document how the equivalent facilitation was determined.

41-6.03 Application

All newly constructed facilities, altered portions of existing facilities, and elements added to existing facilities for pedestrian circulation and use located in the public right-of-way shall comply with the requirements in this Section.

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Oct 2013

Accessible Component	Scoping Requirements	Technical Requirements
Pedestrian Access Route (PAR)	R204	R302
Alternate PAR	R205	
Pedestrian Street Crossing	R206	R306
Curb Ramps and Blended Transitions	R207	R304
Detectable Warnings	R208	R305
Accessible Pedestrian Signals and Pedestrian Pushbuttons	R209	
Protruding Objects	R210	R402
Signs	R211	R410
Transit Stops and Transit Shelters	R213	R308
On-Street Parking	R214	R309
Off-Street Parking	ADAAG R208	ADAAG R502; IAC 400.310(c)
Passenger Loading Zones	R215	R310
Stairways and Escalators	R216	R408
Handrails	R217	R409
Doors, Doorways, and Gates	R218	
Ramps		R407

SCOPING AND TECHNICAL REQUIREMENTS

Figure 41-6A

41-6.04 Alterations

41-6.04(a) General

Where existing elements, spaces, or facilities are altered, each altered element, space, or facility within the scope of the project shall comply with the applicable requirements for new construction unless existing physical constraints exist. The alteration of multiple elements or spaces within a facility may provide a cost-effective opportunity to make the entire facility or a significant portion of the facility accessible.

Figure 41-6B provides a summary of some common alterations.

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Type of Work	Alteration Required
Resurfacing (includes, but not limited to, addition of a new layer of asphalt, reconstruction, concrete pavement rehabilitation and reconstruction, open-graded surface course, microsurfacing and thin lift overlays, cape seals, and in-place asphalt recycling)	Correct non-compliant curb ramps and crosswalks
Remove and Replace Sidewalk (sidewalk patch, relocate poles or posts, etc.)	Replace with compliant (includes transition to non-compliant)
Curb & Gutter Replacement	Install curb ramps if replaced curb and gutter is at a pedestrian crossing with adjacent sidewalk
Pedestrian Signal (signal controller and software altered, or signal head replaced)	Installed Accessible Pedestrian Signals and accessible pushbutton
Restriping Parking Markings	Provide accessible spaces

ALTERATION REQUIRED BY TYPE OF WORK

Figure 41-6B

41-6.04(b) Existing Physical Constraints.

Where existing physical constraints make it impracticable for altered elements, spaces, or facilities to fully comply with the requirements for new construction, compliance is required to the extent practicable within the scope of the project. Existing physical constraints include, but are not limited to, underlying terrain, right-of-way availability, underground structures, adjacent developed facilities, drainage, or the presence of a notable natural or historic feature.

The LPA should document the various options considered, reasons for selecting, and any public comments received concerning an alteration to the extent practicable. Furthermore, the facility shall continue to be listed as a barrier in the LPA's self-evaluation.

41-6.04(c) Transitional Segments.

Transitional segments of an altered PARs shall connect to existing unaltered segments of pedestrian circulation paths. The transitional segment shall be removed when the existing unaltered section is altered in the future.

41-6.04(d) Reduction in Access Prohibited.

An alteration shall not decrease or have the effect of decreasing the accessibility of a facility or an accessible connection to an adjacent building or site below the requirements for new construction in effect at the time of the alteration. Sidewalk improvements that correct existing excessive cross slope should be carefully planned to avoid creating excessive slope in curb ramps or adding a step at existing building entrances. Solutions may include:

1. Split sidewalks that serve building entrances and street or highway at separate levels;

2. Sidewalks with greater cross slope along the curb and PARs with lesser cross slope along building fronts;
3. PARs along the curb and ramped entrances to buildings.

41-6.04(e) Alterations to Qualified Historic Facilities.

Where the State Historic Preservation Officer or Advisory Council on Historic Preservation determines that compliance with a requirement would threaten or destroy historically significant features of a qualified historic facility, compliance shall be required to the extent that it does not threaten or destroy historically significant features of the facility.

Where there is a federal agency “undertaking”, as defined in 36 CFR 800.16 (y), the requirements in section 106 of the National Historic Preservation Act (16 U.S.C. 470f) and 36 CFR part 800 apply. Location of a facility within an historic district by itself does not excuse compliance with the requirements in this document. The State Historic Preservation Officer or Advisory Council on Historic Preservation must determine that compliance would threaten or destroy historically significant features of the facility. Reproductions or replications of historic facilities are not qualified historic facilities.

41-6.05 Pedestrian Access Route

A PAR shall be provided within sidewalks and other pedestrian circulation paths located in the public right-of-way. The pedestrian access route shall connect to accessible elements, spaces, facilities, and to other accessible routes not within the public right-of-way.

PARs shall consist of one or more of the following: sidewalks and other pedestrian circulation paths, or a portion of sidewalks and other pedestrian circulation paths; pedestrian street crossings and at-grade rail crossings; pedestrian overpasses and underpasses and similar structures; curb ramps and blended transitions; ramps; elevators and limited use/limited application elevators; platform lifts; and doors, doorways, and gates.

41-6.06 Alternate Pedestrian Access Route

When a pedestrian circulation path is temporarily closed by construction, alterations, maintenance operations, or other conditions, an alternate PAR shall be marked and/or provided. Any pedestrian barricades and channelizing devices shall comply with the *ILMUTCD*.

The *ILMUTCD* recommends that whenever possible, work should be done in a manner that does not create a need to detour pedestrians from existing pedestrian routes. Extra distance and additional pedestrian street crossings add complexity to a trip and increase exposure of risk to accidents.

41-6.07 Curb Ramps and Blended Transitions

A curb ramp, blended transition, or a combination of curb ramps and blended transitions shall be installed to allow pedestrians to continue through pedestrian street crossings, alleys, or driveways. The curb ramp (excluding any flared sides) or blended transition shall be contained wholly within the width of the crossing served. In alterations where existing physical constraints prevent a curb ramp at each crossing, a single diagonal curb ramp shall be permitted to serve both pedestrian street crossings.

There are two types of curb ramps:

- Perpendicular curb ramps have a running slope that cuts through or is built up to the curb at right angles, or meets the gutter break at right angles where the curb is curved. On large corner radiuses, it will be necessary to indent the gutter break on one side of the curb ramp in order for the curb ramp to meet the gutter break at right angles.
- Parallel curb ramps have a running slope that is in-line with the direction of sidewalk travel and lower the sidewalk to a level turning space where a turn is made to enter the pedestrian street crossing.
- Parallel and perpendicular curb ramps may be combined. A parallel curb ramp is used to lower the sidewalk to a mid-landing and a short perpendicular curb ramp connects the landing to the street.

Blended transitions are similar to curb ramps. However, blended transitions have a less severe running slope and some other differences from curb ramp design. Raised pedestrian street crossings are considered blended transitions. Blended transitions are suitable for a range of sidewalk conditions and should be considered at level intersections.

The Department has developed a series of highway standards that provide the requirements for curb ramp and/or blended transition construction. However, these standards may not provide the contractor and LPA construction supervisor with enough information to ensure accessibility compliance at locations with severe slopes, existing site constraints, or other unique situations. Therefore, the LPA should consider providing plan details for each corner where curb ramps or blended transitions are being constructed.

41-6.08 Detectable Warning Surfaces

41-6.08(a) General

Detectable warning surfaces indicate the boundary between pedestrian and vehicular routes where there is a flush rather than a curbed connection and shall be provided at the following locations on the PAR and at transit stops:

- Curb ramps and blended transitions at pedestrian street crossings;
- Pedestrian refuge islands (minimum width 6 ft);
- Pedestrian at-grade rail crossings not located within a street or highway;
- Boarding platforms at transit stops for buses and rail vehicles where the edges of the boarding platform are not protected by screens or guards; and

- Boarding and alighting areas at sidewalk or street level transit stops for rail vehicles where the side of the boarding and alighting areas facing the rail vehicles is not protected by screens or guards.

Detectable warning surfaces should not be provided at crossings of residential driveways, since the pedestrian right-of-way continues across residential driveway aprons. However, where commercial driveways are provided with yield or stop control, detectable warning surfaces should be provided at the junction between the pedestrian route and the vehicular route.

41-6.09 Pedestrian Street Crossing

All pedestrian street crossings shall be accessible to pedestrians with disabilities. Where pedestrian signals are provided at pedestrian street crossings, they should consider accessible pedestrian signals

41-6.10 Protruding Objects

Objects along or overhanging any portion of a pedestrian circulation path shall not reduce the clear width required for the PAR.

41-6.11 Signs

Where audible sign systems and other technologies are used to provide information equivalent to the information contained on pedestrian signs and transit signs, the signs are not required to comply with accessibility requirements.

Audible sign systems and other technologies that provide information equivalent to the information contained on signs are more usable by pedestrians who are blind or have low vision. Remote infrared audible signs that transmit information to portable devices that are carried by and audible only to the user are an example of audible sign systems and other technologies.

41-6.12 Transit Stops and Transit Shelters

Where provided (regardless of who provides), transit stops and transit shelters shall comply with accessibility requirements.

Transit stops in the public right-of-way typically serve fixed route bus systems, including bus rapid transit systems, and light rail transit systems. Signs that identify the routes served by the transit stop shall comply with the technical requirements for visual characters on signs unless audible sign systems or other technologies are used to provide the information. The FHWA has issued guidance on the obligations of state transportation departments, metropolitan planning organizations, and transit agencies to coordinate the planning and funding of accessibility improvements to transit systems and facilities.

41-6.13 On-Street Parking

41-6.13(a) General

Where on-street parking is provided on the block perimeter and the parking is marked or metered (including pay stations), accessible parking spaces shall be provided. Where parking pay stations are provided and the parking is not marked, each 20.0 ft (6.1 m) of block perimeter where parking is permitted shall be counted as one parking space. Figure 41-6C specifies how many accessible parking spaces shall be provided on the block perimeter where on-street parking is marked or metered.

Accessible parking spaces shall be identified by signs complying with the *ILMUTCD*. Accessible parking spaces should be located where the street has the least crown and grade and close to key destinations.

Total Number of Marked or Metered Parking Spaces on the Block Perimeter	Minimum Required Number of Accessible Parking Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 and over	4 percent of total

ON-STREET PARKING SPACES

Figure 41-6C

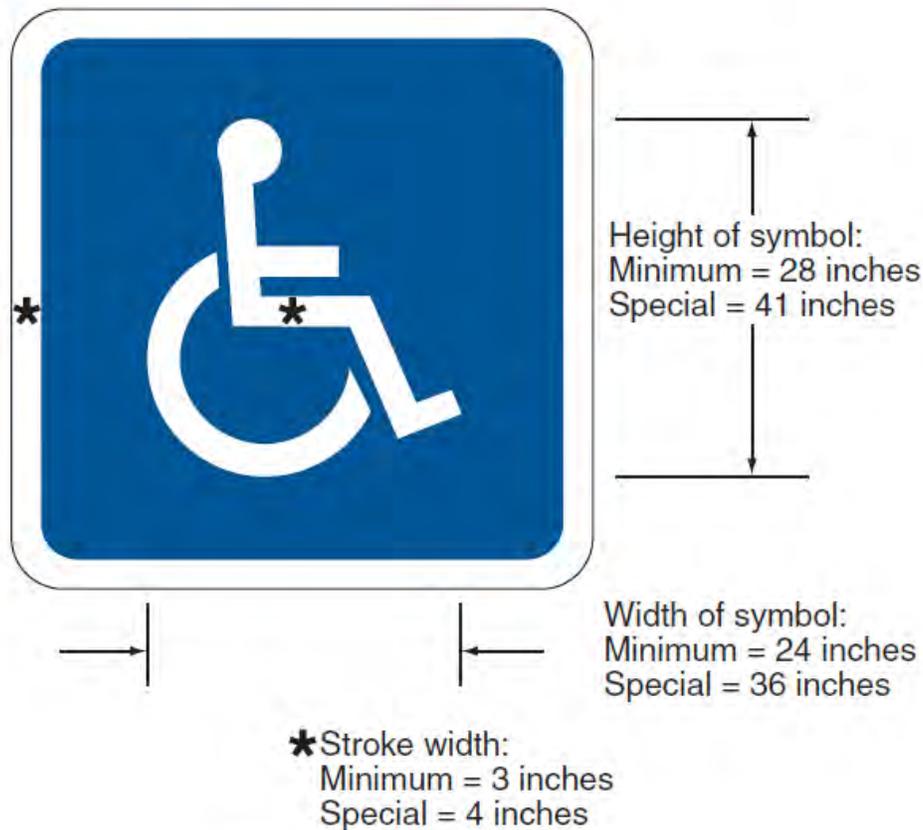
41-6.13(b) Signage

Accessible parking spaces shall be designated with a ground-mounted RESERVED PARKING for persons with disabilities (R7-8) sign with the \$____ FINE (R7-I101) supplemental plaque. The amount of the fine shall be as established by 625 ILCS 5/11-1301.3(c). Signs shall be 7 ft (2.0 m) minimum above the finish floor or ground surface measured to the bottom of the sign, and no more than 2 ft (0.6 m) horizontally from the face of curb. Signs shall be located at the head or foot of the parking space so as not to interfere with the operation of a side lift or a passenger side transfer.

41-6.13(c) Pavement Marking

1. Color. Accessible parking spaces and access aisles shall be designated with white pavement marking and may be supplemented with blue pavement markings.
2. Width. Pavement marking shall be 3 in (75 mm) to 6 in (150 mm) wide.

3. Access Aisle. When required, the access aisle shall be marked with 45 degree diagonal lines. The diagonal lines should be 3 in (75 mm) to 6 in (150 mm) wide and separated by gaps of 12 in (300 mm) to 36 in (900 mm). The gap between the lines should not exceed 6 times the width of the diagonal lines.
4. Symbol. The international symbol of accessibility should be used to provide additional emphasis. See Figure 41-6D.



Note: Blue background and white border are optional

INTERNATIONAL SYMBOL OF ACCESSIBILITY FOR PAVEMENT MARKING

Figure 41-6D

41-6.13(d) Dimensions

Where parking spaces are marked with lines, width measurements of parking spaces and access aisles shall be made from the centerline of the markings. The required size of parking spaces and access aisles shall be determine by the type of parking space.

41-6.13(e) Curb Ramps or Blended Transitions

Curb ramps or blended transitions complying with Section 41-6.07 shall connect the access aisle to the PAR. Curb ramps shall not be located within the access aisle. At parallel parking spaces, curb ramps and blended transitions should be located so that a van side-lift or ramp can be deployed to the sidewalk and the vehicle occupant can transfer to a wheelchair or scooter. Parking spaces at the end of the block face may be served by curb ramps or blended transitions at the pedestrian street crossing, provided that the curb ramp is not accessed from a travel lane.

Detectable warning surfaces are not required on curb ramps and blended transitions that connect the access aisle to the sidewalk, including where the sidewalk is at the same level as the parking spaces, unless the curb ramps and blended transitions also serve pedestrian street crossings.

41-6.14 Off-Street Parking

41-6.14(a) General

Accessible parking spaces for individuals with disabilities and accessible passenger loading zones that serve a particular building shall be the spaces or zones closest to the nearest accessible entrance on a PAR. In separate parking facilities that do not serve a particular building, locate parking spaces for individuals with disabilities on the shortest possible circulation route to an accessible pedestrian entrance of the parking facility. In buildings with multiple access entrances with adjacent parking, accessible parking spaces may be dispersed and located closest to the accessible entrances. The total number of accessible parking spaces may be distributed among parking facilities, if greater accessibility is achieved in consideration of such factors as anticipated usage, number and location of entrances and level parking areas. Figure 41-6E specifies how many accessible parking spaces shall be provided.

Each parking space shall have its own access aisle and all access aisles shall blend to a common level with an accessible route. Parking spaces and access aisles shall be level with surface slopes not exceeding 1:50 (2.0%) in all directions. Minimum vertical clearance of 98 in (2490 mm) at the parking space and along at least one vehicle access route to such spaces from site entrance(s) and exit(s) shall be provided.

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Total Number of Marked or Metered Parking Spaces on the Block Perimeter	Minimum Required Number of Accessible Parking Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2 percent of total
1001 and over	20, plus 1 for each 100, or fraction thereof, over 1000

OFF-STREET PARKING SPACES

Figure 41-6E

41-6.14(b) Signage

See Section 41-6.13(b).

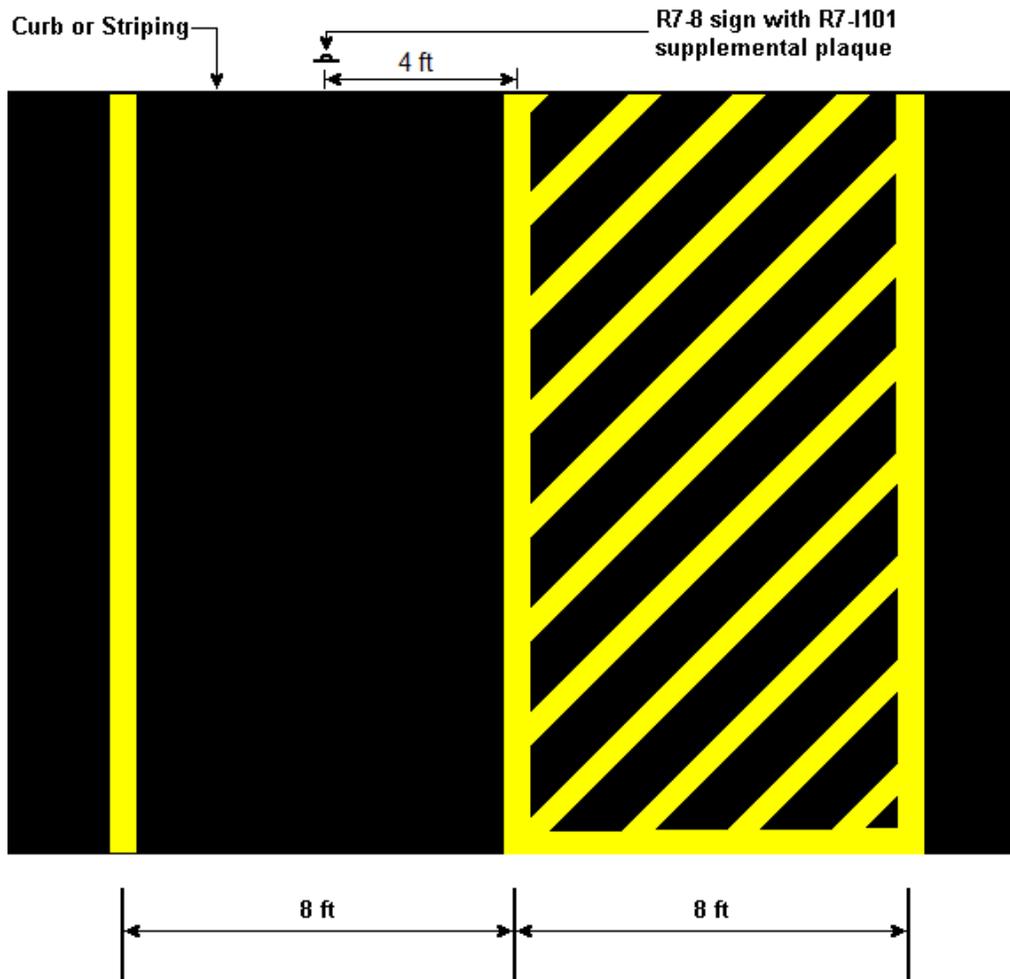
41-6.14(c) Pavement Marking

1. Color. Accessible parking spaces and access aisles shall be designated with yellow pavement marking.
2. Width. See Section 41-6.13(c).
3. Access Aisle. See Section 41-6.13(c).
4. Symbol. See Section 41-6.13(c).

41-6.14(d) Dimensions

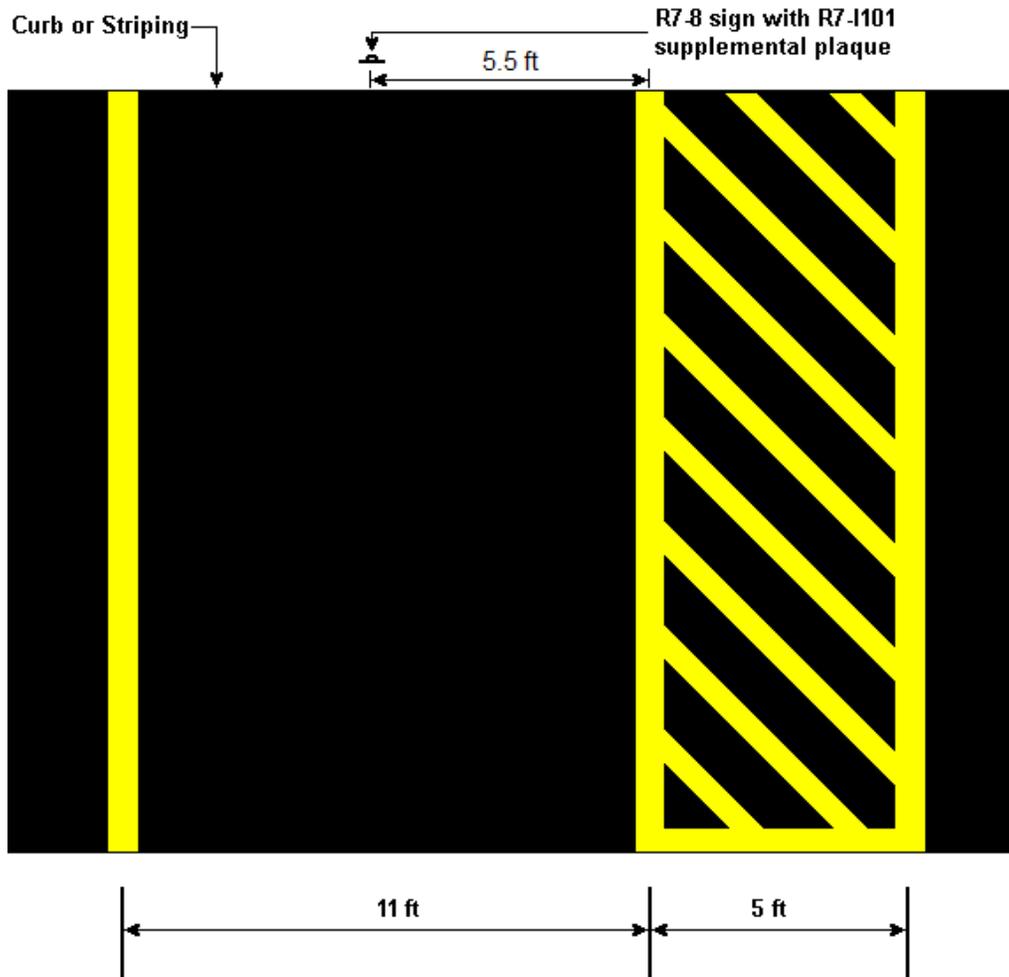
An accessible parking space shall consist of a 16 ft (4.9 m) wide parking space, which includes an 8 ft (2.4 m) wide access aisle (See Figure 41-6F). In the alternative, an accessible space may be 16 ft (4.9 m) wide, including a space 11 ft (3.4 m) wide with a 5 ft (1.5 m) access aisle (See Figure 41-6G).

A common access aisle shall not be shared between adjacent parking spaces. Access aisles shall be permitted to be placed on either side of the parking space except for angled parking spaces, which shall have access aisles located on the passenger side of the parking space.



STANDARD OFF-STREET ACCESSIBLE PARKING SPACES

Figure 41-6F



UNIVERSAL PARKING DESIGN OFF-STREET ACCESSIBLE PARKING SPACES

Figure 41-6G

41-6.15 Passenger Loading Zones

Where passenger loading zones other than transit stops are provided, at least one accessible passenger loading zone shall be provided for each 100.0 ft (30 m) of continuous loading zone space or fraction thereof. Accessible passenger loading zones must be identified by signs displaying the International Symbol of Accessibility.

41-6.16 Other

Where provided on pedestrian circulation paths, Stairways and Escalators (shall not be part of a PAR), Handrails, Doors, Doorways, and Gates; and Ramps shall comply with accessibility requirements.

41-7 HIGHWAY LIGHTING

41-7.01 Guidelines for Justifying Highway Lighting

Providing lighting for all highway facilities is neither practical nor cost effective. It is generally only practical to provide highway lighting where justified based on sound engineering judgment and on the criteria, recommendations, and principles presented in the AASHTO publication *Guidelines for Highway Lighting*.

For a highway facility to be considered for lighting, the lighting system must be both economically feasible and justified based on the applicable criteria presented in the following Sections. The impacts of local conditions (e.g., frequent fog, ice, snow, roadway geometry, ambient lighting, sight distance, signing) also should be considered when analyzing highway lighting needs.

41-7.01(a) Analyzing Highway Lighting Needs

The AASHTO publication *Guidelines for Highway Lighting* presents an empirical approach to analyzing highway lighting needs with primary application to freeway-type facilities. The principal considerations are vehicular traffic volume, land development, and artificial lighting conditions in the area surrounding the roadway, and the night-to-day crash ratio. The affect of these factors on driver visibility should be considered in the lighting needs analysis.

A supplemental approach to analyzing highway lighting needs, based primarily on an analytical evaluation of driver information, is published in NCHRP Report No. 152 *Warrants for Highway Lighting*. This publication has application to both urban-type facilities (e.g., streets, arterials, intersections). In urban areas where the analyst may find difficulty in applying the AASHTO empirical approach, Report No. 152 offers an alternative approach for analyzing highway lighting needs.

41-7.01(b) Lighting of Streets and Highways

Urban and rural conditions, traffic volumes (both vehicular and pedestrian), intersections, turning movements, signalization, channelization, and varying geometrics are factors that should be considered when determining the lighting needs of streets and highways. Consider the following:

1. Facilities with Raised Medians. Consider highway lighting along sections of facilities that have raised medians.
2. Major Urban Arterials. Consider highway lighting along all major arterials that are located in urban areas.
3. Intersections. Consider intersection lighting at rural intersections that meet any one of the following conditions:
 - there are 2.4 or more crashes per million vehicles in each of 3 consecutive years;

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- there are 2.0 or more crashes per million vehicles per year and 4 or more crashes per year in each of 3 consecutive years;
- there are 3.0 or more crashes per million vehicles per year and 7 or more crashes per year in each of 2 consecutive years;
- the intersection is signalized and there have been, in the past year, 5 or more reported nighttime crashes and a day-to-night crash ratio of less than 2.0;
- substantial nighttime pedestrian volume exists;
- less than desirable alignment exists on any of the intersection approaches;
- the intersection is an unusual type requiring complex turning maneuvers;
- commercial development exists in the vicinity that causes high nighttime traffic peaks;
- distracting illumination exists from adjacent land development; and/or
- recurrent fog or industrial smog exists in the area.

Isolated intersections located within the fringe of corporate limits that are suburban or rural in character may be illuminated provided they meet the above criteria.

4. High Conflict Locations. Consider providing lighting along roadway sections with high vehicle-to-vehicle interactions (e.g., sections with numerous driveways, significant commercial or residential development, and high percentage of trucks). Lighting generally improves traffic safety and efficiency at these locations.
5. Complex Roadway Geometry. Consider providing lighting at spot locations in rural areas where the driver is required to pass through a roadway section with complex geometry.
6. Night-To-Day Crash Ratio. Lighting should be considered at locations or sections of streets and highways where the night-to-day ratio of crash rates is higher than the statewide average for similar locations, and a study indicates that lighting may be expected to significantly reduce the night crash rate. The number of nighttime crashes also should be evaluated.
7. LPA Needs. Lighting should be provided where the LPA finds sufficient benefit in the forms of convenience, safety, policing, community promotion, public relations, etc., to pay the installation, maintenance, and operation of the lighting facilities.

41-7.01(c) Lighting of Bridge Structures and Underpasses

Because of their typical configuration and length-to-height ratio, underpasses generally have good daylight penetration and do not require supplemental daytime lighting. Underpass lighting generally is installed to enhance driver visibility after daylight hours. When the length-to-height ratio of the underpass exceeds approximately 10:1, it usually is necessary to analyze specific geometry and roadway conditions, including vehicular and pedestrian activity, to determine the need for supplemental daytime lighting.

On highways that are not continuously lighted, consider providing underpass lighting where frequent nighttime pedestrian traffic exists through the underpass or where unusual or critical geometry exists within or on an approach to the underpass.

Provide underpass lighting on all highways that are continuously lighted. Favorable positioning of conventional highway luminaires adjacent to a relatively short underpass often can provide adequate illumination within the underpass without a need to provide supplemental lighting. If this action is considered, ensure that shadows cast by the conventional luminaires do not become a visibility problem within the underpass.

41-7.01(d) Other Locations

Provide lighting for all pedestrian underpass and pedestrian tunnel facilities. In addition, the need to provide lighting for the following facilities will be determined on a case-by-case basis:

- commuter park-and-ride lots,
- bike paths,
- pedestrian walkways, and
- pedestrian overpasses.

41-7.01(e) Roadway Reconstruction

During roadway reconstruction projects, existing highway lighting should be evaluated and upgraded or removed, if necessary, to meet current highway lighting criteria.

41-7.01(f) Ornamental Lighting

Ornamental lighting is lighting provided along the roadway for purposes other than highway lighting. There are some ornamental lighting luminaires with distribution patterns that will control the light and meet AASHTO requirements. A LPA may provide ornamental lighting if the minimum requirements are met.

41-7.02 Highway Lighting Procedures

Consider street lighting at all intersections and continuous street lighting heavily built up areas, particularly on collector and arterial streets. Determinations on lighting should be coordinated with crime protection and other community needs.

Use the following guidelines in the design and submittal of street lighting projects to be maintained by a LPA. The design of street lighting systems should be as recommended in the AASHTO publication, *Guidelines for Highway Lighting*. ANSI/IESNA *American National Standard Practice for Roadway Lighting* also presents guidelines for highway lighting.

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Previous design criteria may be used if the proposed work is a part of an overall street lighting improvement already begun. Traffic safety should be given consideration in the physical design of lighting systems. In additions, certain characteristics (e.g., traffic speed, type of parking, type of curb, location of sidewalk) should govern the pole type and setback.

It is important to analyze charges for energy consumed by various lighting types (i.e., high-pressure sodium, low-pressure sodium, metal halide). Note that 55% to 75% of maintenance and operational costs are for electricity.

Generally, breakaway or frangible supports are recommended whenever the support is exposed to traffic. An exception would be a situation where a falling support would create a greater hazard than that of a vehicle striking a non-breakaway support. Selection of the proper light support to be used is discussed in AASHTO's *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*.

Street lighting projects to be maintained by the State shall be designed in accordance with Chapter 56 of the *BDE Manual*.

41-8 MAIL DELIVERY

Mailboxes and newspaper tubes served by carriers in vehicles may constitute a safety hazard, depending upon the placement of the mailbox and the width of the turnout. Therefore, the designer should make every reasonable effort to replace all non-conforming mailboxes and turnouts with designs that meet the criteria in the *BLRS Highway Standards*, 605 ILCS 5/5-411, 605 ILCS 5/6-412, and the *AASHTO A Guide for Erecting Mailboxes on Highways*.

41-8.01 Location

Mailboxes and turnouts should be placed for maximum convenience to the patron, consistent with safety considerations for highway traffic, the carrier, and the patron. Consider the following:

1. Intersections. Placing a mail stop near an intersection will have an effect on the operation of the intersection (e.g., reduction of intersection sight distance, blocked lanes). The nature and magnitude of this impact depends on traffic speeds, volumes on each of the intersecting roadways, the number of mailboxes at the stop, type of traffic control, how the stop is located relative to the traffic control, and the distance the stop is located from the intersection. Figure 41-8A provides the recommended minimum clearance distances to mailbox stops near intersections.
2. Near-Side/Far-Side at Driveways. On rural two-lane highways where a single mailbox installation is required, the near-side turnout is preferable because this design allows the postal patron to pull up to the mailbox and then to turn into the driveway without backing up. If there is a need for multiple mailbox installations at one location, the far-side turnout is preferable because all postal patrons except for one can pull into the turnout and then drive out and proceed to their homes.
3. Right or Left Side. Only place boxes on the right-hand side of the highway in the direction of travel of the carrier, except on one-way streets where they may be placed on the left-hand side.
4. Guardrail. Where a mailbox is installed in the vicinity of an existing guardrail and where practical, place the mailbox support behind the guardrail. Allow for deflection of the guardrail.

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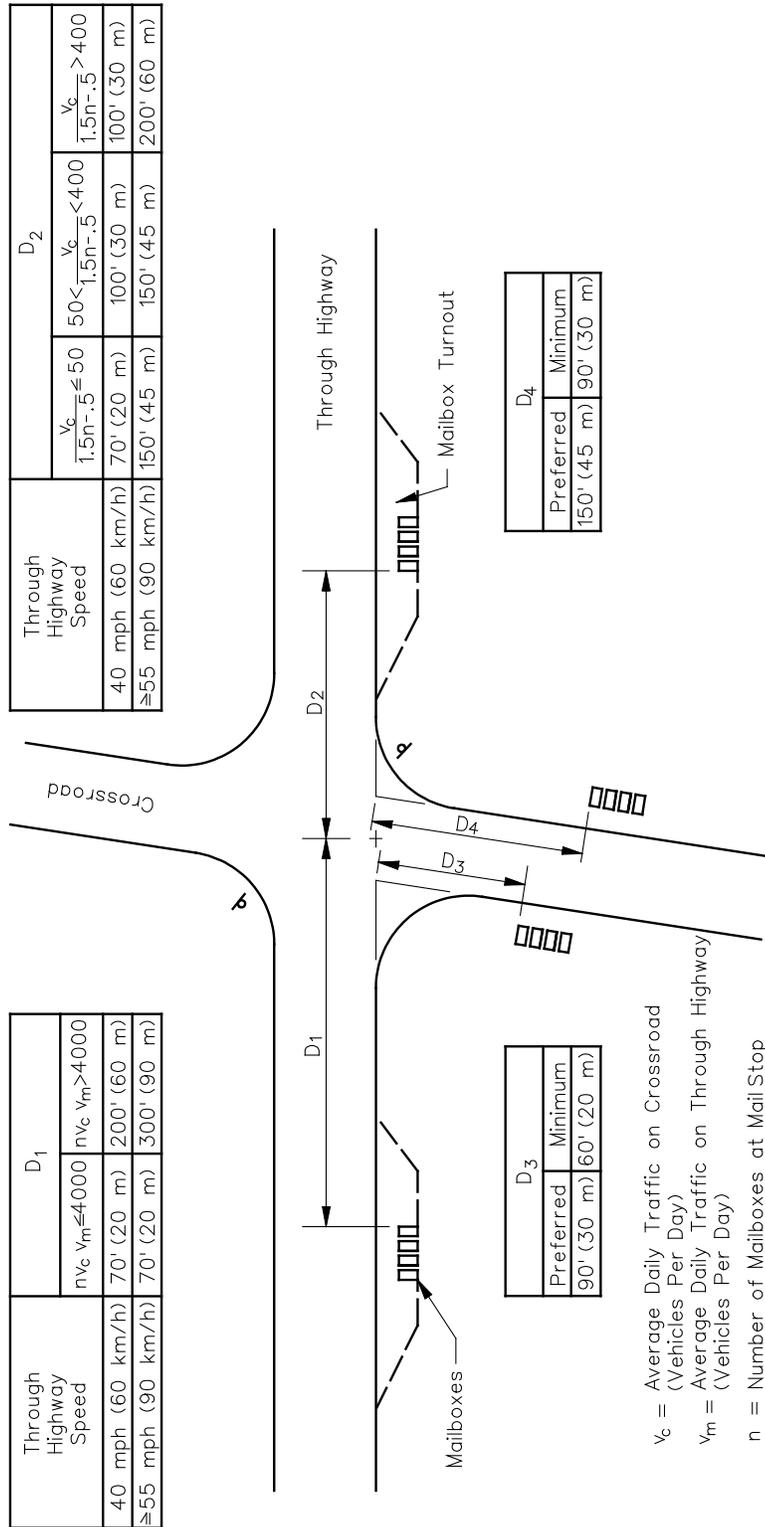
5. Suburban/Urban Areas. A potential problem frequently occurs where a roadway section with shoulder originally existed and where the roadway is reconstructed to a curb and gutter cross section. Previously, the mail carrier would have delivered mail from a vehicle by driving along the shoulder. With the reconstruction to a curb and gutter section, the mail now has to be delivered by driving on the pavement adjacent to the curb and gutter. A curb and gutter section 30 ft (9 m) wide provides adequate width for a vehicle to pass a stopped mail carrier in a vehicle. Under certain conditions, mail delivery along a curb and gutter roadway has the potential to be hazardous. The factors that could contribute to a potential problem along the street are high-operating speeds, the number of through and turning lanes, and the amount of congestion due to traffic volumes. To alleviate the potential for mail delivery problems where a curb and gutter cross section is proposed, the LPA should work closely with local postmaster during the development of the project. In many cases, after coordination with a postmaster is completed, the designer will determine that the potential for mail delivery problems is minor and no special design features are needed. However, where the potential for mail delivery problems is determined to be significant, it may be possible to modify rural type delivery on streets with curb and gutter by considering the following:
- a. Grouping. Where there are a number of closely spaced houses located along a highway, it may be desirable to group 2, 4, or 6 mailboxes at one location as shown on Figures 41-8B and 41-8C.
 - b. Neighborhood Delivery and Collection Box Unit (NDCBU). NDCBU is a cluster of 8 to 16 locked boxes mounted on a pedestal or within a framework. These clusters can weigh between 100 lbs to 200 lbs (45 kg to 90 kg) and may be a roadside hazard. Therefore, they should be located outside the clear zone in rural areas and preferably on a side street in urban areas. Usually, NDCBU is located in trailer parks, apartment complexes, and new residential subdivisions. However, note that postal patrons usually do not like this solution in older established neighborhoods.
 - c. Park and Loop Routes. Request the mail carrier to park his/her vehicle on a side street, walk the block, and return to the vehicle.
 - d. Paved Shoulder. Provide a continuous 6 ft (1.8 m) paved shoulder with curb and gutter located behind the shoulder. This alternative is expensive and right-of-way may not be available in many cases. However, this design allows for mail carriers, garbage trucks, and delivery trucks to avoid parking in the traffic lane.
 - e. Construction. If during the preparation of the plans it is determined that temporary locations will be required for mail delivery during construction, provide the necessary details in the plans and special provisions.

Where a satisfactory mail delivery solution cannot be reached between all parties involved, contact the Delivery Programs Support Analysts at one of the US Postal Services' district offices at the following locations:

- For northern Illinois, contact the postal official at (630) 260-5260.
- For central Illinois, contact the postal official at (708) 563-7360.

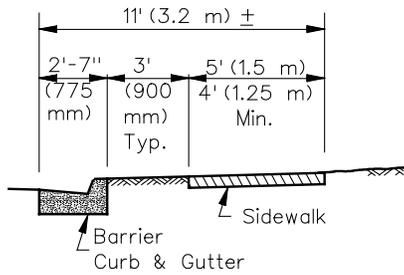
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- For southern Illinois, contact the Midwest Area Office in St. Louis at (314) 692-5426.

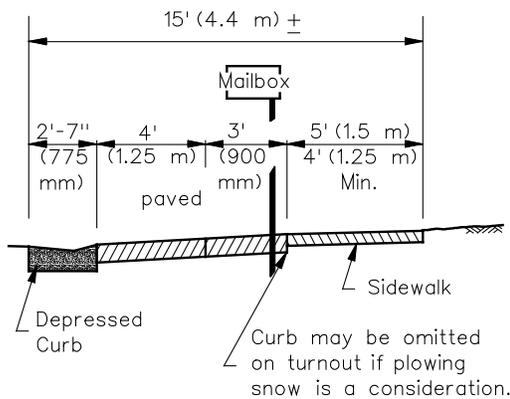


RECOMMENDED MINIMUM CLEARANCE DISTANCES TO MAILBOX STOPS NEAR INTERSECTIONS

Figure 41-8A

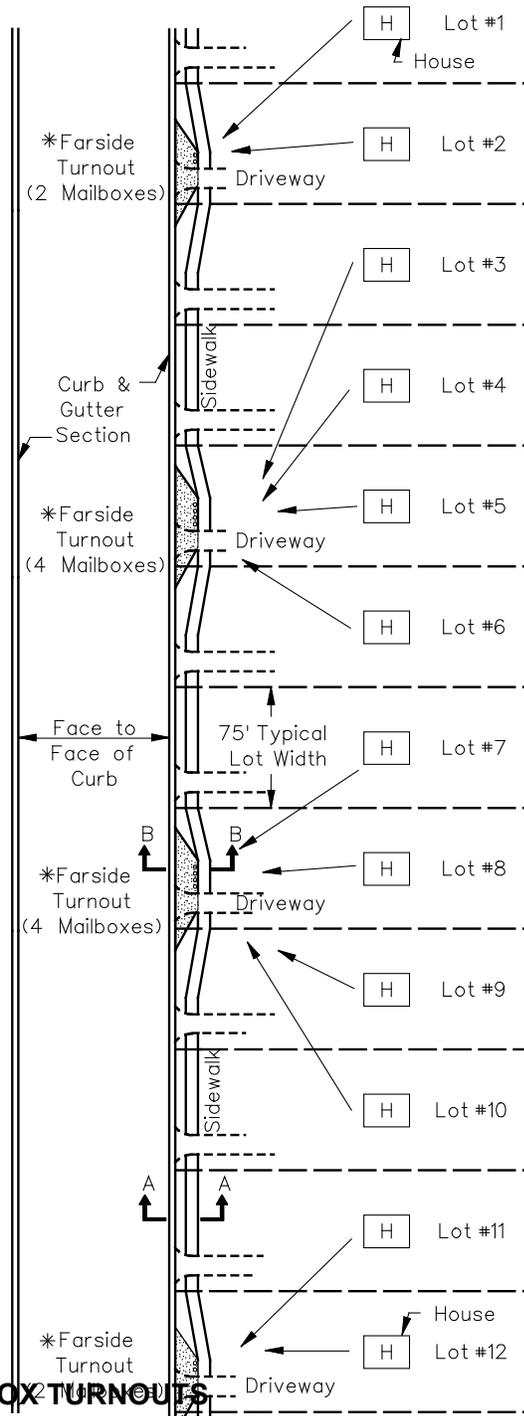


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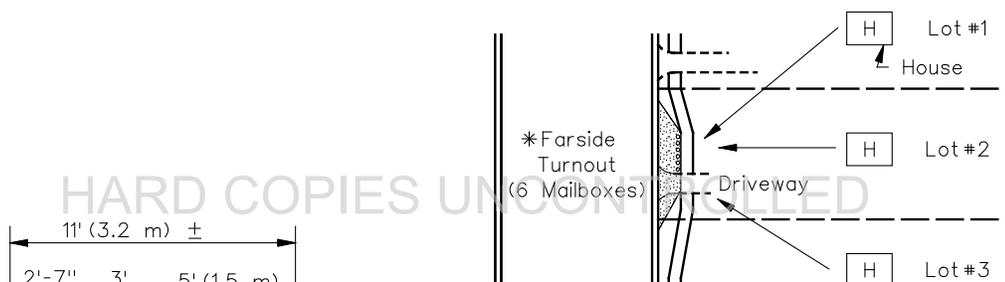
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*Note: Farside turnouts are preferable from a traffic operations standpoint. Nearside locations may be considered after discussions with homeowners and the local postmaster.



**URBAN MAILBOX TURNOUTS
(Two or Four Mailboxes Grouped Together)**

Figure 41-8B



URBAN MAILBOX TURNOUTS
(Six Mailboxes Grouped Together)

Figure 41-8C

41-8.02 Mailbox Turnout Designs

The *IDOT Highway Standards* provide the geometric design criteria for rural mailbox turnouts. The designer should also consider the following:

1. Stopping Sight Distance. Ensure that there is sufficient stopping sight distance in advance of the mailbox turnout.
2. Width. The minimum width of a mailbox turnout should be in accordance with the BLR Standard for Mailbox Turnouts on Local Roads.
3. Narrow Shoulders. Widening and/or resurfacing of highways may result in shoulder widths that are too narrow for mailbox turnouts. In these cases, it will be necessary to widen out the shoulder at the mailbox location to provide the minimum width and, in some cases, installing a sufficient length of pipe culvert to provide for roadside drainage.
4. Surface. The following will apply:
 - a. County Roads. For turnouts along county roads with all weather surfaces, provide an all-weather surface (605 ILCS 5/5-411).
 - b. Township and Road District Roads. For township and road district roads that have an all-weather surface, also provide this surface to the mailbox if funds are available (605 ILCS 5/6-412).
5. Special Designs. Due to the multitude of different conditions, the standard mailbox turnout designs may not always be practical and a special design must be used. This is especially true in urban and suburban areas.

41-8.03 Mailbox Supports

41-8.03(a) Removal of Hazardous Supports

Removal and replacement of mailboxes can be a sensitive issue and should be reviewed with the local postal authorities and the postal patron. The process for evaluating the removal and replacement of these supports discussed in Section 22-2 as required for Federal-funded projects and may be used for other projects.

41-8.03(b) Mailbox Designs

In determining acceptable mailbox designs, consider the following:

1. Heights. Mailbox heights are usually located so that the bottom of the box is 3 ft (1.0 m) to 4 ft (1.2 m) above the mail stop surface.

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2. Mailbox Supports and Attachment Design. The post-to-box attachment details should be of sufficient strength to prevent the box from separating from the post top if a vehicle strikes the installation. For guidance on mailbox posts, supports, and attachments, see the AASHTO *A Guide for Erecting Mailboxes on Highways*.
3. Multiple Mailboxes. Due to the possibility of spearing of windshields by the horizontal support, it is desirable to individually mount each mailbox on a separate support. However, it may be acceptable to mount multiple mailboxes on one support if it meets the criteria in the AASHTO *A Guide for Erecting Mailboxes on Highways*. No more than two mailboxes may be mounted on a support structure unless the support structure and mailbox arrangement have been shown to be safe by crash testing. However, lightweight newspaper boxes may be mounted below the mailbox on the side of the mailbox support. To reduce the possibility of ramping, multiple mailbox supports should be separated by a distance at least equal to three-fourths of their height above ground.
4. Foundations. Do not set mailbox supports in concrete unless the support design has been shown to be safe by crash tests when so installed. Do not embed the post more than 2 ft (600 mm) into the ground. Do not fit a metal post with an anchor plate; however, it may have an anti-twist device that extends no more than (10 in) 250 mm below the ground surface.
5. Post Sizes. The following posts sizes are generally considered to be acceptable:
 - a single 4 in x 4 in (100 mm x 100 mm) square wooden post,
 - a 4 in (100 mm) diameter wooden post, or
 - a metal post with strength no greater than a 2 in (50 mm) diameter standard strength steel pipe.

41-9 NOISE BARRIERS

41-9.01 General

Properly constructed noise barriers (e.g., earth berms, structural walls) in combination with landscaping, whether within or outside the highway right-of-way, can reduce excessive noise levels. Thick dense wooded areas with no visual path between the highway and the affected site can also reduce noise levels. However, trees by themselves do not prove to be a good noise barrier unless they have a very dense mass. Rows of buildings and houses can reduce noise impacts on subsequent rows of buildings and houses.

41-9.02 Design Considerations

The FHWA's *Highway Traffic Noise Analysis and Abatement Policy and Guidance* provides guidelines and design considerations for noise barriers.

41-9.03 Roadside Safety

Chapter 35 provides the design criteria for clear zones. If practical, noise barrier walls should be placed outside of the applicable clear zone value. Otherwise, guard rail should be considered to shield the wall from run-off-the-road vehicles. The designer must ensure that adequate deflection distance is available between the guard rail and noise barrier. Chapter 35 discusses the design of guardrail in detail.

If the noise barrier is a mound of dirt, the toe of the barrier should be traversable by a run-off-the-road vehicle.

41-9.04 Sight Distance

For at-grade intersections, noise barriers should not be located in the triangle required for corner sight distance. Section 28-3 provides the criteria to determine the required sight distance triangle.

Noise barriers can also impact sight distance along horizontal curves. Section 29-5 provides the detailed criteria to determine the middle ordinate value that will yield the necessary sight distance. The location of the noise barrier must be outside of this value.

41-9.05 Right-of-Way

The noise barrier must be located within the highway right-of-way.

41-9.06 Interference with Roadside Appurtenances

A noise barrier may be constructed on a new or on an existing highway. Its proposed location could interfere with proposed or existing roadside features, including signs, sign supports, utilities, and illumination facilities. The designer must determine if the noise barrier impacts these features.

41-10 LANDSCAPING AND EROSION CONTROL

41-10.01 Landscape Plantings General Information

Highway landscape plantings are the living component of the highway design and, through the use of native and non-native materials, provide the means to fully integrate the highway with the surrounding environment. Landscape plantings will serve as functional elements (e.g., erosion control, screening, sound abatement, snow control) in the highway environment.

41-10.01(a) Plant Selection

The plants selected generally should be characteristic, native, or indigenous to the specific locality. Consider the following guidelines:

1. Native Plants. Native plants are effective in perpetuating a self-sustaining roadside landscape. They are adapted to regional environmental conditions and can survive extreme temperatures, wind, and rainfall without additional irrigation or fertilizer.
2. Non-Native Plants. Non-native plants may be selected to achieve special effects (e.g., color, texture, growth habit) for emphasis. For example, non-native plants could be used in urban areas to accentuate an artificial manmade environment. Another example would be to use non-native material to screen the unsightly view of a junkyard.
3. Plant Maintenance. Maintenance is a major consideration in landscape plant selection. Strive to choose those plants that require a minimum of maintenance.

41-10.01(b) Prohibited Plants

The following plants are banned from use on highway projects in Illinois:

1. Ash Tree (*Fraxinus spp.*). Due to federal Emerald Ash Borer quarantine established by the United States Department of Agriculture, highway plans should not include any species of ash tree (*Fraxinus spp.*).

41-10.01(c) Hardiness

Select plants for a particular section of roadway based on their climatic and soil requirements. In Illinois, climatic conditions and soil types are favorable to both southern and northern plant groups. Conduct a study of soils, climate, and existing plant growth in the area when planning each planting project. Plant hardiness zones will be as stated in the *IDOT Standard Specifications*. Use the USDA Plant Hardiness Zone Map, latest edition, when selecting plant material for any project.

41-10.01(d) Size

The size at which a plant matures will determine the number of plants that will be required in a group planting. Consider the following guidelines:

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1. Younger Plants. Younger plants generally establish themselves faster than older plants. As a general practice, specify the smallest size of plants that is consistent with the requirements of the environment.
2. “Balled and Burlapped” Planting. Specify all deciduous trees larger than 1.5 in (40 mm) in diameter or 5 ft (1.5 m) in height as “balled and burlapped” at the time of planting. Also, specify this method of planting for plants that, according to good horticultural practice, require a ball of earth. It is acceptable to specify container-grown material in lieu of “balled or burlapped” plants as an alternative. The relationship of the plant size to the soil ball size or the container size will be as stated in the *IDOT Standard Specifications*.
3. Perennial Plants. Perennial plants can be planted as bulbs, tubers, or container plants. Bulbs and tubers should be of a size large enough to produce a healthy plant and to flower the first year. Container plants should be well rooted in the container. A quart sized container is usually the smallest size that should be planted on highway projects.
4. Prairie Forbs and Grasses. Prairie forbs and prairie grasses can be planted as root plugs or as seed. The minimum size plug should be 1.25 in (30 mm) in diameter by 4.25 in (110 mm) deep.

41-10.01(e) Considerations for Plantings

Consider the following:

1. Fertilizing and Mulching. For survivability and lack of future maintenance, give consideration to fertilizing and mulching all plantings.
2. Roadside Safety. Do not locate woody plants with diameters at maturity greater than 4 in (100 mm) in the clear zone, as defined for new construction. These plants should not be planted on the front slope or in ditches even if outside the clear zone.
3. Existing Soil. Where practical, use the existing soil in the planting operation. In cases where highway construction has made the condition of the existing soil unsuitable, consider the use of soil amendments or new topsoil. When soil conditions require topsoil placement to ensure adequate growth, specify 8 in (200 mm) where extensive plantings of woody or perennial plants are proposed.
4. Impacts of Salt. Due to the adverse effect of salt upon plants, give special consideration to the type and location of plants and their proximity to the roadway in those areas of the State where there is extensive snow and ice control.
5. Agricultural Areas. Do not plant large trees or evergreens on the right-of-way where there is adjacent agricultural land use due to their shading characteristics and their impact on farm machinery mobility.
6. Signage. Do not place plants in a location that will block the view of legally placed advertising signs.

7. Screening. Landscape plantings are used to screen adjacent properties that have undesirable land usage; to reduce highway noise, dust, etc., reaching adjacent properties; and/or to screen the highway from a residential area or park.
8. Sight Distance. When planting in urban areas, consider potential sight distance problems and the problems of obstructing traffic signals, signs, lighting, etc.
9. Snow Drifting. Do not plant dense continuous hedges within 40 ft (12 m) of the edge of pavement where they may cause snow to drift onto the pavement.

41-10.02 Classification

Consider the following groups for planting:

1. Shade Trees. A single-stem, high-headed, deciduous plant that generally grows to a height in excess of 30 ft (9 m).
2. Intermediate Trees. Generally, a multi-stem, deciduous, low, round-headed plant that matures at 30 ft (9 m) or less in height.
3. Shrubs. Low-growing multiple stemmed plants that are either deciduous or evergreen.
4. Evergreen Trees. Tall-growing evergreen plants.
5. Ground Cover and Vines. A colony forming plant less than 1.5 ft (0.5 m) high that has the ability to spread and root itself.
6. Seedlings. Small shade trees, intermediate trees, shrubs, and evergreens that are usually less than 2 years old.

41-10.03 Turf Grasses

Non-native grass, grains, legumes, and native grasses form the backbone of highway vegetation cover. The large number of species and varieties of vegetative cover may be used for many applications. Consider the following guidelines:

1. Temporary Erosion Control. Use temporary vegetative cover for temporary erosion control at locations where the duration of the turf cover is short term and is expected to prevent loss of soil.
2. Permanent Erosion Control. Permanent vegetative cover is used for permanent erosion control in most highway applications. To achieve a cost-effective permanent cover, select a type of turf grass appropriate to the landscape conditions and planned maintenance.

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3. Weed Control. Good turf establishment will minimize weed growth, thereby reducing pesticide requirements.
4. Groomed Appearance. Provide a vegetative cover that can be mowed into a park-like appearance. In urban settings, use a lawn-type mixture to blend in with the urban landscape.
5. Wildlife. Provide a vegetative cover that will enhance and encourage wildlife.
6. Sodding. Seed mixtures are most commonly used; however, some instances may call for the use of sodding to provide for the rapid establishment of turf.
7. Applications. The turf grasses specified in the *Standard Specifications* are used for specific applications as follows:
 - a. Lawn Mixtures. Lawn mixtures are used in urban settings to create a park-like appearance and require a relatively high degree of maintenance.
 - b. Salt Tolerant Mixtures. Salt tolerant mixtures are used along road segments where de-icing salts are heavily used.
 - c. Roadside Mixtures. Roadside mixtures are used in more rural settings where a tougher, lower maintenance turf is desired.
 - d. Slope Mixtures. Slope mixtures are used on slopes usually 1V:3H or greater.
 - e. Native Grass and Forb (Wildflower) Mixtures. Native grass and forb (wildflower) mixtures can be planted to create specific turf conditions; see Section 59-7.05 of the *BDE Manual*.
 - f. Conservation Mixtures. Conservation mixtures are used for wildlife nesting cover. These are usually planted at the request of resource agencies.
 - g. Temporary Erosion Control Mixtures. Temporary erosion control mixtures are seeded to prevent soil from being displaced on a construction project that will be exposing soil. The mixture is spread over all exposed earth to provide a quick cover of the turf that will interrupt the force of rain on the soil and prevent soil from moving. The temporary erosion seed mixture may need to be spread on construction sites numerous times during construction activities. The temporary erosion control mixture also can be combined with a permanent erosion control mixture to provide a nurse crop while the permanent seed is establishing.

41-10.03(a) Seeding

The seeding operation that is conducted in the field occurs in a series of steps. The most important aspects of seeding are seed mixture selection, site preparation, and placement of mulch. Select the class of seed mixtures that are appropriate to the specific roadside environment. Consider the following:

1. Class 1 (Lawn Mixture). Use Class 1 seeding in an urban setting.

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- a. Class 1A (Salt Tolerant Lawn Mixture). Use Class 1A seeding for:
 - urban projects not covered in Class 1B, and/or
 - all projects where the entire right-of-way is not torn up and Bluegrass is the primary existing cover.
- b. Class 1B (Low Maintenance Lawn Mixture). Use Class 1B in the southern half of the State for urban projects.
2. Class 2 (Roadside Mixture). Class 2 seeding is a hardy roadside turf and should be used where reduced mowing will occur. Use Class 2A seeding (Salt Tolerant Roadside Mixture) for:
 - all rural reconstruction projects where the entire right-of-way is to be seeded or any situation where grasses other than Bluegrass are the primary existing cover, and/or
 - areas adjacent to roads subject to salt spray and/or disposition.
3. Class 3 (Slope Mixture). Use Class 3 seeding in rural areas for slopes 1V:3H or steeper.
4. Class 4, 4A, 4B, 5, 5A, 5B (Native Grass and Forbs Mixture). See Section 59-7.05 of the *BDE Manual* for additional discussion.
5. Class 6 and 6A (Conservation Mixture). Class 6 seeding is used for wildlife cover in the east central part of Illinois. Class 6A seeding is a Class 6 which includes salt tolerant grass. Use caution when considering this class with other seeding classes.
6. Class 7 (Temporary Turf Cover). Class 7 seeding is used as a temporary cover for areas to be regraded more than a year from the time of seeding. Use Class 7 for winter shut down. Provide temporary mulch or erosion control blanket with Class 7 seeding.

Use the Temporary Erosion Control Seeding System weekly for shorter-term temporary cover.

41-10.03(b) Sodding

Appropriate uses of sodding are as follows:

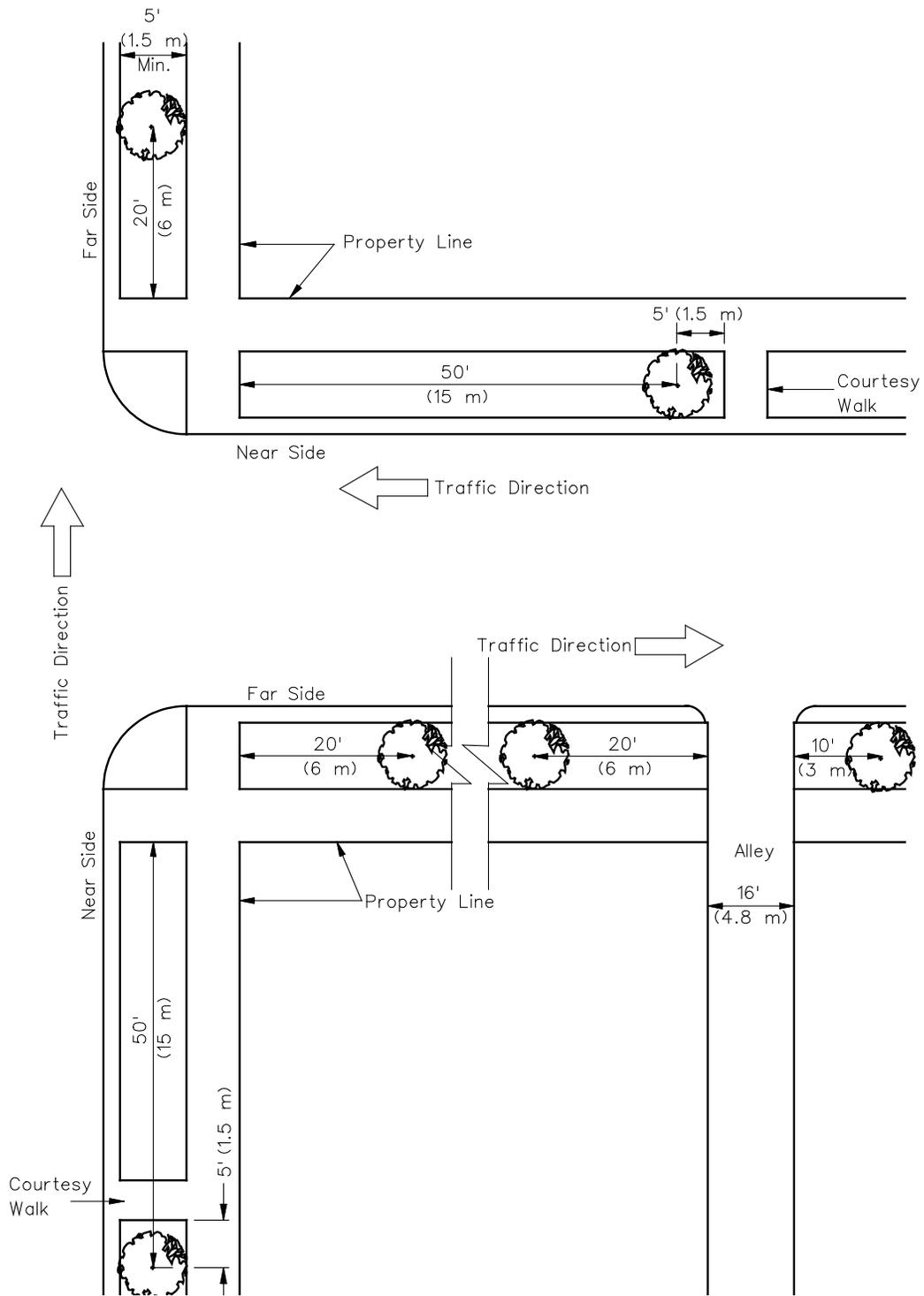
- urban areas with residential or commercial development (e.g., in front of homes, businesses, parks, adjacent to paved shoulders or edges of paved ditches);
- in front of maintained parks and cemeteries;
- erosion control in ditch bottoms and around culverts; and
- special areas (e.g., channelized medians, around inlets in grassed areas). Small areas which would normally be seeded should be sodded where a large majority of the remainder of the project (90% +/-) is to be sodded.

Specify salt tolerant sod in those areas where large quantities of deicing salt are used by maintenance forces (e.g., highly urbanized areas).

41-10.04 Planting in Urban Areas

Use the following criteria for planting in urban areas:

1. Minimum Distance from Intersections, Alleys, and Driveways. The following criteria relates to distances as measured from the property line and along the property lines:
 - a. Intersections. Do not locate trees within 50 ft (15 m) on the near side and 20 ft (6 m) on the far side of the intersection; see Figure 41-10A. Trees on medians should be located a minimum of 50 ft (15 m) from intersections.
 - b. Alleys. Do not locate trees within 20 ft (6 m) on the near side and 10 ft (3 m) on the far side.
 - c. Commercial Driveways. Do not locate trees within 20 ft (6 m) on the near side and 10 ft (3 m) on the far side.
 - d. Residential Driveways. Do not locate trees within 10 ft (3 m).



MINIMUM PLANTING DISTANCES FROM INTERSECTIONS

Figure 41-10A

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2. Minimum Distances from Walks, Curbs, Utilities, and Structures. The following criteria applies from face of curb or center of utility to edge of tree, as measured horizontally:
- sidewalks and carriage walks — 3 ft (900 mm),
 - access of courtesy walks — 5 ft (1.5 m),
 - face of curb — 4 ft (1.2 m),
 - manholes and catch basins — 10 ft (3 m),
 - fire hydrants — 10 ft (3 m),
 - underground utility mains and services — 5 ft (1.5 m),
 - street lights — see Item 3,
 - existing trees — see spacing criteria below,
 - overhead wires — do not plant ascending shade trees under overhead wires,
 - railroad crossings — 100 ft (30 m), written approval from railroad is required to plant within 100 ft (30 m), and
 - other structures — 30 ft (9 m) or as directed.

These requirements are for reduced speed urban areas and must be adjusted for higher speeds so that clear zone and sight distance requirements are met.

3. Minimum Basal Clearance Between Trees and Structures. Basal clearance is defined as the distance from the center of the tree to the structure or object involved. Minimum basal clearance between trees and between trees and structures located on parkways, medians, or other areas of the right-of-way are as follows:
- Trees with spreading crowns must have a minimum basal clearance of 15 ft (4.5 m).
 - Trees with global or pyramidal crowns must have a minimum basal clearance of 12 ft (3.6 m).
 - Trees with fastigiated or columnar crowns must have a minimum basal clearance of 10 ft (3 m).
 - Do not plant trees in areas where basal clearance is less than 10 ft (3 m).
 - Select tree species from the approved tree list of the district Landscape Architect or from a municipal tree list if it is applicable to the project site.
4. Spacing of Trees Within Parkway. Use the following criteria for spacing of trees within parkways:
- Space trees with spreading crowns at a minimum of 30 ft (9 m).
 - Space trees with global or pyramidal crowns at a minimum of 25 ft (7.5 m).
 - Space trees with fastigiate or columnar crowns at a minimum distance of 20 ft (6 m).

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5. Spacing Between Trees Within Median or Other Right-of-Way Areas. Spacing will follow the same criteria given for spacing between trees within parkways.
6. Width of Parkway, Medians, and Other Public Ways. Landscape designs must be so arranged to provide a sufficiently wide, clear, and safe pedestrian walkway. The required width will in no case be less than 6 ft (1.8 m) wide, measured from a line 1 ft (300 mm) within the right-of-way. Use the following criteria:
 - a. Minimum Width of Parkways. Use the following criteria for minimum width of parkways:
 - Do not plant trees on any parkway that is less than 6 ft (1.8 m) in width.
 - Do not plant trees on any commercial or industrial sidewalk or cut-out in a sidewalk that is less than 16 ft (4.8 m) in width.
 - b. Minimum Width of Medians. Do not plant trees on any median that is less than 10 ft (3 m) in width.

41-10.05 Erosion and Sediment Control

41-10.05(a) Background

Appropriate implementation of erosion and sediment is necessary on highway construction projects as necessary to protect the roadway and associated rights-of-way, adjacent properties, and sensitive environmental resources (e.g., endangered and threatened species, wetlands, water bodies, and other resources for which the LPA commits to the implementation of erosion and sediment control measures). The policies documented in this Section are for use to comply with FHWA regulations on erosion and sediment control which are detailed in 23 C.F.R. 650, Subpart B. They also ensure fulfillment of commitments for erosion and sediment control associated with Section 404 permits issued by the U.S. Army Corps of Engineers, or such commitments made to the Illinois Environmental Protection Agency (IEPA), and other regulatory and natural resource agencies during project development.

The National Pollutant Discharge Elimination System (NPDES) program under Section 402 of the *Federal Clean Water Act* currently imposes erosion and sediment control requirements on construction projects that involve disturbance of 1 acre (4047 m²) or more of total land area.

41-10.05(b) Policy

Provide erosion and sediment control on all projects that will expose areas of soil to potential displacement by storm events such that sediment could adversely affect operations on the highway or associated rights-of-way, could be introduced into receiving waters, or could affect adjacent properties, sensitive environmental resources, or other resources for which a commitment was made to protect from sedimentation impacts. The nature and extent of the control measures should be appropriate to address the specific conditions involved and the measures will be properly maintained to ensure continued effective operation.

Projects that involve no clearing and grubbing, excavation, stockpiling of topsoil, borrow, or construction of embankment normally will not require erosion and sediment control measures. Projects that involve only isolated excavation for installation of lighting, signing, traffic signals, guardrail, or woody plant materials likewise normally will not require erosion and sediment control measures. The following are examples of actions that normally will not require erosion and sediment control measures:

- installation of lighting, signing, traffic signals, or guardrail,
- weed spraying,
- pavement marking,
- seal coating,
- bituminous resurfacing,
- pavement patching, and
- planting of woody landscaping materials.

Evaluate the need for erosion and sediment control, and any additional right-of-way necessary to accommodate their implementation, prior to the preparation of design plans and include the appropriate information to address the identified needs in the plans. Erosion and sediment control needs should be evaluated and addressed for construction of both roadway and bridge/culvert components of proposed projects. The selection and application of erosion and sediment control measures should reflect use of the best temporary and permanent devices and practices appropriate for the site and project conditions.

41-10.05(c) Temporary Erosion Control Systems

Temporary erosion control systems are meant to control erosion and sediment damages to the roadway, adjacent properties, and water resources during the construction phase and before the final erosion control measures can be placed. Temporary practices include the use of sedimentation basins, temporary ditch checks, perimeter erosion barriers, temporary seeding, and other erosion control devices and methods. The designer must ensure that the temporary erosion control system is fully coordinated with the permanent erosion control measures. The following are the various available types of erosion and sediment control systems and the applications to which each is best suited:

1. Temporary Ditch Checks. When used, this system acts as a dam and slows the velocity of water through the project. Temporary ditch checks should be used at the outfall of existing ditches to collect silt. Straw bales, rolled excelsior, or urethane foam/geotextile ditch checks should be used for newly seeded ditch lines that have a velocity of less than 8 ft/sec (2.4 m/sec). Aggregate ditch checks should be used for ditch lines with a velocity of 8 ft/sec (2.4 m/sec) or greater.

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2. Perimeter Erosion Barrier. This system is used to prevent exposed soil along the perimeter of the project from leaving the job site and can prevent exposed soil adjacent to the project from entering the job site. The NPDES Permit requires the perimeter erosion barrier to be in place prior to any earth disturbing activities. The designer should specify this system at the limits of the construction site where sediment in sheet flow will run off from the area under construction and can be captured.
3. Inlet and Pipe Protection. This system protects inlets that will receive runoff from areas within the limits of construction and inlets along access streets where material will be tracked by construction vehicles. Inlet and pipe protection for initial sediment control should be specified for existing inlets.
4. Sedimentation Basins. Sedimentation basins are settling ponds constructed to trap waters carrying sediment. The basins detain sediment laden runoff from larger drainage areas long enough for most of the sediment to settle out. Sedimentation basins have a maximum designed depth of 2.5 ft (750 mm) and a maximum designed allowed drainage area of 5 acres (2 ha). Guidance for use of sediment basins can be found in the *Illinois Urban Manual*.
5. Temporary Ditches. This system is constructed to divert and/or intercept water borne silt and runoff at designated locations. Temporary ditches are also used to divert clean water around construction sites and to stop the mixing of clean waters with silt-laden waters. It may be necessary to line the temporary ditch with a fabric barrier to stop sediment introduction into the waterway. Ditches can create safety hazards on construction sites that should be considered and adequately protected. Guidance for use of temporary ditches can be found in the *Illinois Urban Manual*.
6. Temporary Erosion Control Seeding. This system should be used on a weekly basis to cover those areas of exposed soil due to contractor operations. The designer should specify temporary erosion control seeding on all projects where grading or soil stockpiling is involved. Erosion control blanket should be specified for use with temporary erosion control seeding for exposed areas adjacent to bodies of water, for lining ditches, and for slopes 1V:3H or steeper.
7. Temporary Mulch. This system should be specified for temporary cover when grading will occur on a project after September 30th or in the winter when temporary seed will not germinate and provide erosion protection until the following spring. Mulch, Method 1; Mulch, Method 2; and Erosion Control Blanket are the various methods used for temporary mulch.
8. Aggregate (Erosion Control). This system can be used as an erosion control method to prevent soil displacement. Various uses would include aggregate ditch checks, aggregate lined ditches, or aggregate for temporary construction entrances. The designer should specify the proper aggregate gradation. Guidance for use of aggregate for erosion control can be found in the *Illinois Urban Manual*.

Additional information can be found in Section 59-8 of the *BDE Manual*.

41-11 DESIGN CONSIDERATIONS FOR UTILITIES

The designer should consider the following in designing utility placements:

1. Utility Locations. Utility installations should be located as follows:
 - a. General. Consider the following:
 - Locate above-ground utilities as far from the traveled way as practical. Desirably, locate the utility within 1 ft (300 mm) from the right-of-way line.
 - New utilities installed under paved or shoulder areas must be constructed of long life materials that are expected to be maintenance free.
 - Locate ground-mounted appurtenances for underground facilities within 1 ft (300 mm) or as near as practical to the right-of-way line.
 - Install suitable markers at the right-of-way line for any high-pressure gas or liquid fuel line that crosses a roadway.
 - No utility appurtenances (e.g., pumping stations, transformers) will be allowed within interchange right-of-way.
 - Special restrictions may be placed on utility companies where visual quality is an important consideration. See the *IDOT Accommodation of Utilities on Right-of-Way of the Illinois Highway System* for more information.
 - b. Longitudinal Utilities. Consider the following:
 - No new above-ground longitudinal utilities, including any above-ground appurtenances for underground installations, should be placed within the clear zone. Where it is necessary to locate installations within the clear zone, give consideration to locating the installation where there is low probability it can be struck by a vehicle, make it breakaway, or provide a barrier or crash cushion; see Chapter 35.
 - Locate longitudinal utilities parallel and as near as practical to the right-of-way line but not more than 8 ft (2.4 m) from the right-of-way line.
 - No new longitudinal utility installations should be permitted under the paved portion of streets and highways unless there is no other practicable location available.
 - c. Manholes. Consider the following:
 - New manholes should not be permitted in the traveled way or shoulders of rural highways. Existing manholes may remain in place.
 - Manholes may be permitted in city streets where existing utilities have been permitted to remain in place under existing or proposed roadways.
 - New manholes should not be permitted at intersections.
 - d. Utility Crossings. Consider the following:
 - Utility crossings should be approximately 90° to the highway centerline as practical.
 - Utility crossings should be installed by trenching except under paved roads.
 - Install utility crossings under paved roads by boring or jacking. Trenching may be acceptable in special cases if approved by the proper highway authorities.
 - Utilities should not be permitted to cross under highways in cattle passes, culverts, or other drainage facilities.

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2. Cover. The following cover criteria, below the pavement surface, will be required for underground installations:
 - a. Power. These installations will require a minimum cover of 2.5 ft (750 mm).
 - b. Communication. Where these installations are installed by the plowed method, the minimum cover will be 2 ft (600 mm).
 - c. Gas Pipelines. Gas installations must have a minimum cover of 2.5 ft (750 mm) at all locations within the highway right-of-way.
 - d. Water Lines. To prevent freezing, place water lines below the frost line.
 - e. Sewers and Drain Lines. Storm sewers, sanitary sewers, and drain lines must have a minimum clearance of 2.5 ft (750 mm) to the top of pipe to prevent freezing.
3. Casings. Where casings are used for underground utilities, the following criteria is required:
 - Install at least one vent located on the high side and extend to the right-of-way line.
 - Place vents above the pipeline to serve as markers for a crossing utility.
4. Aerial. The following will apply to power lines and/or communication lines:
 - a. Guy Wires and Brace Posts. These devices should not be allowed within the right-of-way.
 - b. Overhead Clearances. For overhead power and communication lines crossing the highway or street, the minimum vertical clearance is 18 ft (5.5 m).
 - c. Location. In general, aerial utility poles should be located as close to the right-of-way line as practical. However, for urban areas the following will apply:
 - Curbed. For curbed sections, the placement distance of poles behind the face of the curb shall be at least 1.5 ft (500 mm), measured to the closest face of the pole.
 - Curb and Gutter. For curb and gutter sections, place the poles a minimum of 2 ft (600 mm) from the face of curb. In addition, the clear zone distance must be checked.
 - Shoulder with Curb and Gutter at Shoulder Edge. The minimum pole placement is 4 ft (1.2 m) beyond the outside of the shoulder to the closest face of the pole. In addition, the clear zone distance must be checked.
 - Sidewalks. Where there are sidewalks, provide a minimum of 3 ft (1 m) of "obstacle free sidewalk," where feasible.
5. Attachments to Structures. If it is determined that there is no reasonable alternative means of attachment except to the main structural member or to the deck, the following locations may be considered in the listed order of preference:
 - diaphragms,
 - beams, and
 - deck.

The structural integrity of the structure must be checked. See Section 36-2.04 for additional information.

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6. Light Standards. Place light standards and power poles in accordance with the criteria presented in Section 56-5 of the *BDE Manual*.
7. Detours. Awareness of potential utility conflicts is extremely important when constructing detours near the right-of-way line or on temporary right-of-way.

41-12 SPEED HUMPS AND TABLES

41-12.01 Speed Humps

41-12.01(a) General

Speed humps are raised sections of pavement that are placed across the entire width of a highway to reduce vehicle speeds and enhance pedestrian safety. Speed humps have a more gradual slope than traditional speed bumps. Therefore, speed humps are more effective at slowing traffic to a desired design speed. In addition, speed humps are a low cost tool. However, speed humps may be controversial in some localities due to their appearance, jarring effects on vehicles and passengers, and impact to emergency response vehicles.

Speed humps shall not be installed if highway drainage is not considered or in the path of a pedestrian crossing or curb ramp.

41-12.01(b) Design

The best speed hump designs employ a very gradual slope. Traditional designs include a 3 - 4 in (75 - 100 mm) vertical elevation change, with the width varying based on the design speed, although many LPAs limit the height of speed humps to 3 to 3 ½ in (75 to 83 mm). Figure 41-12A provides the typical speed hump length and design speed.

Length of Speed Hump	Typical Design Speed
12 ft (3.7 m)	15 mph (25 km/h)
14 ft (4.3 m)	20 mph (30 km/h)
22 ft (6.8 m)	25 - 30 mph (40 - 50 km/h)

SPEED HUMP LENGTH AND DESIGN SPEED

Figure 41-12A

The *ILMUTCD* provides marking and signing requirements.

41-12.01(c) Impact on Pedestrian Access

In general, speed humps enhance pedestrian safety by effectively slowing traffic. However, people with mobility impairments may experience problems on speed humps. For example, people with back or neck problems may experience pain or discomfort caused by the jarring effect when traveling over speed humps in an automobile. This is further complicated if the person relies on para or public transit and does not have control over the speed of the vehicle.

41-12.02 Speed Tables

41-12.02(a) General

Speed tables are speed humps with a flat section on top. Speed tables may be used as raised crosswalks to serve as a pedestrian crossing. Speed tables are preferred over speed humps by emergency response vehicles.

Speed tables shall not be installed if highway drainage is not considered.

41-12.02(b) Design

The length of speed tables should accommodate the entire wheel base of a passenger vehicle to rest on the flat section. The flat section is typically 10 ft (3.1 m) long. Combined with gently sloped ramps, speed tables permit slightly higher motorist speeds and smoother transitions than speed humps. Traditional designs include a 3 - 4 in (75 - 100 mm) vertical elevation change with the width varying based on the design speed. However, if used as a raised crosswalk, the height should match the curb height. Figure 41-12B provides the typical speed table length and design speed.

Length of Speed Table (including 10 ft flat section)	Typical Design Speed
22 ft (6.8 m)	20 mph (30 km/h) ¹
24 ft (7.4 m)	25 mph (40 km/h) ¹
32 ft (9.8 m)	30 mph (50 km/h) ¹

Note: 1. Reduce design speed by 5 mph (10 km/h) or use longer speed table if the height of the speed table is greater than 4 in (100 mm).

SPEED TABLE LENGTH AND DESIGN SPEED

Figure 41-12B

The *ILMUTCD* provides marking and signing requirements.

41-12.02(c) Impact on Pedestrian Access

Speed tables have the same pedestrian safety impact as speed humps by effectively slowing traffic. However, when used as a pedestrian crossing, an added safety impact is the increased visibility of pedestrians crossing the highway. Speed tables resolve some of the access problems for people with mobility impairments. However, when used as a pedestrian crossing, detectable warnings shall be installed (See Section 41-6).

41-13 REFERENCES

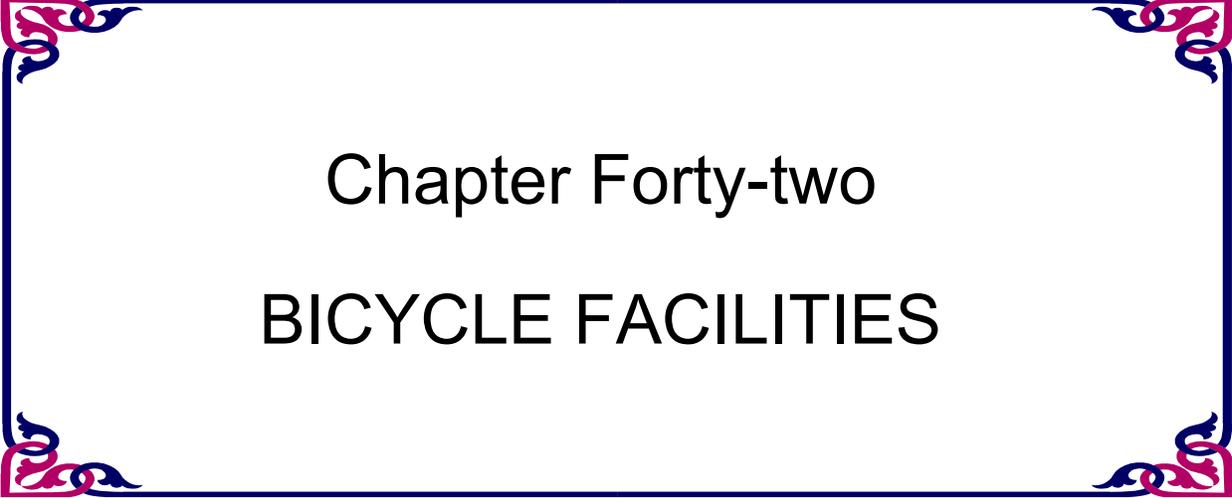
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BICYCLE FACILITIES

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Chapter Forty-two
BICYCLE FACILITIES

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Chapter Forty-two

BICYCLE FACILITIES

42-1 BICYCLE ACCOMMODATIONS

42-1.01 Definitions

1. Bicycle. Every vehicle propelled solely by human power upon which any person may ride, having two tandem wheels, except scooters and similar devices. The term “bicycle” in the context of this Chapter also refers to three- and four-wheeled human-powered vehicles, but not children’s tricycles.
2. Bicycle Route (Bike Route). A segment within a system of bikeways designated by the agency having jurisdiction of the facility with appropriate directional and informational markers, with or without a specific bicycle route number, on-pavement striping, or other markings or signage.
3. Bikeway. A generic term for any road, street, path, or traveled way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or shared with other transportation modes.
4. Bike Lane. The portion of a roadway surface that is designated by pavement markings and signing for the exclusive use of bicyclists.
5. Bicycle Path/Shared-Use Trail/Sidepath. A facility physically separated from the roadway and intended for bicycle or other non-motorized transportation (e.g., pedestrians, disabled persons in wheelchairs, in-line skaters). The terms path and trail generally are describing the same facility. Sidepath refers to a path or trail closely associated with and parallel to a roadway.
6. Bicycle Facilities. A broad term which includes bikeways, shared roadways, shoulders (which may be used by bicyclists), traffic control devices, shelters, and parking facilities for bicycles.
7. Rail-Trail. A shared use path, either paved or unpaved, built within the right-of-way of an existing or former railroad.
8. Shared Lane. A lane of traveled way on any roadway upon which a separate bicycle lane is not designated and which may be legally used by bicyclists regardless of whether such facility is specifically designated as a bikeway.
9. Urbanized Area. An Urbanized Area is a statistical geographic entity designated by the Census Bureau, consisting of a central core and adjacent densely settled territory that together contain at least 50,000 people, generally with an overall population density of at least 1,000 people per square mile.

42-1.02 Policy

The local public agency (LPA) should consider the travel needs of all users of a transportation corridor when planning transportation improvements. Bicycle facilities shall be considered on all Federal-aid projects and should also be considered on MFT projects, where practical.

This chapter provides a general overview of bicycle planning and design concepts. However, the latest edition of the AASHTO Guide for the Development of Bicycle Facilities should be consulted. If the LPA desires to use another bicycle design standard, the LPA shall provide documentation that the design standard is accepted by FHWA or other national organizations. For all LPA projects that are on, impact, or cross a state route, the LPA shall follow Chapter 17 of the BDE Manual.

42-1.03 Needs Assessment

The LPA shall determine the need for bicycle accommodations based on anticipated demand, community plans, and traffic safety considerations. The following guidelines should be considered:

- The highway or street is designated as a bikeway on a regionally or locally adopted bike plan or published in a regional or locally adopted map as a recommended bike route.
- The 5-year projected two-way bicycle traffic volume after completion of the project is 25 ADT or greater during the peak three months of the bicycling season on a highway or street where the current vehicular traffic exceeds 1000 ADT. See Section 42-3.01 for information concerning bicycle demand analysis.
- The route provides primary access to a park, recreational area, school, other designated bikeways/trails, or other significant destination.
- The route provides unique access across a natural or man-made barrier (e.g., bridges over rivers, roadways, railroads) or under access-controlled facilities and roadways.
- The highway project negatively affects the recreational or transportation utility of an independent bikeway or trail. Highway projects will negatively affect at-grade bikeways, paths, and trails where they are severed, when the projected roadway traffic volumes increase to a level that prevents safe crossings, or where the widening of the roadway prohibits sufficient time for safe crossing.
- Provisions may also be necessary to safely accommodate bicycle traffic on highways where bridge decks are being replaced or rehabilitated.

The following additional guidance is provided to determine bicycle accommodation need where bicycle travel is difficult to predict:

1. Urbanized Areas. Because of the potential for bicycle travel, bicycle accommodation will likely be needed in the majority of urbanized areas, particularly at points of community development that generate, attract, or result in commercial, recreational, or institutional establishments near or along highways, at present or in the planned future.
2. Rural Towns. Bicycle accommodation may be needed in rural towns located on main highways where bicycle travel within the community and from the outlying populated areas could justify such accommodation.

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3. Rural Highway Projects. Bicycle accommodation will likely be needed on rural highway projects that provide unique access over a major barrier (e.g., river) or that connect an urbanized area to a rural attraction (e.g., park).
4. Unpopulated Rural Areas. In unpopulated rural areas, typical origins and destinations are far less frequent. Thus, bicycle accommodation may not be needed. However, when roadways provide unique access or bicycle accommodations are called for in approved or adopted plans, then bicycle accommodations should be considered.

Section 42-2 provides checklists to assist the LPA in deciding if bicycle facilities should be included. If it is determined that the volume and character of existing and future bicycle travel in the vicinity of a project justify the provision of bicycle facilities, provide the appropriate accommodations as discussed in Section 42-3.

|

42-2 CHECKLIST FOR BICYCLE ACCOMMODATIONS

Include a checklist in the Project Development Reports for Federal projects where Section 42-1.03 requires the evaluation of the potential for bicycle accommodations. If provisions for adequate bicycle accommodations are already designed, provide a descriptive statement regarding the bicycle accommodations in lieu of a checklist. A checklist may also be used as a guide for bicycle accommodations on projects constructed with other funds.

42-2.01 Bicycle Travel Generators in the Project Vicinity

Potential bicycle travel generators in the vicinity of a project should be reviewed and recorded. A checklist of the potential bicycle travel generators is provided in Figure 42-2A. Record the types of generators within 1.2 miles (2 km) of the project corridor. Attach a legible map of this area showing these generators. An example project location map is provided in Figure 42-2B. Sections of municipal or township maps are acceptable, as well as photocopies of aerial photos. Indicate where bicyclists will cross or ride along the corridor on the map. Also, indicate the absence of any of these types of destinations, therefore providing the justification for the exclusion of accommodations for bicycle travel.

Generators	Yes	No	Generators	Yes	No
Residential Areas	<input type="checkbox"/>	<input type="checkbox"/>	Shopping Centers	<input type="checkbox"/>	<input type="checkbox"/>
Parks	<input type="checkbox"/>	<input type="checkbox"/>	Hospitals	<input type="checkbox"/>	<input type="checkbox"/>
Recreation Areas	<input type="checkbox"/>	<input type="checkbox"/>	Employment Centers	<input type="checkbox"/>	<input type="checkbox"/>
Churches	<input type="checkbox"/>	<input type="checkbox"/>	Government Offices	<input type="checkbox"/>	<input type="checkbox"/>
Schools	<input type="checkbox"/>	<input type="checkbox"/>	Local Businesses	<input type="checkbox"/>	<input type="checkbox"/>
Libraries	<input type="checkbox"/>	<input type="checkbox"/>	Industrial Plants	<input type="checkbox"/>	<input type="checkbox"/>
Existing Bicycle Trails	<input type="checkbox"/>	<input type="checkbox"/>	Public Transportation Facilities	<input type="checkbox"/>	<input type="checkbox"/>
Planned Bicycle Trails	<input type="checkbox"/>	<input type="checkbox"/>	Other _____	<input type="checkbox"/>	<input type="checkbox"/>

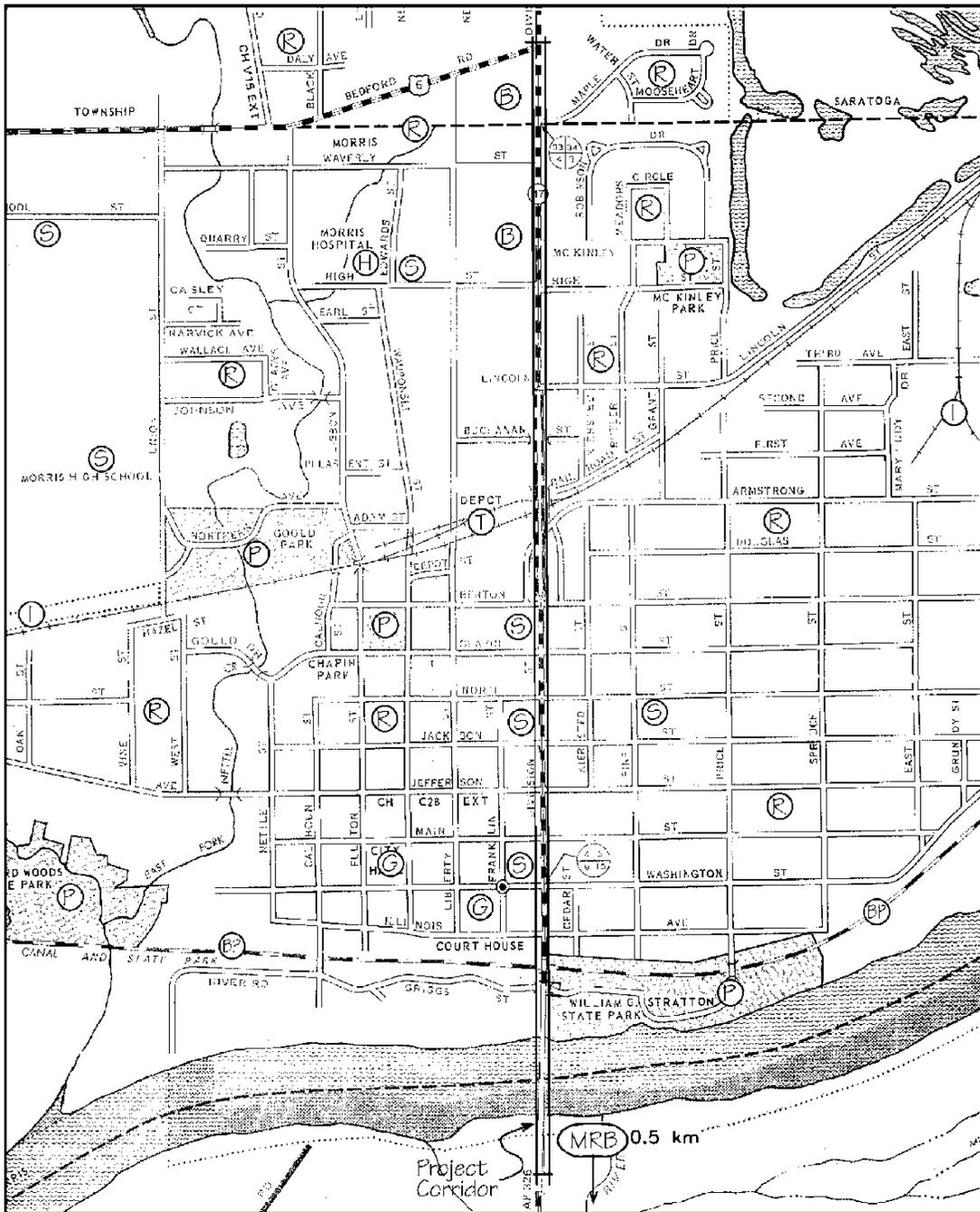
CHECKLIST FOR BICYCLE TRAVEL GENERATORS IN PROJECT VICINITY

Figure 42-2A

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R	Residential	BP	Existing Bicycle Trails	G	Government Offices
P	Parks	PBP	Planned Bicycle Trails	B	Local Businesses
P	Recreational Areas	M	Shopping Centers	I	Industrial Plants
C	Churches	H	Hospitals	T	Public Transit Facilities
S	Schools	E	Employment Centers		

EXAMPLE OF MAP TO ACCOMPANY CHECKLIST FOR BICYCLE TRAVEL

Figure 42-2B

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42-2.02 Public Coordination

Use a checklist similar to the checklist provided in Figure 42-2C to note whether those organizations have been contacted to assess nearby bicycle travel or planned development of recreational trails or other bicycle travel generators. Include documentation of these written contacts and all applicable replies in the Project Development Report.

Organization	Yes	No	Organization	Yes	No
Metropolitan Planning Organization (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>	League of Illinois Bicyclists	<input type="checkbox"/>	<input type="checkbox"/>
Local Municipalities	<input type="checkbox"/>	<input type="checkbox"/>	Illinois Department of Natural Resources	<input type="checkbox"/>	<input type="checkbox"/>
Park or Forest Preserve Districts	<input type="checkbox"/>	<input type="checkbox"/>	Trails for Illinois	<input type="checkbox"/>	<input type="checkbox"/>
Sub-Regional Planning Council (as appropriate)	<input type="checkbox"/>	<input type="checkbox"/>	Active Transportation Alliance (District 1 only)	<input type="checkbox"/>	<input type="checkbox"/>
Local Bicycle Clubs, Advocacy Groups	<input type="checkbox"/>	<input type="checkbox"/>			

CHECKLIST FOR ORGANIZATIONS AND PUBLIC COORDINATION

Figure 42-2C

42-2.03 Assessment of Bicycle Travel

Based on the indicators discussed in Section 42-2.01 and 42-2.02, the LPA should attach additional information, if appropriate. Use the following questions as a basis for including additional information.

1. Where and how would bicyclists cross the project?
2. Where and how would bicyclists need to ride parallel to the project?
3. Does the project provide access across a river, railroad, highway corridor, or other natural or man-made barrier?
4. Will the highway project negatively affect the recreational or transportation utility of an independent existing or planned bikeway or trail? Highway projects will negatively affect at-grade paths and trails when they are severed, when the projected roadway traffic volumes increase to a level that prohibits safe crossings at grade, or where the widening of the roadway prohibits sufficient time for safe crossing?
5. Does the route provide important or primary access to a park, recreational area, school, or other significant destination?
6. Is the highway or street designated as a bikeway in a regionally or locally adopted bike plan, or published in a regionally or locally adopted map, as a recommended bike route?
7. Will the projected two-way bicycle traffic volume approximate 25 ADT or more during the peak three months of the bicycling season five years after completion of the project (See Section 42-3.01).

42-3 BICYCLE FACILITY DESIGN GUIDELINES

Use the current edition of AASHTO's *Guide for the Development of Bicycle Facilities* as the primary source for planning and design guidance. In addition, FHWA has recommended the use of the National Association of City Transportation Officials' *Urban Bikeway Design Guide* and the Institute of Transportation Engineers' *Designing Urban Walkable Thoroughfares* for the development of bikeways in urban areas.

42-3.01 Bicycle Facility Design Analysis

In order to build or improve bicycle facilities, the LPA should analyze existing conditions, as well as public and stakeholder input, to determine the type and capacity of any bicycle facility. The methods described in this section provide the LPA with options to synthesize a large amount of complex data. However, the LPA should consider which method or combination of methods to use.

42-3.01(a) Data Collection and Flow Analysis

Bicycle related data collection is an important part of understanding, planning, maintaining, and operating a bicycle facility. Bicycle count and movement analysis may be used to:

- Identify Corridors
- Understand Patterns of Usage
- Forecast Bicycle Travel Demand
- Track Community-wide Bicycle Use
- Project Future Bicycle Use
- Analyze Specific Travel Patterns

If bicycle traffic volume data is not available, the LPA may estimate the bicycle traffic volume by multiplying the highway traffic volume data by the bicycle commuting percentage from census data. However, this method is most accurate in the urbanized area where census tracts or more compact.

42-3.01(b) Bicycle Level of Service

Bicycle Level of Service (Bicycle LOS) evaluates bicyclists' perceived safety and comfort with respect to motor vehicle traffic while traveling in a roadway corridor. Bicycle LOS provides a score for each roadway that indicates how comfortable a typical adult bicyclist would feel while riding along that roadway during peak travel conditions. See Section 27-6.04 and the Highway Capacity Manual for more information.

42-3.01(c) Safety Analysis

Analysis of crash data to identify intersections or corridors where most bicycle-motor vehicle crashes occur, including "dooring" type crashes, will assist identifying locations for bicycle facilities.

42-3.01(d) Bicycle Demand Analysis

Evaluating bicycle travel demand shares some similarities to motor vehicle travel demand modeling by forecasting future needs based on objective data inputs. However, bicycle travel demand should also account for latent demand (demand that is not apparent, but underlying). Therefore, bicycle travel demand methods make assumptions regarding how many people would choose to bicycle along a given corridor if bicycle accommodations are made. Types of bicycle demand analysis include:

- Comparison Study
- Sketch Plan Methods
- Market Analysis/ Land Use Models
- Discrete Choice Survey Models

For additional information on bicycle demand analysis, see Section 2.6.5 of AASHTO's Guide for the Development of Bicycle Facilities, 4th Edition.

42-3.02 Separated, Shared Use, and Sidepath Bicycle Paths

The principles for geometric design of bike paths are the same as those used in general highway design. While exclusive bicycle use of a bicycle path is often ideal, it seldom occurs. For this reason, pedestrian, in-line skaters, and other anticipated use is always considered in the design of the facility. Include separate areas to minimize the conflicts arising from the different speeds of these transportation modes, where practical. This Section provides guidance specific to the design of bike paths. Also, see the latest edition of the *AASHTO Guide for the Development of Bicycle Facilities* for more detailed information.

42-3.02(a) Bike Paths Versus Sidewalks

Sidewalks are generally not suitable for bicycle travel, primarily because of their narrow width and multiple opportunities for conflicts with driveways and commercial entrances. However, some suburban sidewalks may be preferable to on-road accommodations, particularly if they provide adequate width, do not have excessive number of driveways/conflict points, and are located on both sides of the roadway.

42-3.02(b) Width

Widths for shared use bicycle paths will vary in accordance with the conditions illustrated in Figure 42-3A. Figure 42-3B illustrates the minimum cross sections for two-way, shared-use paths.

42-3.02(c) Surface Type

Hot mix asphalt (HMA) or concrete pavement surfaces are preferred over crushed aggregate surfaces. In some situations, a bituminous surface treatment (BST) over an aggregate base may be adequate for bikeways. The LPA should consider the life cycle cost when selecting the bikeway surface type.

1. Concrete. Concrete provides the hardest surface that supports most users and is the lowest maintenance. Concrete is easy to form to site conditions and may offer advantages in wet soil conditions or in areas that may periodically flood. However, concrete is not a natural surface and has the highest initial costs. Project location may impede access for large, heavy construction equipment. Joints should be sawed rather than tooled.
2. HMA (or Warm Mix Asphalt). HMA provides for hard surface that supports most users and is low maintenance. HMA does not erode. However, HMA is not a natural surface and has higher initial costs. Project location may impede access for large, heavy construction equipment.
3. BST. BST provides a stable surface and is less expensive than HMA or Concrete. However, BST is not a natural surface and has a potential for bleeding in hot weather. Loose surface chips may also pose a safety concern.
4. Crushed Aggregate Surfaces. Crushed aggregate surfaces are the least expensive and provides a permeable surface. However, crushed aggregate surfaces provide lower level of service and require substantially increased maintenance over the life of the project. The subgrade should be properly compacted and a geotextile fabric mat used if the soil is soft or unstable. Crushed aggregate surface (i.e., FA 20 or equivalent) should be placed over a base course and properly rolled and compacted.

42-3.02(d) Separation

Where a two-way bike path is physically located within the highway right-of-way, traffic wide separation should be provided to demonstrate that the path functions as an independent facility for bicyclists and other users. This separation should be as wide as practical and still allow the bicyclist to be visible by the motorist. However, the following minimum separations are recommended:

1. Urban Cross Section. The minimum recommended distance between the path and the face of curb is 5 ft (1.5 m). See Figure 42-3C.
2. Rural Cross Section. The minimum recommended distance is based on the posted speed limit.
 - For a posted speed limit of 45 mph (km/h) or less, the minimum separation between the path and the edge of travelled way is 5 ft (1.5 m).
 - For a posted speed limit greater than 45 mph (km/h), the minimum separation between the path and the edge of travelled way is 10 ft (3.0 m).

Where a paved shoulder is present, the separation distance begins at the outside edge of the shoulder.

Where the recommended separation is not feasible, a physical barrier or railing should be provided between the path and the roadway to prevent path users from making undesirable or unintended movements and to reinforce that the path is an independent facility. Barriers or railings that not only define the edge of the path, but also prevent bicyclists from falling over the rail to a substantially lower elevation, shall be a minimum of 3.5 ft (1.1 m) high. See Section 42-3.02(h) for barrier or rail height on structures.

42-3.02(e) Design Speed

Bicycle paths should be designed for a selected speed that is at least as high as the preferred speed of the faster bicyclists. In general, use a minimum design speed of 18 mph (30 km/h). However, where the grade exceeds 4.0% or where strong prevailing tail winds exist (e.g., along a lake or river), a design speed of 30 mph (50 km/h) is advisable.

On unpaved paths, where bicyclists tend to ride slower, use a lower design speed of 14 mph (25 km/h). Similarly, where the grades or the prevailing winds dictate, a higher design speed of 25 mph (40 km/h) may be considered.

42-3.02(f) Horizontal Alignment

Unlike an automobile, a bicycle must be leaned while cornering to prevent it from falling outward due to the centrifugal force. The balance of centrifugal force due to cornering, and the bicycle's downward force due to its mass, act through the bicycle and operator's combined center of mass, which intersects a line that connects the front and rear tire contact points.

In most cases the lean angle and design speed should be used when determining the minimum radius of a horizontal curve. However, calculating the minimum radius of a horizontal curve based on the coefficient of friction and design speed may be useful on unpaved bicycle paths, where bicyclists may be hesitant to lean as much.

Consider the following factors when determining horizontal curves:

1. Lean Angle. The bicyclist leans when traveling through horizontal curves to counteract centrifugal forces tending to cause the bicycle/operator to fall outward. If the bicyclist pedals through the curve at a lean angle of 25°, the inside pedal generally strikes the ground during the downstroke. As a result, the typical maximum lean angle should be considered to be 15°-20°. Figures 42-3D and 42-3E present minimum radii and length for horizontal curves based on lean angles of 15° and 20° for paved bike paths.
2. Cross Slope/Superelevation. Shared use paths shall be accessible to people with disabilities. A pavement cross slope shall not exceed 2.0 percent (1 percent recommended). Therefore, the limiting rate of superelevation on the bike path is 2.0 percent.
3. Lateral Clearance. Bicyclists tend to ride near the middle of the bike path when the path is narrow, and tend to ride side-by-side when in groups of two or more. This increases the likelihood of head-on collisions. Account for this in the design by calculating lateral clearances on horizontal curves based on the sum of the stopping sight distances for bicyclists traveling in opposite directions. If this is impractical, consider widening the path through the curve (see Figure 42-3F), installing a centerline stripe, or installing "Curve Ahead" warning signs in accordance with the *ILMUTCD*.

42-3.02(g) Vertical Alignment

Consider the following when determining vertical alignment:

1. Grades. The maximum grade of a shared use path shall comply with the latest edition of the Public Rights of Way Accessibility Guidelines. Grades in excess of 5.0% shall be evaluated concerning the need for *ADA* compliance. In addition, grades in excess of 3.0% are impractical for unpaved paths because of increased erosion potential. Mitigate excessive grades using the following options:
 - Provide additional width to permit slower bicyclists to dismount and walk.
 - Provide signing alerting bicyclists to the maximum percent of grade, per the *ILMUTCD*.
 - Post a recommended descent speed.
 - Provide stopping sight distances that exceed the minimums.
 - Provide horizontal clearances that exceed the minimums.
 - Widen the path or include short switchbacks to contain the speed of descending bicyclists.
 - Provide extra shoulder width for riders to dismount and rest.

2. Sight Distance. For sight distance calculations, assume the bicyclist's combined perception and brake reaction time is 2.5 seconds. The height of eye for a bicyclist is 4.5 ft (1.4 m) and the height of object is 0.0 ft (0.0 m). The coefficient of friction between tire and pavement is 0.16 for wet-weather braking conditions. Use the following equations to determine the applicable sight distance for bicycle paths:

$$S = \frac{V^2}{30(f \pm G)} + 3.67V \quad \text{Equation 42-3.1 (US Customary)}$$

$$S = \frac{V^2}{254(f \pm G)} + \frac{V}{1.4} \quad \text{Equation (42-3.1 Metric)}$$

Where:

- S = stopping sight distance, ft (m)
- V = velocity, mph (km/h)
- f = coefficient of friction (use 0.16)
- G = grade, ft/ft (m/m) (rise/run)

3. Vertical Curve Lengths. Using the sight distance data and Equation 42-3.2, determine the vertical curve lengths. Use the following equations:

$$L = \frac{AS^2}{200(\sqrt{h_1} + \sqrt{h_2})^2} \quad \text{(Equation 42-3.2)}$$

$$L = KA \quad \text{(Equation 42-3.3)}$$

Where:

- L = length of vertical curve, ft (m)
- A = algebraic difference between the two tangent grades, %
- S = sight distance, ft (m)
- h₁ = height of eye above road surface, ft (m)
- h₂ = height of object above road surface, ft (m)
- K = horizontal distance needed to produce a 1.0% change in gradient, ft/% (m/%)

42-3.02(h) Bike Path Structures

Bike path structures shall comply with the Department's structure design policies. The following criteria apply to structures for bike paths:

1. Width. The clear width for a new bike path structure should be the width of the approach paved bicycle path including the width of the required shoulders. A design variance may be considered to allow the clear width to be reduced. However, a minimum clear width of at least 10 ft (3.0 m) is required to allow access for emergency, patrol, and maintenance vehicles.
2. Railings. Railings, fences, or barriers on both sides of a bicycle path structure should be a minimum of 54 in (1.4 m) high. Smooth rub rails should be attached to the barriers at handlebar height of 42 in (1.1 m).
3. Vertical Clearances. A minimum vertical clearance of 8 ft (2.4 m) should be provided for the bike path. However, vertical clearance may need to be greater to permit passage of maintenance vehicles, rescue vehicles, and ambulances. Rescue vehicles typically can exceed 9 ft (2.7 m) in width. Wherever practical, a vertical clearance of 10 ft (3.0 m) is desirable. Where the bike path crosses over highways or railroads, provide a minimum vertical clearance of 17 ft-3 in (5.3 m) over highways and 23 ft-0 in (7.0 m) over railroads. A variance for a vertical clearance over a highway will only be considered under extreme conditions where the bridge is located in an urbanized area.

Bike path structures across the navigable waters of the United States are considered obstructions to navigation, permitted only when they serve the needs of land transportation. While the public right of navigation is paramount to land transportation, it is not absolute. This right may be diminished to benefit land transportation, provided the reasonable needs of navigation are not impaired. The Coast Guard approves the location and plans of bridges and causeways and imposes any necessary conditions relating to the construction and maintenance of these bridges in the interest of public navigation. For bike path structures across waterways not considered navigable waters by the United States Coast Guard, the LPA should still consider providing vertical clearances for any watercraft currently using the waterway.

4. Tunnels. The design of bike or shared use path tunnels or underpasses should follow the same guidance for size and overhead clearance, as discussed in Section 17-2 of the *BDE Manual*, with recognition of the types of traffic that need to be accommodated (e.g., emergency vehicles). With tunnels or box culverts exceeding 100 ft (30 m) in length, the users' sense of security is enhanced with larger openings (i.e., minimum 10 ft (3 m) high and 14 ft (4.2 m) wide). The alignment of the approaching path should provide a clear view through the structure, where practical. On long structures (e.g., under multilane highways), a shaft opening at the median can provide natural light and ventilation. Lighting should be considered in areas where security is a concern. Where bike or shared use paths are routed under highway bridges, drainage from the bridge above should be routed to drain away from the path surface.
5. Additional Guidance. The *AASHTO Guide Specification for Design of Pedestrian Bridges* and the *AASHTO Standard Specifications for Highway Bridges* provides additional information applicable to the design of bike path structures.

42-3.02(i) Bike Paths/Highway Crossings

The design of shared use path and highway intersections has a significant impact on user's comfort, mobility, and safety. Shared use path crossings may be categorized as mid-block, sidepath, or grade separated crossings. A mid-block crossing is located outside of the functional area of any adjacent intersection. While a sidepath crossing occurs within the functional area of an intersection of two or more roadways. See Section 5.3 of AASHTO's *Guide for the Development of Bicycle Facilities* and AASHTO's *Guide for the Planning, Design, and Operation of Pedestrian Facilities* for more details. At these intersections, accessible curb ramps shall be provided.

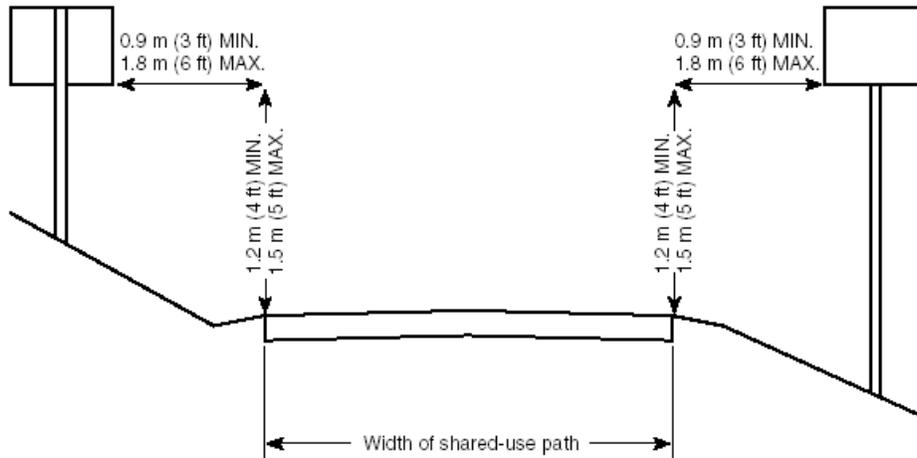
If adequate gaps in vehicular traffic are not available, some form of crossing control is generally required. This may include marked crosswalks, signage, pedestrian refuge medians, flashing lights, Rectangular Rapid Flashing Beacons (RRFB) signals, pedestrian hybrid beacons, in-roadway lights, or a grade separation. The *ILMUTCD* provides guidance on proper marking and signage. Also, consider re-routing the path to a nearby signalized intersection. However, any use of re-routing that causes excessive redundant travel may be perceived as a barrier and should not be used. At crossings of high-volume, multilane arterial highways where a signal or a grade separation is not provided, consider providing a median refuge area for bicyclists. Designers should use engineering judgment to decide where these types of safety measures are necessary and cost-effective by considering traffic volumes, motor vehicle speeds, and anticipated usage.

ANTICIPATED VOLUME	ONE-WAY⁽¹⁾⁽²⁾⁽³⁾⁽⁴⁾	TWO-WAY⁽²⁾⁽³⁾⁽⁴⁾
< 100 Users per Peak Hour	5 ft (1.5 m) ⁽⁵⁾	8 ft (2.4 m) ⁽⁵⁾
100 - 300 Users per Peak Hour	6 ft (1.8 m)	10 ft (3.0 m)
> 300 Users per Peak Hour	7 ft (2.1 m)	12 ft (3.6 m) ⁽⁶⁾

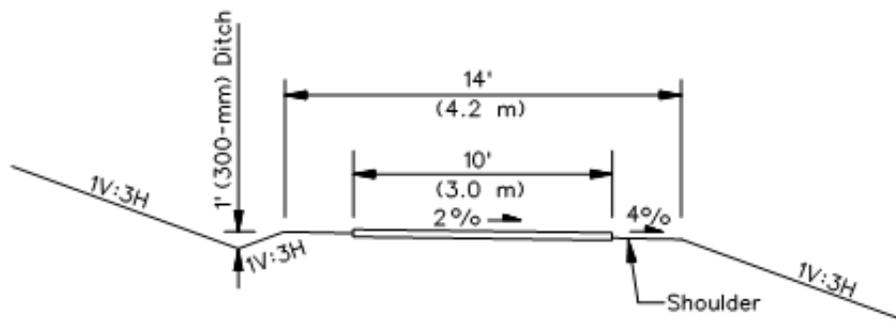
- Notes:
1. It should be recognized that one-way bicycle paths will often be used as two-way facilities unless effective measures are taken to ensure one-way operation (such measures are difficult to achieve). Without such measures, it should be assumed that bicycle paths will be used as two-way facilities and designed accordingly.
 2. Provide a minimum 2 ft (600 mm) wide graded turf or gravel area to both sides of the pavement.
 3. Desirably, provide a 3 ft (900 mm) or more clear area on each side to trees, poles, walls, fences, guardrails, and other lateral obstructions.
 4. If signs are installed along the bicycle path, provide a minimum 3 ft (900 mm) to a maximum 6 ft (1.8 m) clear area from the edge of path.
 5. Use the 5 ft (1.5 m) and 8 ft (2.4 m) width only at locations where there will be low usage, few conflicts among users, good horizontal and vertical alignment providing for safe and frequent passing opportunities, minimal maintenance vehicle traffic which would cause pavement edge damage, and/or right-of-way constraints or physical barriers.
 6. Where usage exceeds 300 users per hour during the peak periods of usage, separating bicycle and pedestrian travel may be considered. Stripe 4 ft (1.2 m) bike lanes in each direction and a 4 ft (1.2 m) width for pedestrians, as shown in Figure 42-3B. Also, consider constructing a separated pathway for pedestrians.

SHARED-USE BICYCLE PATH WIDTHS

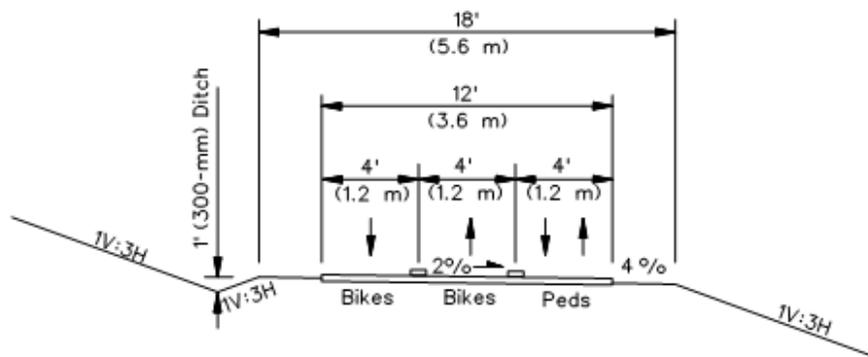
Figure 42-3A



TYPICAL SIGN PLACEMENT FOR SHARED USE PATH



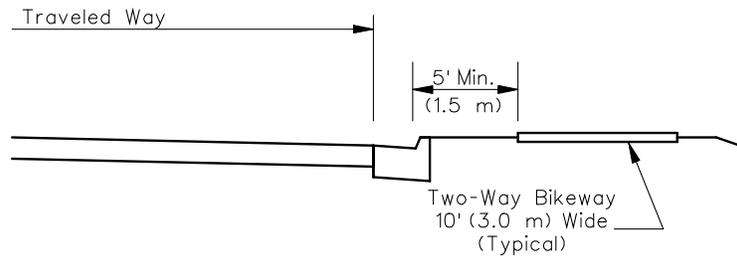
TYPICAL SHARED USE PATH FOR AVERAGE SHARED USE



TYPICAL SHARED USE PATH FOR SUBSTANTIAL SHARED USE
(More Than 300 Users in Peak Hour, Striping is Optional)

TYPICAL CROSS SECTIONS FOR TWO-WAY, SHARED-USE BICYCLE PATHS

Figure 42-3B



MINIMUM SEPARATION OF BICYCLE PATH FROM ROADWAY

Figure 42-3C

DESIGN SPEED (V)		MINIMUM RADIUS (R_{min})		MINIMUM LENGTH OF CURVE (L_{min})	
mph	km/h	ft	m	ft	m
12	19	36	11	10	3
14	23	49	16	13	4
16	26	64	20	17	5
18	29	81	25	21	7
20	32	100	30	26	8
25	40	156	47	41	12
30	48	225	68	59	18

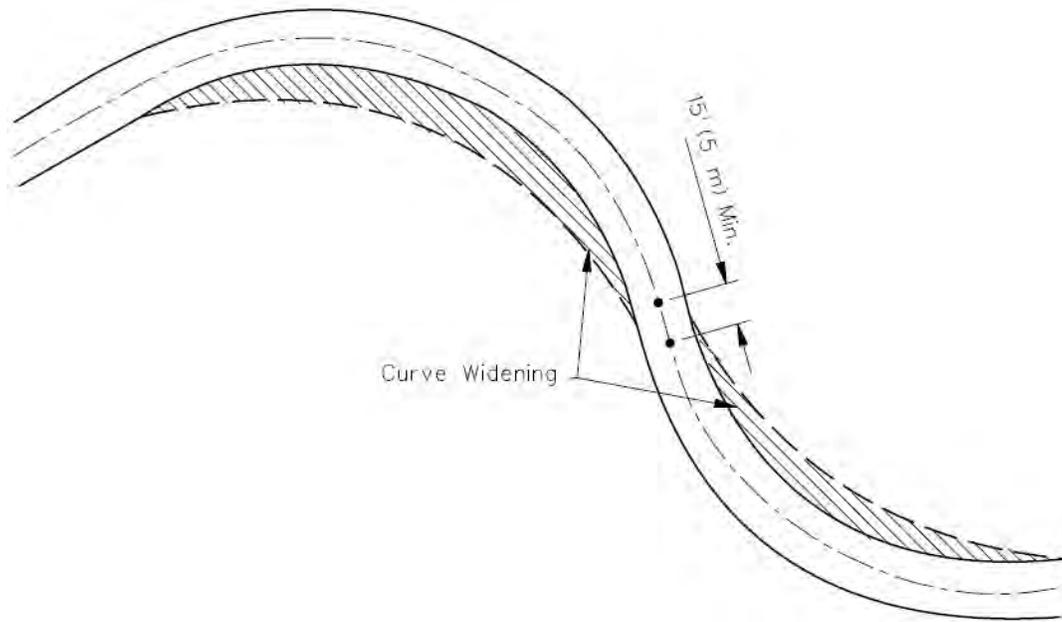
MINIMUM RADIUS AND LENGTH OF CURVE FOR PAVED PATHS (15° LEAN ANGLE)

Figure 42-3D

DESIGN SPEED (V)		MINIMUM RADIUS (R_{min})		MINIMUM LENGTH OF CURVE (L_{min})	
mph	km/h	ft	m	ft	m
12	19	27	8	10	3
14	23	36	11	13	4
16	26	47	15	17	5
18	29	60	18	21	7
20	32	74	22	26	8
25	40	115	35	41	12
30	48	166	54	59	18

MINIMUM RADIUS AND LENGTH OF CURVE FOR PAVED PATHS (20° LEAN ANGLE)

Figure 42-3E



CURVE RADIUS		ADDITIONAL PAVEMENT WIDTH	
ft	m	ft	m
0 – 25	0 – 7.5	4	1.2
25 – 50	7.5 – 15	3	0.9
50 – 75	15 – 22.5	2	0.6
75 – 100	22.5 – 30	1	0.3
100 +	30 +	0	0

Note: Only use additional pavement width where curve radii are less than design speed of bike path or where a 20° lean angle is assumed

BIKE CURVE WIDENING FOR VARIOUS CURVE RADII

Figure 42-3F

42-3.03 On-Road Bicycle Accommodations

42-3.03(a) General

The type of on-road bicycle accommodation will depend on the type of the roadway (rural or urban), traffic volume, and posted speed. In addition, the surrounding land use and planned development should be considered. For recommendations for the type of bicycle accommodation, see Section 17-2 of the BDE Manual and the most recent edition of the AASHTO Guide for the Development of Bikeway Facilities.

42-3.03(b) On Rural Roadways

Bicycle accommodation on rural cross sections consists of paving a portion of the shoulder. In addition to the benefits to the bicyclist, paved shoulders offer added safety, reduced maintenance, and a hard surface off the traveled way for mail delivery and emergency vehicles.

In order to accommodate bicyclists, a minimum shoulder width of 4 ft (1.2 m) of smooth paved surface shall be provided. Additional width may be necessary in locations where:

- vehicular speeds are in excess of 45 mph (70 km/h);
- there are a significant number of trucks and recreational vehicles; or
- fixed objects (e.g., traffic signs) are located too close to the bicycle facility.

When rumble strips are desired in a paved shoulder and the width of the paved shoulder is 4 ft (1.2 m) to 6 ft (1.8 m), Highway Standard 642006 should be used to accommodate bicyclists.

If the paved shoulder is intended for bicyclists, proper pavement marking and signage may be provided. Marked bikeways should be maintained to provide a desirable riding surface and should provide protection from obstacles or barriers by means of increased bikeway width.

42-3.03(c) On Urban Roadways

Bicycle accommodation on urban cross sections consists of providing a shared lane (unmarked or marked) or providing a bike lane to carry bicycles in the same direction as traffic. Bicycle lane width should be determined by context and anticipated use. Bicycle lane width will vary depending on traffic volume and speed, adjacent parking and land uses, and types of highway vehicles.

1. **Shared Lanes.** On a shared lanes facility, bicyclists and motorists share the same travel lanes without a striped separation. Shared lanes have particular application where physical constraints (e.g., buildings, narrow sidewalks, environmentally sensitive areas) preclude widening a street to provide bike lanes, or on minor roads with low volumes.
 - a. **No Specific Accommodation.** No specific accommodation is necessary for roadways with an ADT less than 2,000 ADT and a posted speed limit of 30 mph (50 km/h) or less.
 - b. **Wide Outside Lane.** Wide outside lanes should be considered for a bicycle accommodation on roadways with an ADT between 2,000 - 10,000 and a posted speed limit of 30 mph (50 km/h) or less. The shared lane width shall be 14 ft (4.0 m) minimum measured from edge of the gutter pan to the center of the lane line.

Shared lanes may be unmarked. However, the shared lane marking (sharrow) shall be considered as the preferred treatment (see Section 42-3.06). In some instances, it may be advantageous to sign some shared lanes as bicycle routes when providing continuity to other bicycle facilities or when establishing a touring route. See the *ILMUTCD* for additional guidance on bicycle markings and signage.

2. **Bike Lanes.** Bike lanes are marked on curbed streets to delineate bicycle traffic from motor vehicle traffic. They are always one-way facilities carrying traffic in the same direction as adjacent motor vehicle traffic. The preferred operating width is 5 ft (1.5 m). However, wider lanes may be desirable under the following conditions:

BUREAU OF LOCAL ROADS & STREETS
BICYCLE FACILITIES

42-3(12)

Oct 2013

- a. Adjacent to Parking Lane. Consider a minimum width of 6 ft (1.8 m) to prevent car door/ bicyclist conflicts. If parking has high turnover and right-of-way is available, a width of 7 ft (2.1 m) is desirable. The bicycle lane should be located between the parking lane and the through traffic lane.
- b. High Bicycle Volume without Parking. Consider a minimum width of 6 ft (1.8 m) to allow bicyclists to ride side by side or for passing slower bicyclists.
- c. High Speed Highways or Heavy Trucks. Consider a minimum width of 6 ft (1.8 m) that may include an optional 2 ft (0.6 m) striped buffer zone and/or a bi-directional side path to minimize wind blast and other effects.
- d. Highways With ADT Greater than 10,000. Consider a minimum width of 6 ft (1.8 m) that may include an optional 2 ft (0.6 m) striped buffer zone and/or a bi-directional side path.

42-3.03(d) On Existing Roads and Streets

1. With Widening. Where right-of-way is adequate roadways may be widened to provide shared roadways, paved shoulders, or bicycle lanes. In areas with sidewalks, the bicycle accommodation should be balanced with the goal of maintaining a high-quality pedestrian environment. If there is no overlay planned as part of the widening, steps should be taken to ensure that there is not a rough joint where bicyclists ride.
2. Without Widening. Bicycle accommodations may also be provided on a roadway by marking or remarking the pavement to reduce the number of lanes, to increase the width of the curb lane, or to add bike lanes. This is commonly referred to as a “road diet”. Consider the following:
 - a. Reduce Travel Lane Width. This option may be considered if the lane widths on an existing roadway are greater than the minimum required in Chapter 32 and 33. However, engineering judgment should be used to determine the impact to capacity and safety. Factors to consider include operating speeds, volumes, traffic mix, roadway geometrics, land use context, and parking.
 - b. Reduce Median Width. This option includes reduction or elimination of medians, especially raised curb medians. However, the safety advantages of medians, used as refuge islands for pedestrians and bicyclists, should be considered.
 - c. Reconfigure or Reduce On-Street Parking. If this option is considered, a parking study may assist in determining impact. Potential solutions include eliminating parking on one side of the street, peak-hour restrictions, or converting diagonal parking to parallel parking. Additional parking spaces may be provided for on side streets or in an off-street parking facility.
 - d. Reduce Number of Travel Lanes. Reducing the number of travel lanes (“road diet”) may be used to integrate bike lanes on existing roadways. This strategy may be appropriate on:
 - highways with excess capacity;
 - two-lane roadways that are being switched to one-way roadways; or
 - multi-lane roadways being converted to less lanes (e.g.).

See Figure 42-3G for example of a road way with four through-travel lanes converted to a road way with two through-travel lanes and one two-way center left-turn lane. This reconfiguration is the most common form of a “road diet” and is feasible on road ways with an ADT \leq 20,000.

42-3.03(e) Bike Lanes on Highway Structures

Since structures have a long life and are often far apart, structures are very important in providing non-motorized access over barriers such as highways, railways, waterways, and other barriers and natural features. Maintain a consistent bicycle lane width from the approach roadway across the structure. New highway structures should, at a minimum, equal the width of the approach roadway plus the width of approaching bicycle lanes and/or sidewalks. The bike lane should have a minimum width of 5 ft (1.5 m). Consider the possible need for future bicycle lanes when planning a new structure. Depending on vehicle speeds and volumes, striped buffer areas or barriers may be needed on structures to separate bicyclists and pedestrians from motor vehicles. Minimum cross sections for shared roadway, bicycle lanes, and bicycle paths are shown in Figure 42-3H.

Where it is necessary to include a separated bicycle path on a highway bridge, several alternatives should be considered in light of what the geometrics of the bridge will allow. One option is to carry the bicycle path across one side of the structure. This should be considered where:

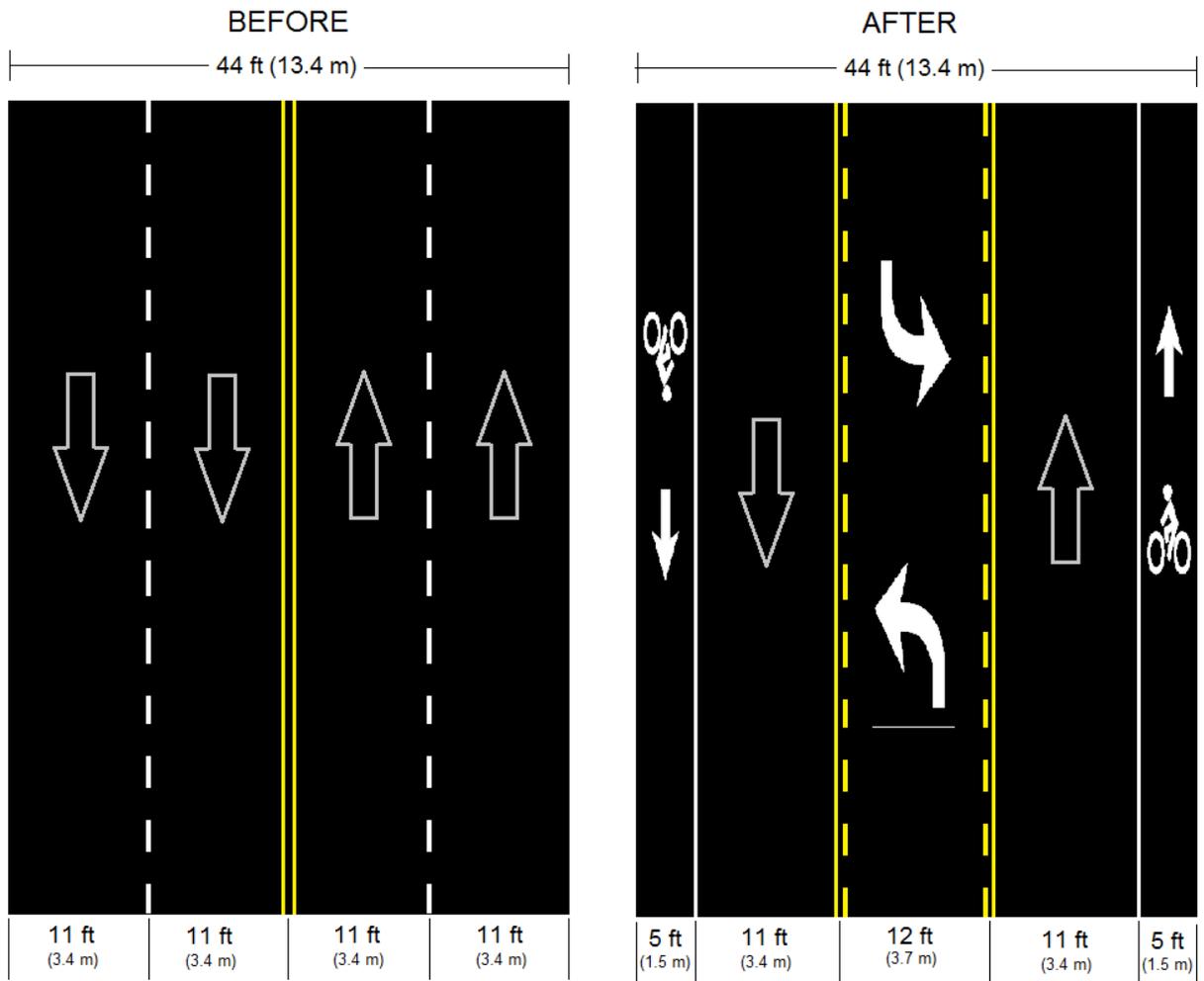
- the bridge facility will connect to a bicycle path at both ends,
- sufficient width exists on that side of the bridge or can be obtained by widening or restriping lanes, and
- provisions are made to physically separate bicycle traffic from motor vehicle traffic.

Another option is to use existing sidewalks as one-way or two-way facilities. This may be advisable where:

- conflicts between bicyclists and pedestrians will not exceed tolerable limits, and
- the existing sidewalks are adequately wide.

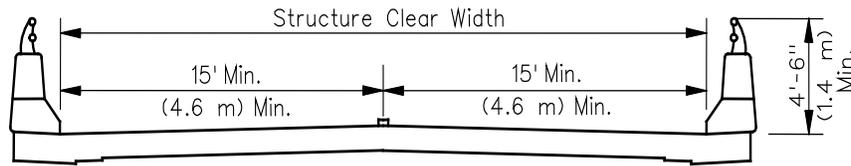
If the facility cannot provide adequate widths, appropriately sign the facility to warn users of the deficiencies or require bicyclists to dismount and cross the structure as a pedestrian. Section 17-2 of the *BDE Manual* provides additional design guidance for bicycle or shared use paths on structures. The *AASHTO Standard Specifications for Highway Bridges* specifies a 4.5 ft (1.4 m) outside railing height. Design on-road bicycle accommodations accordingly.

Where bridge projects include bike lane or sidewalk accommodations, the approaches to the structure should ensure a usable facility by continuing the accommodation to logical termini.

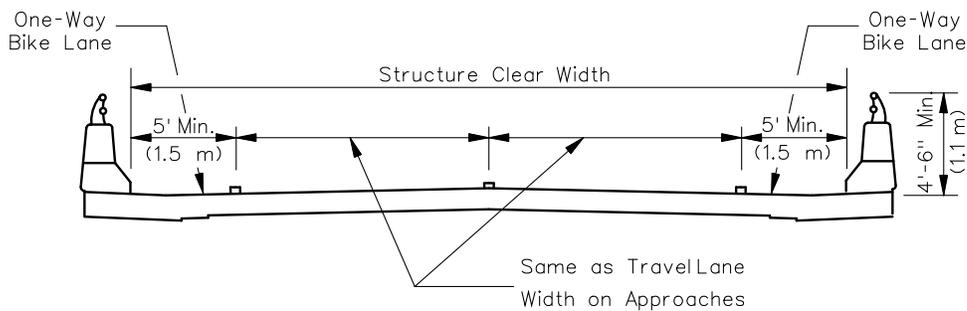


TYPICAL "ROAD DIET"

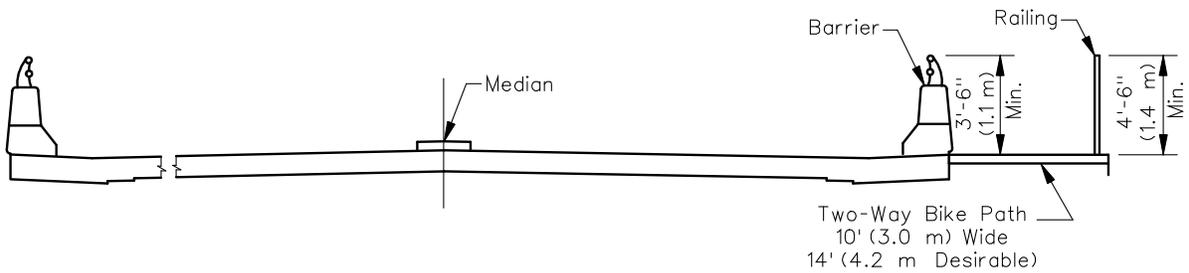
Figure 42-3G



WIDE LANES/SHOULDERS CONTINUED ACROSS STRUCTURE



BIKE LANE ACROSS STRUCTURE



ROADWAY SECTION CONTINUED ACROSS
BRIDGE WITH INTEGRAL BIKE PATH

BIKE LANES AND BIKE PATHS ACROSS HIGHWAY BRIDGES

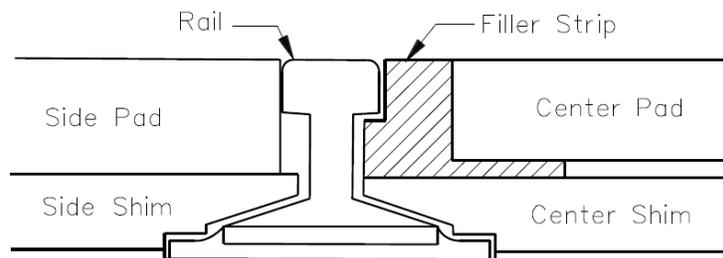
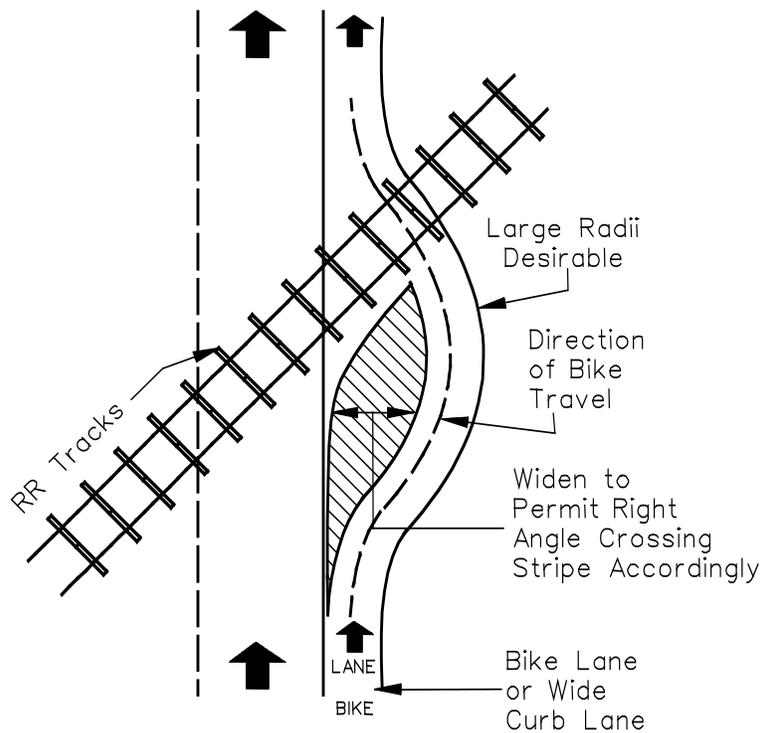
Figure 42-3H

42-3.04 Bicycle Railroad Crossings

Bike lane and path intersections with the railroad are more sensitive to the skew angle than the main highway because of the possibility of bicycle or wheelchair wheels being trapped in the rail flangeway. It may be possible to modify the horizontal alignment of a bikeway to provide increased crossing safety. Lower design speeds require smaller curve radii; therefore, a deviation from the general alignment can be accomplished over a relatively short distance.

Consider the following to accommodate bicycles across railroads:

1. Width. In general, the normal width of the bikeway, including shoulders, should be maintained through the grade crossing.
2. Vertical Alignment. The vertical alignment considerations that apply to mainline roadways are also applicable to bikeways.
3. Crossing Angle. Bicyclists should be able to cross railroad tracks at or near a right angle to minimize the potential for the bicycle's front wheel to be trapped in the flangeway. When the crossing angle is less than 45°, consider widening the outside lane, shoulder, or bicycle lane to improve the angle of approach (See Figure 42-31). Where this is not practical, consider using commercially available compressible flangeway fillers to provide a smooth transition over the rails (See Figure 42-31). Appropriate pavement striping in the widened area can guide users of the bike lane toward the safest alignment across the tracks.
4. Surface. The bicycle portion of the pavement surface should be at the same elevation as the top of the rails. Provide a bicycle-crossing surface that is consistent with the vehicular or bike path-crossing surface.
5. Visibility. Maximum visibility should be provided to improve the cyclist's awareness of approaching trains. Post Railroad Advance Warning signs no less than 50 ft (15 m) in advance of the tracks.
6. Signing and Protection. Crossbuck signs shall be erected at the crossing. All signing should conform to *ILMUTCD*. The LPA should coordinate with the railroad to determine the need for flashing light signals and gates.
7. Coordination. Contact the railroad early in the development of the project. The ICC may also be involved with bike crossings adjacent to roadways.



BIKE LANE RAILROAD CROSSING TREATMENTS
Figure 42-31

42-3.05 Incidental Design Factors

Consider the following additional design factors where applicable to the project.

1. Drainage Grates. Drainage grates and utility covers can be hazardous to bicyclists. All current IDOT drainage grate designs are suitable for bicycle travel. Grates and utility covers located in the cyclist's expected path should be flush with the pavement. With pavement overlay projects, replace utility covers and non-conforming drainage grates and adjust them to be flush with the new surface. A less desirable alternative is to design and construct the pavement to taper into drainage inlets to avoid creating an abrupt edge.

2. Bollards. If bollards are installed across a bike path where it intersects with a street, provide an adequate clear zone between the bollards and the street.
3. Environmental Effects. Analysis of the environmental effects of bicycle accommodations should be accomplished and documented along with the environmental analysis for the associated highway project. When not part of a roadway project, bikeway projects may be processed as a Categorical Exclusion (CE) for federally funded projects.
4. Rumble Strips. Where rumble strips are placed across the traffic lane in rural areas to warn motorists of upcoming traffic controls, provide a minimum 3 ft (1.0 m) clear paved area on the paved portion of the shoulder to allow a bicyclist an opportunity to avoid the rumble strip. When rumble strips are installed in a paved shoulder which serves as a bicycle accommodation and the width of the paved shoulder is 6 ft (1.8 m) or less, the 8 in (200 mm) rumble strip design should be used to minimize the impact to the accommodation.

42-3.06 Signing, Pavement Marking, and Traffic Control

Signing, pavement markings, and traffic control for bicycle facilities will be in accordance with the criteria presented in the ILMUTCD and applicable local ordinances. Signing and pavement markings are especially important at the approaches to intersections and at bike lane termini. Where a bike lane ends, bicyclists may be required to merge with motor vehicle traffic. Bicyclists should be encouraged with the appropriate signing and pavement markings to make lane changes in advance of the intersection.

Not all bicycle accommodations or bikeways need to be or should be marked as bike routes. Generally, only low-volume roads, bike lanes and bicycle paths should be marked as designated bicycle facilities. The absence of a marked bicycle lane or any other traffic control devices shall not be construed to mean that bicyclists are not permitted to travel on that roadway.

Bicycle routes should be marked if they meet the following criteria, are continuous, and are at least 1 mi (1.5 km) long:

- The route provides through and direct travel in bicycle-demand corridors.
- The route connects discontinuous segments of shared used paths, bike lanes, and/or other bike routes.
- An effort has been made to adjust traffic control devices (e.g., stop signs, signals) to give greater priority to bicyclists on the route, as opposed to alternative streets. This could include placement of bicycle-sensitive detectors where bicyclists are expected to stop.
- Street parking has been removed or restricted in areas of critical width to provide improved safety.

The following are some examples of what should not be marked:

- Wide curb lanes that provide intermittent access to businesses along the route, but provide no connection to another part of a bike route; and
- Any facility that does not meet minimum design criteria in the AASHTO publication Guide for the Development of Bicycle Facilities.

However, short segments of a continuous bike route that do not meet minimum criteria may be marked if the user is adequately warned of the conditions. For example, where a roadway serves as a bikeway and intermittent restrictions on width exist, such as at narrow bridges, mark these obstructions with both signing and pavement markings to warn bicyclists and motorists of the hazards.

At signalized intersections where frequent bicyclists need access to a green signal phase, a number of acceptable alternative methods are available including timed signals (where a cyclist must wait for the signal to change), traffic-actuated detectors, and push-button actuation. This opportunity (to access a green signal) should be provided where a marked bikeway crosses the project corridor. Other crossing locations to consider include potential bicycle travel from schools, parks, or other significant destinations described in Section 42-2.

Traffic-actuated detection should be sensitive to bicycles and should be located in the bicyclist's expected path, including left-turn lanes if necessary. Figure 42-3J shows three recommended loop types for bicycle detection, each with particular advantages, and a pavement-marking stencil used to designate where a bicyclist should stand to activate the detector loop. The following information on bicycle detection should be considered:

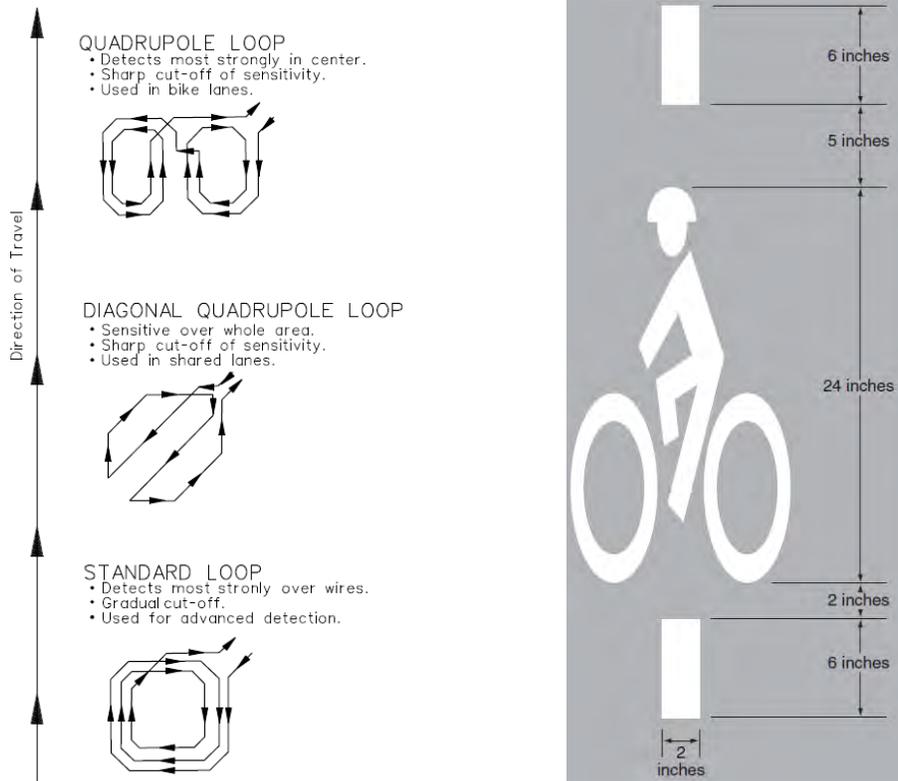
1. Quadrupole Loop Detectors. The quadrupole loop detector functions best in a bicycle path or lane situation. In such a situation, the expected position of a bicyclist can be easily predicted. This loop is less sensitive over its outer wire than over its center wires and is also relatively insensitive to motor vehicle traffic in neighboring lanes.
2. Diagonal Quadrupole Loop Detector. The diagonal quadrupole loop detector functions best in shared-roadway situations where the position of a bicycle cannot be easily predicted. This detector is equally sensitive over its entire width and is relatively insensitive to motor vehicle traffic in neighboring lanes.

Signal timing usually does not need to be lengthened to allow adequate time for bicycle crossing. The AASHTO publication *Guide for the Development of Bicycle Facilities* recommends calculating clearance intervals with a bicyclist's speed of 10 mph (16 km/h) and a perception/reaction/braking time of 1.0 second. At extremely wide intersections, however, consider providing a median refuge area that is at least 6 ft (2 m) wide if signal timing would prohibit adequate crossing time.

The shared lane marking (sharrow) shown in Figure 42-3K should be placed:

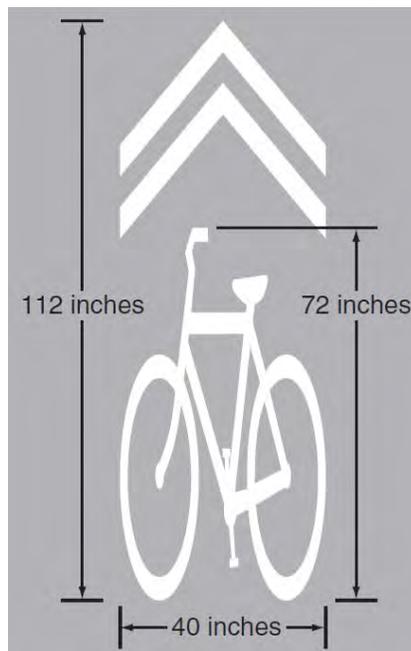
1. On highways with on-street parallel parking, at least 11 ft (3.4 m) from the face of curb, or edge of travelled way where there is no curb; or
2. On highways without on-street parallel parking, at least 4 ft (1.2 m) from the face of curb, or edge of travelled way where there is no curb.

Section 9C.07 of the *ILMUTCD* contains further guidance.



RECOMMENDED LOOP TYPES AND PAVEMENT MARKINGS FOR BICYCLE DETECTION LOOPS

Figure 42-3J



SHARED LANE MARKING

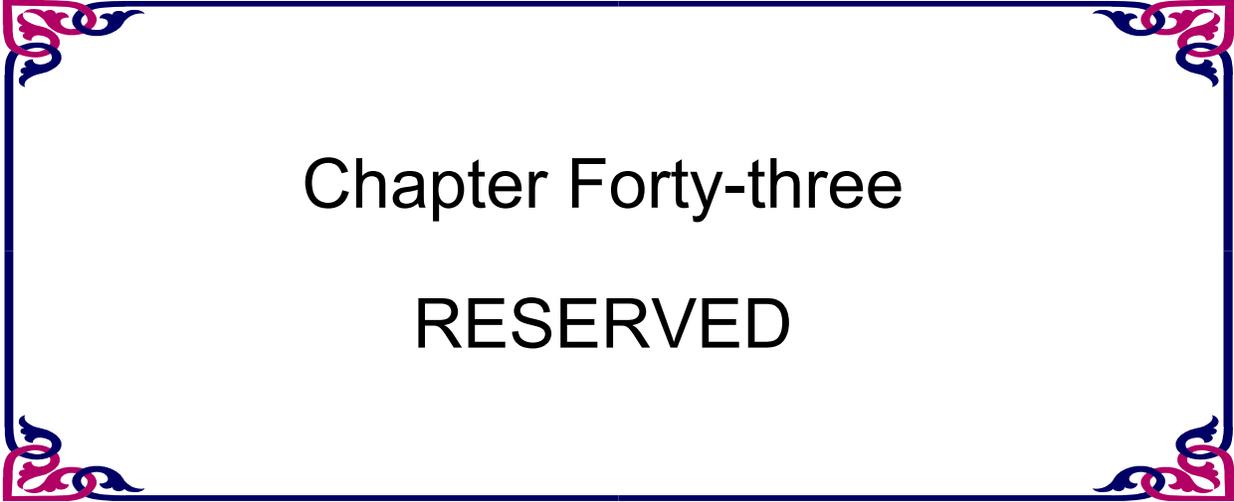
Figure 42-3K

42-4 MAINTENANCE

Responsibility for maintenance of bike lane facilities should be determined and agreed upon during the planning process and should be included in the local agency funding agreement, when applicable.

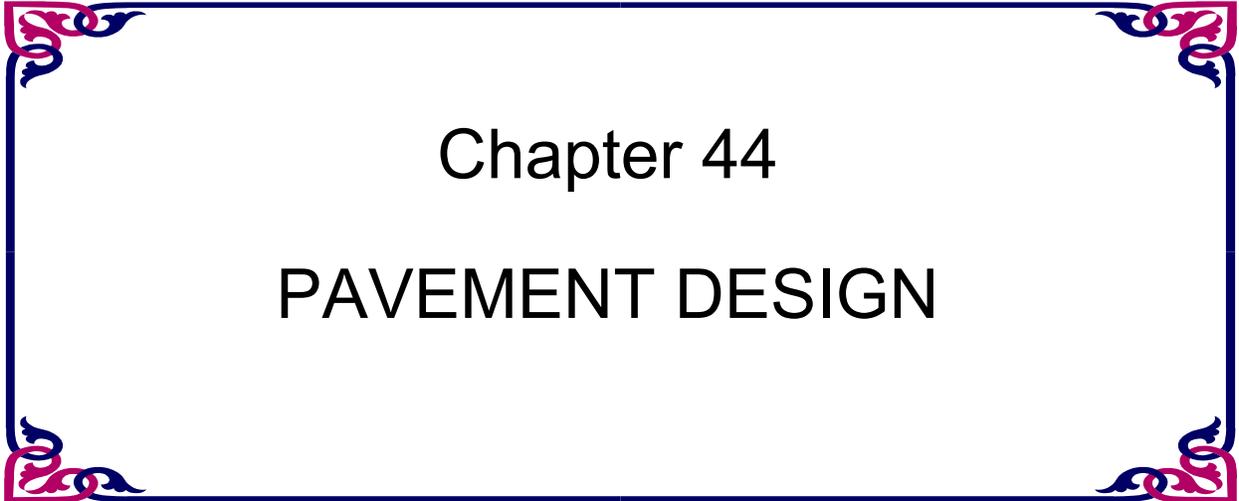
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2. Chapter 17, "Bicycle and Pedestrian Accommodation," *Bureau of Design and Environment Manual*, IDOT.



Chapter Forty-three
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Chapter 44

PAVEMENT DESIGN

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PAVEMENT DESIGN

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Chapter 44

PAVEMENT DESIGN

44-1 GENERAL

Within Chapter 44 there are areas with color (red, blue, or green) added to the text or the figures. The color is based on three example calculations for three different classes of pavement, which are shown through the pavement design procedure for the four types of pavements discussed. The color is only meant to assist in following the criteria used in the examples. There may be duplicate numbers in the figures within Sections 44-1 thru 44-5 to reflect these examples.

44-1.01 Pavement Design Definitions

1. Average Daily Traffic (ADT). The total volume during a given period (in whole days), greater than one day and less than one year, divided by the number of days in that time period.
2. Base Course. The layer used in a pavement system to reinforce and protect the subgrade or subbase.
3. Binder. The asphalt cement used in HMA pavements specified according to the Superpave Performance Graded system.
4. Class I Roads and Streets. Facilities with 4 or more lanes and one-way streets with a structural design traffic greater than 3500 ADT.
5. Class II Roads and Streets. Two or three lane streets with structural design traffic greater than 2000 ADT and all one-way streets with a structural design traffic less than 3500 ADT.
6. Class III Roads and Streets. Roads and streets with structural design traffic between 400 and 2000 ADT.
7. Class IV Roads and Streets. Roads and streets with structural design traffic less than 400 ADT.
8. Composite Pavement. A pavement structure consisting of HMA surface course overlaying a Portland Cement Concrete (PCC) or Roller Compacted Concrete (RCC) slab of relatively high bending resistance which serves as the principle load-distributing component.
9. Continuously Reinforced Concrete Pavement. A rigid pavement structure having continuous longitudinal reinforcement achieved by spliced longitudinal steel reinforcement.
10. Conventional Flexible Pavement. A flexible pavement structure consisting of a HMA surface course and a combination of aggregate base, granular subbase, or modified soil layers.

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11. Design E_{Ri} . Resilient modulus is the repeated deviator stress divided by the recoverable (resilient) strain. For the fine-grained subgrade soils that predominate in Illinois, E_{Ri} is the resilient modulus for a repeated deviator-stress of approximately 6 ksi.
12. Design HMA Mixture Temperature. Design temperature of HMA mixture in the pavement based on its geographical location.
13. Design HMA Modulus (E_{HMA}). The HMA mixture modulus (E_{HMA}) in the pavement corresponding to the "Design HMA Mixture Temperature".
14. Design HMA Strain. HMA design tensile strain at the bottom of the HMA pavement layer.
15. Design Lane. The traffic lane carrying the greatest number of single and multiple unit vehicles.
16. Design Period (DP). The number of years that a pavement is to carry a specific traffic volume and retain a minimum level of service.
17. Equivalent Single Axle Loads (ESAL's). A numeric factor expressing the damage relationship of a given axle load in terms of an 18-kip single axle load.
18. Extended Lane. A monolithic paved lane, typically 1 to 2 ft wider than the marked pavement riding surface, used to reduce PCC pavement edge stresses. Lanes built with integral curb and gutter may be considered extended lanes and designed as such.
19. Heavy Commercial Vehicles (HCV's). The combination of single and multiple unit vehicles (SU's + MU's). These typically account for the majority of the 18-kip ESAL applications to the design lane anticipated during the design period.
20. Hot Mix Asphalt (HMA). A mixture consisting of coarse and fine mineral aggregate uniformly coated with asphalt binder. Used as a base, surface, or binder course.
21. Immediate Bearing Value (IBV). A measure of the support provided by the roadbed soils or by unbound granular materials. The field IBV is obtained from the Dynamic Cone Penetrometer (DCP) test, or in the lab from a penetration test (according to AASHTO T193) on a 4 in. diameter, molded sample, immediately after compaction.
22. Integral Curb and Gutter. A curb and gutter that is paved monolithically with the pavement. Used to reduce edge stresses and provide a means of surface drainage.
23. Modified Soil Layer. A subgrade soil layer treated with a modifier such as lime, fly ash, Portland cement, or slag-modified cement, and constructed according to the [IDOT Standard Specifications](#) for Soil Modification.
24. Multiple Units (MU). Truck tractor semi-trailers, full trailer combination vehicles, and other combinations of a similar nature.
25. Overloads. Loads that are anticipated to exceed the load limits from which the design TF's were developed. Typically, overloads are created from commercial, garbage, construction, and farm trucks; permit loads; buses; and some farm implements.
26. Passenger Vehicles (PV). Automobiles, pickup trucks, vans, and other similar two-axle, four-tire vehicles.

27. Pavement Structure. The combination of subbase, base course, and surface course placed on a subgrade to support the traffic loads and distribute the load to the roadbed.
28. Reliability. The reliability of a pavement design-performance process is the probability that a pavement section designed using the process will perform satisfactorily for the anticipated traffic and environmental conditions for the design period. The following factors may impact the design reliability: materials; subgrade; traffic prediction accuracy; construction methods; and environmental uncertainties.
29. Single Units (SU). Trucks and buses having either 2 axles with 6 tires or 3 axles.
30. Skewed Joints. Transverse joints that are not constructed perpendicular to the centerline of pavement. The use of skewed joints is not recommended.
31. Stage Construction. The planned construction of the flexible pavement structure in two or more phases. A period of up to two years may elapse between the completion of the first stage and the scheduled construction date of the final stage.
32. Structural Design Traffic. The number of passenger vehicles, single-unit trucks, and multiple-unit trucks estimated for the year representing one-half the design period from the year of construction.
33. Subbase. The layer used in the pavement system between the subgrade and the base course.
34. Subgrade. The prepared and compacted soil immediately below the pavement system and extending to a depth that will affect the structural design.
35. Subgrade Support Rating (SSR). Rating of subgrade support used in full-depth HMA, rigid, and composite pavement designs. There are three ratings — poor, fair, and granular. These ratings are based on the silt, sand, and clay contents of the subgrade.
36. Surface Course. One or more layers of a pavement structure designed to accommodate the traffic load, the top layer of which resists skidding, traffic abrasion, and the disintegrating effects of climate. This layer is sometimes called the wearing course.
37. Three Times Nominal Maximum Aggregate Size. The minimum thickness of a HMA course in which the Nominal Maximum Aggregate Size (Superpave) is one size larger than the first sieve that retains more than 10% aggregate.
38. Tied Curb and Gutter. A PCC curb and gutter that is tied with reinforcing steel to the pavement so that some of the pavement load is transferred to the curb and gutter. Used to reduce pavement edge stresses and provide a means of surface drainage. In order to be considered a tied curb and gutter and to receive a pavement thickness adjustment for tied curb and gutter, see the [Illinois Highway Standards](#) for the proper size of reinforcement bar to tie the pavement to the curb and gutter.
39. Tied Shoulder. A PCC stabilized shoulder tied with reinforcing steel to the pavement so that some of the pavement load is transferred to the shoulder. Used to reduce pavement edge stresses. In order to be considered a tied shoulder and to receive the pavement thickness adjustment for tied shoulders, see the [Illinois Highway Standards](#) for the proper size of reinforcement bars to tie the pavement to the PCC shoulder.

40. Traffic Factor (TF). The total number of 18-kip equivalent, single-axle load applications anticipated in the design lane during the design period, expressed in millions.
41. Untied Shoulder. Any shoulder that does not provide edge support. The shoulder may consist of earth, aggregate, or bituminous stabilized materials. PCC shoulders that are tied with smaller reinforcing steel than the size indicated in the [Illinois Highway Standards](#) are considered untied for purposes of determining pavement thickness.

44-1.02 Accessibility Requirements

All pavements constructed shall meet the accessibility requirements in [Section 41-6](#) of this manual.

44-1.03 Basic Mechanistic Design Procedures

Mechanistic pavement design procedures use the actual stresses, strains, and deflections experienced by the pavement to determine its expected fatigue life.

44-1.03(a) Mechanistic Design Factors

Factors that are considered in mechanistic designs include:

- design HMA strain;
- design pavement HMA mixture temperature;
- design HMA mixture modulus (E_{HMA});
- subgrade support rating (SSR);
- design reliability;
- degree of PCC edge support;
- degree of PCC base erosion;
- PCC joint spacing; and
- PCC stresses.

44-1.03(b) Design Period

The level of traffic and type of facility to be constructed affect the selection of the design period. Generally, it is desirable to design highway pavements to carry traffic without necessitating the need for major rehabilitation for a period of 15 to 20 years. However, it may be advantageous to design lesser roadways (e.g., frontage roads, alleys, temporary roads) for shorter periods.

For all pavement types, the minimum design period allowed is 20 years for Class I and II roads and streets. For all pavement types, the minimum design period allowed is 15 years for Class III roads and streets. For Class IV roads and streets with 48 or fewer HCV's, pavement thicknesses provided in each Section 44-2, 44-3, 44-4, and 44-5 should be satisfactory for design periods of 15 years or 20 years.

44-1.03(c) Structural Design Traffic

The structural design traffic is the estimated ADT for the year representing one-half of the design period. For example, when the design period is 20 years, the structural design traffic will be an estimate of the ADT projected to 10 years after the construction date.

1. Estimate ADT of PV, SU, and MU. Vehicular classification and traffic volume projections for structural design traffic are based on available traffic data (i.e., ADT). ADT and vehicular classification data for various roadway classes may be obtained from published IDOT traffic maps. If traffic data is unavailable or if published data is dated or does not appear to reflect known conditions or field observations (e.g., land uses, directional distributions), traffic volume and classification studies may be needed to establish a representative base of existing conditions. Factors that compound annual growth typically are used in traffic projections. It is important to consider any future land development or land use changes that may affect the volume or composition of traffic that will use the facility. If vehicular classification data is not available for Class III or Class IV facilities, use the percentages in Figure 44-1A to estimate the number of PV, SU, and MU vehicles from ADT. Also, consider the potential impacts of heavily loaded vehicles, especially in areas near mines, grain elevators, factories, and river ports. It may be necessary to specifically design for such vehicles.

2. Assign Traffic to the Design Lane. Although the sum of the PV, SU, and MU vehicular volumes determined in Step 1 represents the total ADT that will be carried by the highway facility in the year of the projection, the structural design of the pavement will be based on the lane which carries the greatest number of SU and MU vehicles (i.e., the design lane). The distribution factors in Figure 44-1B have been applied to TF equations contained in this chapter. Use the total two-way ADT for multilane facilities when calculating the structural design traffic as the distribution factors account for directional traffic and the percentage of vehicles in the design lane.

Note that the design lane distribution factors in Figure 44-1B are based on previous traffic studies under average conditions. Unusual traffic control or design features may influence lane usage (e.g., lane restrictions of commercial vehicles, directional influence of major commercial generator). Adjustments may be necessary. Contact the CBLRS for additional guidance.

Class of Road or Street	Percentage of Structural Design Traffic		
	PV (%)	SU (%)	MU (%)
III	88	7	5
IV	88	9	3

**TRAFFIC PERCENTAGE
(Class III and IV)**

Figure 44-1A

Number of Facility Lanes	Percent of Total Vehicular Class Volume (ADT) in Design Lane					
	Rural			Urban		
	PV	SU	MU	PV	SU	MU
2 or 3 *	50%	50%	50%	50%	50%	50%
4 or 5	32%	45%	45%	32%	45%	45%
≥ 6	20%	40%	40%	8%	37%	37%

* 2 or 3 lane facilities include all one-way roads and streets.

DESIGN LANE DISTRIBUTION FACTORS FOR STRUCTURAL DESIGN TRAFFIC

Figure 44-1B

44-1.04 Selection of Pavement Type

The local public agency (LPA) must specify pavement type on the design plans. For MFT or State funded projects, “alternative” or “type” bids may be used according to [Section 12-1](#) and for federally funded projects see [Section 24-1](#). Figure 44-1E provides a decision tree flow chart as a guide for the design of pavements.

The 1993 *AASHTO Guide for Design of Pavement Structures* lists a number of principal and secondary factors that may play a role in the pavement selection process. Some of these include the following:

1. Principal Factors. These include traffic, soil characteristics, weather, construction considerations, recycling, and cost comparison (initial, maintenance, reconstruction, etc.).
2. Secondary Factors. These may include performance of similar pavement in the area, adjacent existing pavements, conservation of materials and energy, availability of local materials or contractor capabilities, traffic safety, incorporation of experimental features, stimulation of competition, and LPA preference.

44-1.05 Minimum HMA Lift Thickness

All HMA surface, binder, and leveling binder lifts must comply with the lift thicknesses in Figure 44-1C.

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Mixture Superpave	Typical Use ⁽¹⁾	Leveling Course Minimum Lift Thickness ⁽²⁾⁽³⁾, in. (mm)	Surface/Binder Course Minimum Lift Thickness ⁽²⁾, in. (mm)
IL-4.75	B/L	3/8 (10)	3/4 (19)
IL-9.5	S/B/L	3/4 (19) ⁽⁵⁾	1 1/4 (29)
IL-12.5	S/B/L	1 1/4 (32)	1 1/2 (38)
IL-19.0 ⁽⁴⁾	B/L	1 3/4 (44)	2 1/4 (57)
IL-25.0 ⁽⁴⁾	B	Not Allowed	3 (76)

Notes:

1. S = Surface; B = Binder; L = Leveling Binder
2. Minimum thicknesses are the nominal thickness of the lift.
3. If the leveling course is placed at or above the minimum thickness specified for surface/binder course, density will be required.
4. This mix may not be used as a surface lift.
5. If the IL-9.5mm leveling binder is being placed over crack and joint sealant, the minimum lift thickness may be 1/2 in. (13 mm).

HMA SURFACE, BINDER, AND LEVELING BINDER LIFT THICKNESSES

Figure 44-1C

44-1.06 Skid Resistance on HMA Surface Courses

Aggregates with suitable friction shall be specified for all HMA surface courses on federal-aid projects and local projects on the state letting. Figure 44-1D lists four surface course mixtures that have been developed to provide adequate skid resistance for various Average Daily Traffic (ADT) levels and number of lanes.

Designers should consider using the appropriate friction aggregate on projects funded by other sources and on a local letting.

Number of Lanes	Frictional Requirements (ADT)			
	Mixture C	Mixture D	Mixture E	Mixture F
≤ 2	≤ 5,000	> 5,000	N/A	N/A
4	≤ 5,000	5,001 to 25,000	25,001 to 100,000	> 100,000
≥ 6	N/A	5,001 to 60,000	60,001 to 100,000	> 100,000

Note: ADT levels are for the expected year of construction.

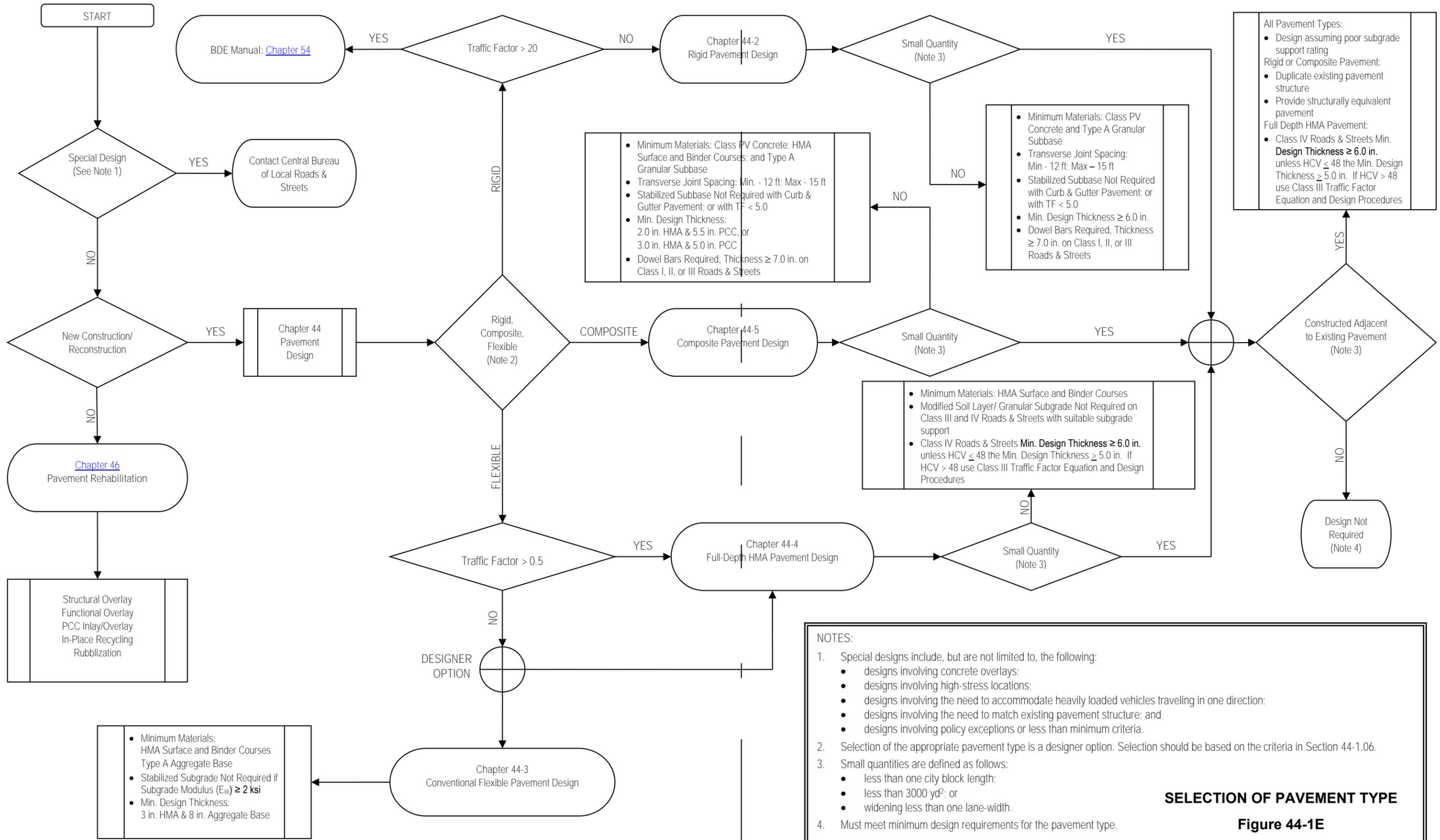
FRICIONAL REQUIREMENTS FOR SURFACE MIXES

Figure 44-1D

44-1.07 Density Testing on HMA Pavements

As the final measure of quality during construction, density is the most critical characteristic of HMA pavements to achieve durability, minimize permeability, and enhance long term resistance to raveling. The department's *Manual of Test Procedures for Materials* provides the *Standard Test Method for Correlating Nuclear Gauge Densities with Core Densities*. However, a correlated gauge is not always practical. Therefore, for HMA projects designed using [Section 46-2](#) of this manual or for less than 3,000 tons of a given HMA mixture, a nuclear-core correlation for determining density is not required. One of the following alternative methods may be used:

- Core Density Testing (Preferred Alternative);
- Growth Curve (LR1030 is required to be used); or
- Non-correlated Nuclear Gauge Testing.



NOTES:

- Special designs include, but are not limited to, the following:
 - designs involving concrete overlays;
 - designs involving high-stress locations;
 - designs involving the need to accommodate heavily loaded vehicles traveling in one direction;
 - designs involving the need to match existing pavement structure; and
 - designs involving policy exceptions or less than minimum criteria.
- Selection of the appropriate pavement type is a designer option. Selection should be based on the criteria in Section 44-1.06.
- Small quantities are defined as follows:
 - less than one city block length;
 - less than 3000 yd²; or
 - widening less than one lane-width.
- Must meet minimum design requirements for the pavement type.

SELECTION OF PAVEMENT TYPE
Figure 44-1E

44-1.08 Example Calculations

Chapter 44 provides examples for three classes of roads and streets, showing calculations of the pavement design for rigid pavement, conventional flexible pavement, full-depth HMA pavement, and composite pavement. The same criteria are used for all pavement types. The examples are not to persuade the use of one type of pavement over another. The designer or LPA should refer to Section 44-1.04 to determine which type of pavement to construct.

As the calculations are completed for each example and pavement design, the various figures and text used in each section will be color coordinated with each example to show lines, shaded areas, etc. Section 44-9 provides clean worksheets and figures to use in the submittal of pavement designs. A design period of 20 years is used for all three examples. A design period of 15 years could be used per Section 44-1.03(b).

44-1.08(a) Example Calculation 1 (Red) – Class I Road

Given:

Class I Road, Four Lane Pavement (Urban) (Section 44-1.01)
12 ft Lanes with Concrete Curb and Gutter
Design Traffic: ADT = 14,000
PV's 86%, SU's 8%, MU's 6% (if unknown see Section 44-1.03(c))
Lake County
Design Subgrade Support Rating – Fair
Posted Speed Limit – 30 MPH with Bus Stops

44-1.08(b) Example Calculation 2 (Blue) – Class III Road

Given:

Class III Road, Two Lane Pavement (Section 44-1.01)
11 ft Lanes with Paved HMA Shoulders
Design Traffic: ADT = 1,800
PV's 90%, SU's 6%, MU's 4% (if unknown see Section 44-1.03(c))
Sangamon County
Design Subgrade Support Rating – Poor
Posted Speed Limit – 40 MPH with No Bus Stops

44-1.08(c) Example Calculation 3 (Green) – Class IV Road

Given:

Class IV Road, Two Lane Pavement (Section 44-1.01)
11 ft Lanes with Aggregate Shoulders
Design Traffic: ADT = 350
PV's 88%, SU's 7%, MU's 5% (if unknown see Section 44-1.03(c))
City of Marion, Williamson County
Design Subgrade Support Rating – Poor
Posted Speed Limit – 55 MPH with No Bus Stops

44-2 RIGID PAVEMENT DESIGN FOR LOCAL PUBLIC AGENCIES

44-2.01 Introduction

44-2.01(a) Types of Rigid Pavements

Rigid pavement is a pavement structure whose surface and principal load-distributing component is a Portland cement concrete (PCC) pavement of relatively high bending resistance. The two types of rigid pavements are as follows:

1. Non-Reinforced Jointed. Jointed pavement without longitudinal steel reinforcement that may or may not use mechanical load transfer devices (e.g., dowel bars).
2. Continuously Reinforced. Pavement with continuous longitudinal steel reinforcement and no man-made joints. It is typically used on high-volume Class I roads (e.g., Interstate routes and freeways).

The non-reinforced jointed pavement design procedure is discussed in this Section. [Chapter 54](#) of the *BDE Manual* provides the design procedures for continuously reinforced concrete pavements.

44-2.01(b) Usage of Procedure

Use the pavement design procedures provided in Section 44-2 for all local road and street projects where a rigid pavement is desired. If the LPA intends to transfer jurisdiction following pavement construction, both agencies involved in the jurisdictional transfer should agree on the design.

A pavement design is not required when small quantities of pavement are to be constructed. Small quantities are defined as follows:

- less than one city block in length,
- less than 3,000 yd² (2510 m²), or
- widening less than one lane-width.

Where small quantities are to be constructed adjacent to an existing pavement, the designer should:

- duplicate the existing total pavement structure,
- provide a structurally equivalent pavement, or
- design assuming a poor subgrade support rating.

44-2.02 Basic Design Elements

44-2.02(a) Minimum Material Requirements

The minimum requirement for Portland cement concrete is Class PV concrete, as specified in the [IDOT Standard Specifications](#). Use Type A granular subbase, according to the [IDOT Standard Specifications](#), where granular subbase is specified.

44-2.02(b) Traffic Factors

For Class I, II, and III roads and streets, the design Traffic Factor (TF) for rigid pavements is determined from the 80,000 lb load limit formulas shown in Figures 44-2A. The formulas are based on the state wide average distribution of vehicle types and axle loadings, which are directly applicable to most roads and streets. However, cases will arise in which a formula cannot be used, and a special analysis will be necessary (e.g. a highway adjacent to an industrial site with heavy commercial vehicles (HCV's) entering and leaving the site generally traveling empty in one direction and fully loaded in the other). These cases should be referred to the CBLRS for special analysis. The LPA must provide the CBLRS with the structural design traffic; the design period; traffic distribution by PV, SU, and MU; and loading distribution of HCV traffic.

For Class IV rigid pavements, thicknesses are provided in Section 44-2.03(b) based on the daily volume of HCV's; therefore, a design TF is not necessary. However, if the number of HCV's is greater than 48, use the Class III TF equations or a TF of 0.5, whichever is greater, and proceed to design the pavement according to Section 44-2.03.

For TF greater than 20.0, the designer should follow the rigid pavement mechanistic design procedure outlined in [Chapter 54](#) of the *BDE Manual*. Contact the CBLRS for additional information.

Class I Roads and Streets	
4 or 5 Lane Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.047PV + 64.715SU + 313.389MU)}{1,000,000} \right]$
6 or More Lane Pavements (Rural)	$TF = DP \left[\frac{(0.029PV + 57.524SU + 278.568MU)}{1,000,000} \right]$
6 or More Lane Pavements (Urban)	$TF = DP \left[\frac{(0.012PV + 53.210SU + 257.675MU)}{1,000,000} \right]$
One-way Street Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.073PV + 71.905SU + 348.210MU)}{1,000,000} \right]$
Class II Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 67.890SU + 283.605MU)}{1,000,000} \right]$
Class III Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 64.790SU + 281.235MU)}{1,000,000} \right]$ TF minimum = 0.5

RIGID PAVEMENT TRAFFIC FACTOR EQUATIONS (80,000 LB LOAD LIMIT)

Figure 44-2A

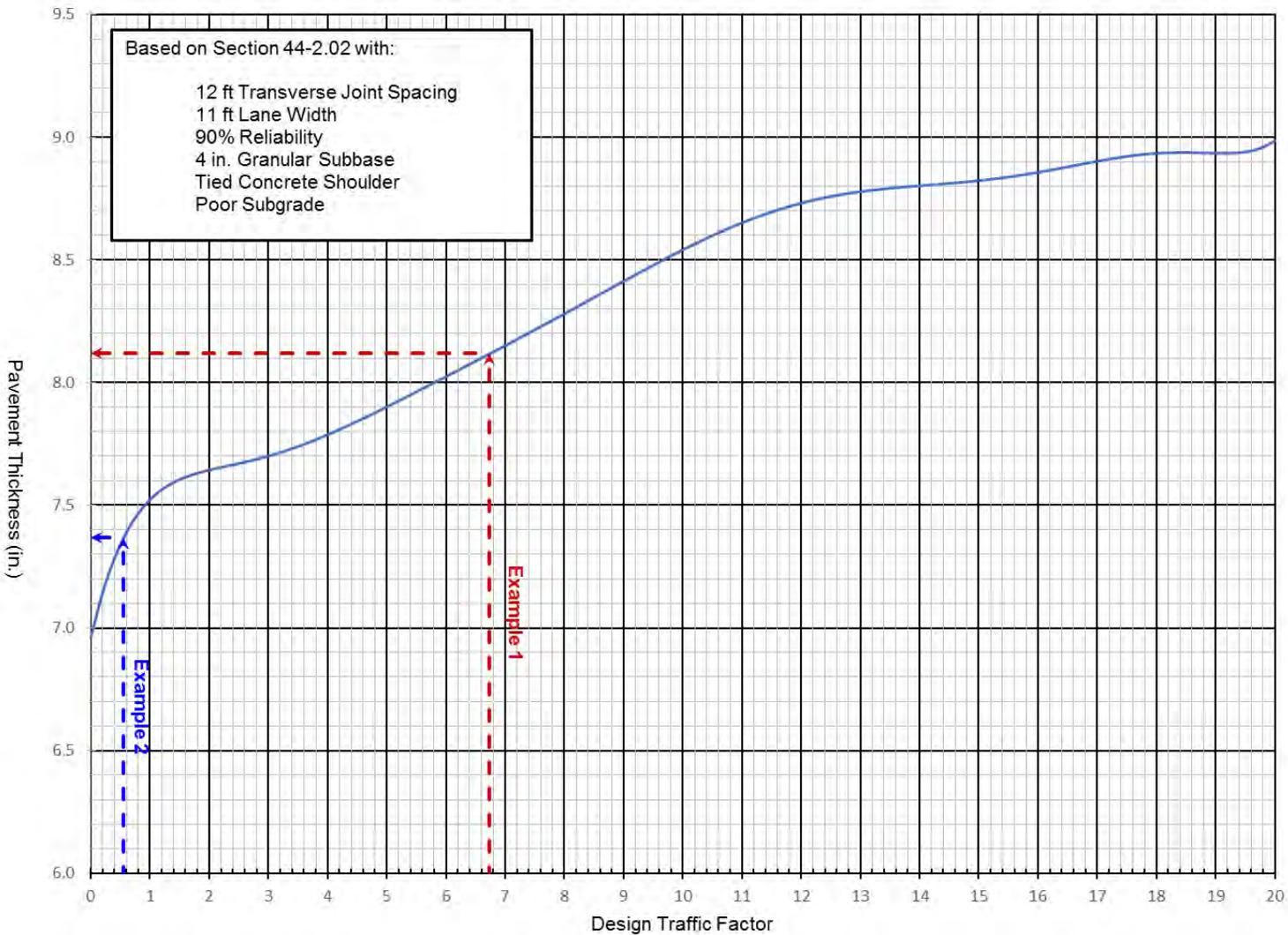
44-2.02(c) Transverse Pavement Joints

For Class I, II, and III pavements, Figure 44-2B provides the thickness design curve for transverse joint spacing of 12 ft, lane width of 11 ft, reliability of 90%, 4 in. granular subbase, tied concrete shoulder, and poor subgrade support. Pavement thickness for this joint spacing may be determined through the pavement design procedure in Section 44-2.03. When alternate joint spacing and pavement design features are desired, the thickness adjustment factor given in Figure 44-2C should be used. The maximum recommended transverse joint spacing for Rigid pavements are given in Figure 44-2D.

Several factors must be carefully considered when selecting transverse joint spacing. Longer joint spacing will result in higher curling and warping stresses, which when combined with load stresses could promote premature failure by fatigue. Longer joint spacing will also result in greater joint movement, which may result in increased joint distress. In urban areas where there is a higher concentration of pavement discontinuities (e.g., manholes, storm sewer outlets, traffic detector loops), longer joint spacing can be less forgiving, leading to cracking between joints. However, shorter joint spacing can result in unstable slabs that may rock and pump under repeated loadings. Shorter joint spacing also results in more joints, thereby increasing the expense of joint maintenance over the life of the pavement. The maximum transverse joint spacing allowed is 15 ft. The CBLRS will provide the thickness designs for pavements granted variances from the joint spacing in Figure 44-2D. In no case is a slab length less than 6 ft recommended except as provided in [Section 46-5](#).

Designers should not use randomized transverse joint spacing unless matching existing joint spacing of adjacent pavement. The use of skewed transverse joints is not allowed. Failure of the portion of the slab where the skewed joint forms an acute angle with the longitudinal joint has been a common occurrence nationwide and in Illinois, and has proven a difficult failure to patch and maintain.

The volume of traffic the pavement will carry determines the type of load transfer device necessary to control faulting at the joints. Mechanical load transfer devices (e.g., dowel bars) are required on pavements that have a design slab thickness of 7 in. or greater. For slab thickness less than 7 in., the designer has the option of using dowel bars or relying on aggregate interlock for load transfer. Shorter joint spacing is recommended when dowel bars are not used.



PRE-ADJUSTED RIGID PAVEMENT THICKNESS

Figure 44-2B

Example 3 – Since the HCV's per day ≤ 48 , the pre-adjusted thickness is 7.0 in. with adjustments of -0.15 in. providing a final thickness of 7.0 in. which exceeds the minimum of 6.0 in. for rigid pavements.

Adjustment Factor	Rigid Pavement Thickness Adjustment (in.)
75% Reliability	-0.50
15 ft Joint Spacing ($0.1 \leq TF \leq 5$)	+1.00
15 ft Joint Spacing ($5 < TF \leq 20$)	+1.25
Untied Shoulder	+0.35
Fair Subgrade	-0.25
Granular Subgrade	-0.50
Stabilized Subbase	-0.25
Existing Pavement as Subbase	-0.50
10 ft Lane Width	+0.25
12 ft Lane Width	-0.25

Note: Thickness adjustment is made for untied shoulders (PCC or flexible). The designer should be aware of the potential for frost heave if untied shoulders are used.

A subbase is optional for all Class III and IV pavements with a TF < 5.0, and for urban sections having curb and gutter and storm sewer systems.

THICKNESS ADJUSTMENT FACTOR

Figure 44-2C

Pavement Thickness (in.)	Maximum Transverse Joint Spacing (ft)
< 10.0	12.0* / 12.0* / 12.0*
≥ 10.0	15.0

* Appropriate for all Class IV pavements.

MAXIMUM TRANSVERSE JOINT SPACING

Figure 44-2D

44-2.02(d) Longitudinal Pavement Joints

Longitudinal joints run parallel to the pavement length and serve the dual function of separating the pavement into travel lanes and controlling longitudinal cracking. Longitudinal joints may be formed by sawing the rigid pavement early in the curing process to form a neat joint before the natural cracking occurs or by limiting the width of the slab being placed. Keyed longitudinal joints are not recommended because of their difficulty in construction and subsequent poor performance. Tied longitudinal construction joints should be used in lieu of keyed longitudinal joints.

Typical BLRS practice requires the use of a deformed tie bar at all longitudinal joints. The basic purposes of tying the longitudinal joint are to promote load transfer through tight aggregate interlock joints and prevent lane separation. However, for pavement cross-sections greater than 60 ft wide, including turn lanes, shoulders, and medians, tying the entire width together may promote longitudinal cracking, particularly if excessive steel is used. For pavement cross sections more than 60 ft, use of dowel bars in lieu of deformed tie bars at one or more longitudinal joints may be an option. In situations where curb and gutter is present on both sides of the pavement, the confining pressure exhibited may preclude the need for tie bars across all longitudinal joints. In these cases, one or more longitudinal joints should not be tied as appropriate or smaller tie bars used than specified in the [Illinois Highway Standards](#) should be used. Local experience may vary in these situations. If it can be determined that lane separation in pavements of similar thickness and cross section has not been a problem, a variance may be requested. The CBLRS should be consulted for variances to the use of tie bars across longitudinal joints.

44-2.02(e) Subgrade

Roadbed soils that are susceptible to excessive volume changes, permanent deformation, excessive deflection and rebound, frost heave, and/or non-uniform support can affect pavement performance. For Class I and II roads, the designer is required to follow the guidelines found in Section 44-7. Use of Section 44-7 is optional for all Class III and IV roadways. In situ soils that do not develop an IBV more than 6.0 when compacted at, or wet of, optimum moisture content require corrective action. The designer should consider corrective actions (e.g., undercutting, moisture density control, soil modification) in the design plans and specifications. The county soil report can be a useful source of typical soil information (e.g., standard dry density and optimum moisture content (AASHTO T 99), soil classification, percent clay, plasticity index (PI)).

Necessary corrective actions as required by Section 44-7 will be in addition to the subbase requirements of the pavement design.

44-2.02(f) Subgrade Support Rating (SSR)

The general physical characteristics of the roadbed soil affect the design thickness and performance of the pavement structure. For pavement design purposes, there are three subgrade support ratings (SSR) — poor, fair, and granular. The SSR is determined as discussed in Section 44-6. The SSR should represent the average or majority classification within the design section. The pavement thickness design curve (Figure 44-2B) is based on a SSR of poor. Adjustments in the design thickness need to be made for fair and granular subgrades are shown in Figure 44-2C.

44-2.02(g) Subbase

A subbase under a pavement serves two purposes. Initially, it provides a stable construction platform for the subsequent man-made layers. After construction, it can improve the pavement performance by alleviating pumping of fine-grained soils and providing positive drainage for the pavement system. The usage and thickness requirements for subbases are given in Figure 44-2E.

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When placing a PCC pavement directly over a flexible pavement with a HMA surface, consult CBLRS for design assistance.

Road Class	Subbase Material	Usage ⁽¹⁾	Minimum Thickness (in.)
Class I and II TF ≥ 5.0 TF < 5.0	Stabilized Subbase ⁽²⁾	Required	4
	Granular ⁽³⁾	Required	4
Class III and IV TF ≥ 5.0 TF < 5.0	Granular ⁽³⁾	Required	4
	Granular ⁽³⁾	Optional / Optional	4

Notes:

1. Subbase will be optional for urban sections having curbs and gutters and storm sewer systems. A 4 in. minimum subbase may be used to serve as a working platform where poor soil conditions exist.
2. Stabilized subbase according to the requirements of the [IDOT Standard Specifications](#) or any applicable special provision.
3. Use Type A granular subbase according to the requirements of the [IDOT Standard Specifications](#).

SUBBASE REQUIREMENTS

Figure 44-2E

44-2.02(h) Design Reliability

Design reliability is considered in the design TF. A reliability of 90% is built into the PCC slab thickness design curve in Figure 44-2B. Adjustments in the design thickness need to be made for medium reliability level as shown in Figure 44-2C. The minimum reliability levels by road classes are given in Figure 44-2F.

Road Class	Minimum Reliability Levels	Reliability (%)
Class I and II	High	90
Class III	Medium	75
Class IV (Figure 44-2G)	Medium	75

RELIABILITY LEVELS

Figure 44-2F

44-2.03 Thickness Design

44-2.03(a) Minimum Design Thickness

Once all pavement thickness adjustments have been made, the final design thickness must be 6 in. (15 cm) or greater.

44-2.03(b) Pre-adjusted Rigid Pavement Thickness

The jointed pavement thickness design procedure is based on determining the pre-adjusted thickness of the rigid pavement, and then adjusting for shoulder type, subgrade support conditions, subbase type, joint spacing, reliability, and lane width. The pre-adjusted rigid pavement thicknesses were developed for pavements with tied PCC shoulders, 4 in. granular subbase, and poor subgrade support. For Class I, II, and III pavements, the pre-adjusted rigid pavement thicknesses are determined from Figure 44-2B for joint spacing of 12.0 ft. If a specific joint spacing, shoulder type, reliability, soil support, subbase, or lane width is not desired, adjustments to the slab thicknesses for alternate design features can be made based on recommendations provided in Figure 44-2C.

For Class IV PCC pavements, Figure 44-2G provides the pre-adjusted rigid pavement thickness of 7.0 in. for an 11.0 ft lane width, a 12.0 ft joint spacing, a 90% reliability, with either tied curb or concrete shoulders, and poor soil conditions. Class IV pavements can have a reduced reliability of 75%. Design rigid pavement thickness should never be less than 6.0 in.

Joint spacing of 15 ft are not recommended for Class IV pavements because their thicknesses are typically less than 10.0 in. and the maximum recommended joint spacing is 12.0 ft as shown in Figure 44-2D.

44-2.03(c) Rigid Pavement Thickness Adjustments

Adjustments to the pre-adjusted rigid pavement thickness should be made based on the shoulder type, joint spacing, subgrade support, subbase type, lane width, and reliability. The final design thickness is rounded to the next highest 0.25 in. In determining any adjustments, consider the following:

1. Shoulder Type. The pre-adjusted rigid pavement thickness is valid if the rigid pavement has one of the following shoulder types:
 - tied PCC slab, including tied PCC widening;
 - tied curb and gutter;
 - integral curb and gutter; and/or
 - extended lanes.

Tied PCC slab, tied curb and gutter, and extended lane shoulder types must be tied per the [Illinois Highway Standards](#) in order to avoid a pavement thickness adjustment. The recommended reinforcement bar shown in the [Illinois Highway Standards](#) is needed to promote load transfer through tight aggregate interlock joints between the pavement and curb/shoulder. Designers may specify smaller tie bars; however, additional pavement thickness will be required based on pavement thickness adjustment factors in Figure 44-2C, since it would be considered as untied.

2. Subgrade and Subbase Support. Rigid pavement thickness adjustments are based on the subgrade support and whether the pavement structure will have a subbase or not. Figure 44-2C provides the subgrade support adjustment factors for fair and granular subgrade. Figure 44-2B provides the slab thickness for 4 in. granular subbase (or none if applicable) with adjustment for stabilized subbase given in Figure 44-2C.
3. Joint Spacing. Joint spacing of 15 ft may be used for rigid pavement thicknesses over 10 in. (Figure 44-2D). Thickness adjustment factors for 15 ft joint spacing are given in Figure 44-2C for $TF \leq 5$ and $5 < TF \leq 20$.
4. Lane Width. The standard chart in Figure 44-2B is for an 11 ft lane width. Thickness adjustment can be made for 10 ft and 12 ft lane width as shown in Figure 44-2C.
5. Reliability. Designs for lower reliability can be completed given the criteria in Figure 44-2F and thickness adjustment factor given in Figure 44-2C.

After all necessary adjustments to the pre-adjusted rigid pavement thickness has been made, the designer should round the final design thickness to the next highest 0.25 in. The designer should compare the recommended design thicknesses to Figure 44-2D to determine which joint spacing is allowed.

44-2.03(d) Dowel Bars

The use of doweled joints will be required for rigid pavement thicknesses that are 7 in. and greater on all Class I, Class II, and Class III roads and streets. Doweled joints will not be required for Class IV roads and streets. Recommended dowel diameters are given in Figure 44-2H.

HCV's/day	Rigid Pavement Thickness for 12 ft Joint Spacing (in.)
≤ 48	7.0 ⁽¹⁾
> 48	(2)

Notes:

1. Minimum rigid pavement thickness shall not be less than 6 in. after all adjustment factors are applied.
2. Use the Class III TF equations or a TF of 0.5, whichever is greater, in conjunction with Figures 44-2B.

**CLASS IV PRE-ADJUSTED RIGID PAVEMENT THICKNESS
(11 ft Lane Width / 90% Reliability / Tied Curb or PCC Shoulders / Poor Soil Conditions)**

Figure 44-2G

Rigid Pavement Thickness (in.)	Dowel Diameter (in.)
≥ 10.00	1.50
> 8.00 to 9.99	1.25
≤ 8.00	1.00 / 1.00

DOWEL BAR DIAMETER REQUIREMENTS

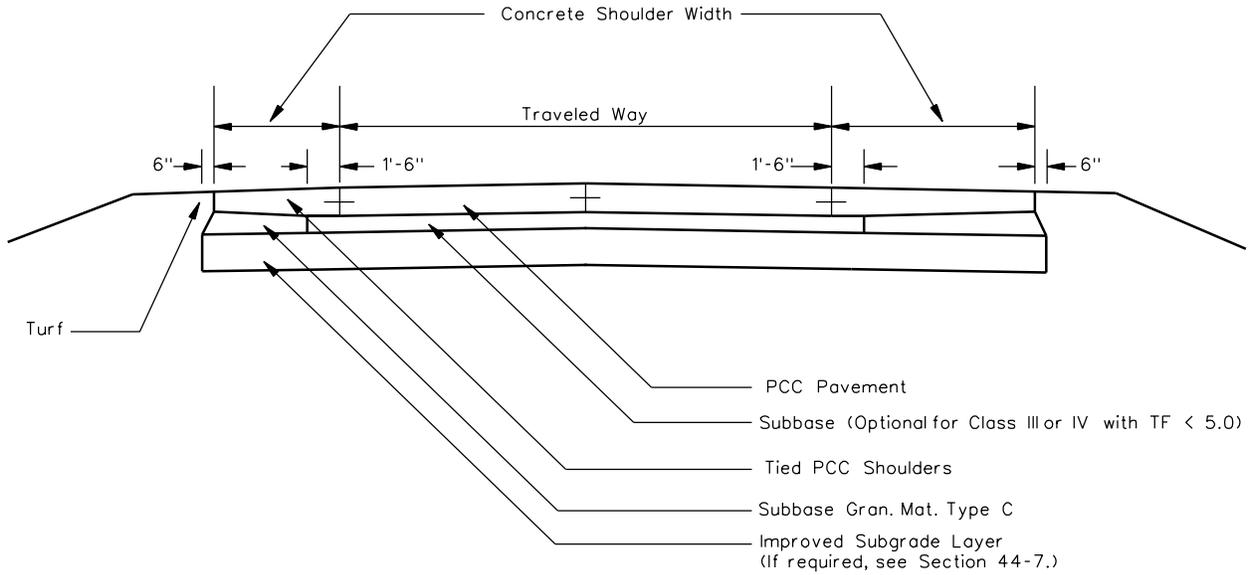
Figure 44-2H

44-2.04 Typical Sections

Figures 44-2I, 44-2J, and 44-2K illustrate typical LPA rigid pavement designs.

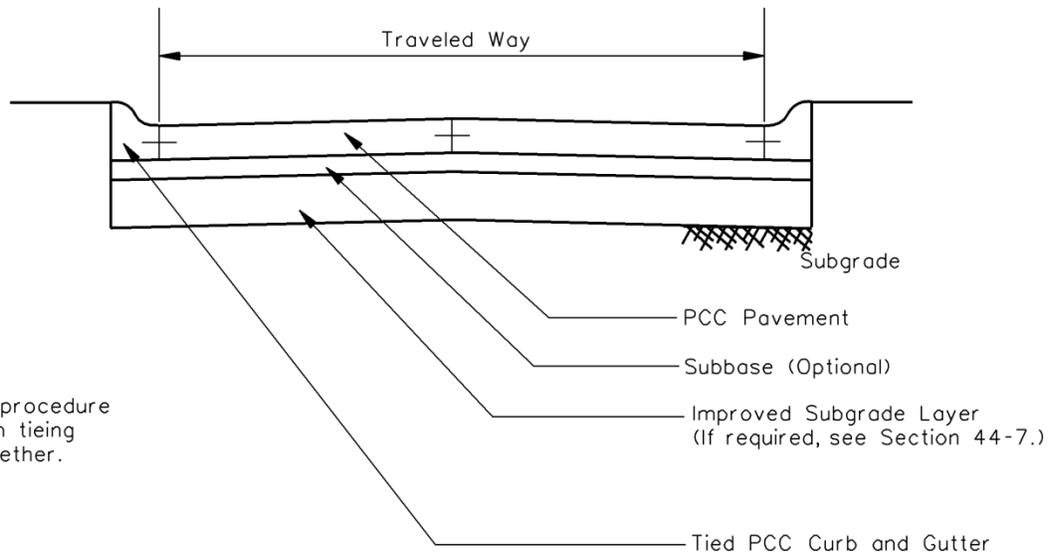
44-2.05 Worksheet

Figure 44-2L represents a worksheet for documenting the rigid pavement design calculations.



**TYPICAL RIGID PAVEMENT DESIGN
WITH TIED SHOULDERS**

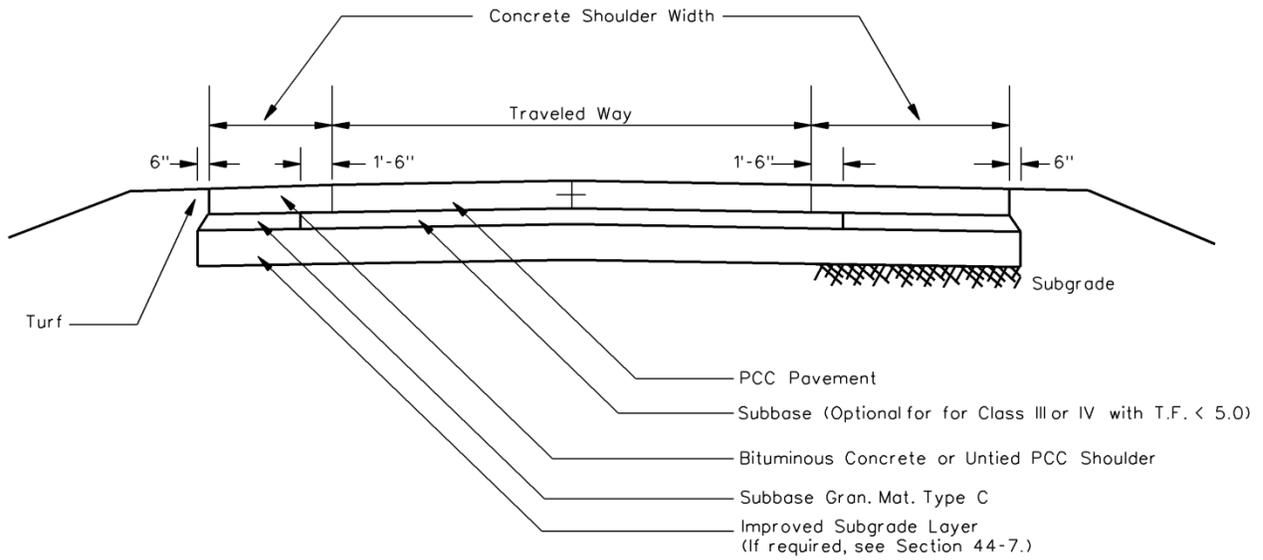
Figure 44-2I



Note: See design procedure for information on tying multiple lanes together.

**TYPICAL RIGID PAVEMENT DESIGN
WITH TIED CURB AND GUTTER**

Figure 44-2J



**TYPICAL RIGID PAVEMENT
DESIGN WITH UNTIED SHOULDERS**

Figure 44-2K

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PAVEMENT DESIGN

44-2-14

June 2018

Date: _____
 Calculations by: _____
 Checked by: _____

County: _____
 LPA: _____
 Section: _____
 Route: _____
 Location: _____

Limits of Analysis:

From: _____
 To: _____
 Length: _____ Feet _____ Miles

Percent / Count *(Figure 44-1A as needed)*

Structural Design Traffic: *(Section 44-1.03(c))*
 Number of Lanes: _____ Width: _____ ft
 ADT: _____
 Class of Road or Street: _____ *(Section 44-1.01)*

PV: _____ % / _____
 SU: _____ % / _____
 MU: _____ % / _____
 HCV: _____

Traffic Factor (Show Calculations): *(Figure 44-2A)*

Traffic Factor: _____

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair Granular *(Section 44-2.02(f) and Figure 44-6A)*
 Pre-Adjusted Rigid Pavement Thickness: *(Figure 44-2B or Figure 44-2G)* _____ in.
 Reliability: *(Figure 44-2F)* 75% or 90%

Adjustments: *(Section 44-2.03(c) and Figure 44-2C)*

75% Reliability	<i>Section 44-2.02(h)</i>	-0.50	_____ in.
15 ft Joint Spacing ($0.1 \leq TF \leq 5$) / ($5 \leq TF \leq 20$)		+1.00 / +1.25	_____ in.
Untied Shoulder		+0.35	_____ in.
Fair Subgrade / Granular Subgrade		-0.25 / -0.50	_____ in.
Stabilized Subbase / Existing Pavement as Subbase		-0.25 / -0.50	_____ in.
<input type="checkbox"/> 10 ft Lane Width / <input type="checkbox"/> 12 ft Lane Width		+0.25 / -0.25	_____ in.
		Total Adjustment:	_____ in.

Adjusted Rigid Pavement Thickness _____ in.
 Transverse Joint Spacing *(Figure 44-2D)* 12 ft or 15 ft
 Final Pavement Thickness *(Rounded to next 1/4 in.)* *(Minimum Thickness 6.0 in.)* _____ in.
 Dowel Bars: Yes No *(Section 44-2.03(d))* Size: *(Figure 44-2H)* _____ in.
 Comments: _____

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

RIGID PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES
Figure 44-2L

44-2.06 Example Calculations**44-2.06(a) Example Calculation 1 (Red) – Class I Road**Problem:

Design a jointed concrete pavement for the given conditions.

Given: (Section 44-1.08(a))

Class I Road, Four Lane Pavement (Urban) (Section 44-1.01)

12 ft Lanes with Concrete Curb and Gutter (tied)

Design Traffic: ADT = 14,000

PV's 86%, SU's 8%, MU's 6% (if unknown see Section 44-1.03(c))

Lake County

Design Subgrade Support Rating – Fair

Posted Speed Limit – 30 MPH with Bus Stops

Solution:

Use Figure 44-2A and determine the TF equation for a four-lane Class I road.

4 or 5 Lane Pavements (Rural and Urban)

$$TF = DP \left[\frac{(0.047PV + 64.715SU + 313.389MU)}{1,000,000} \right]$$

$$TF = 20 \left[\frac{(0.047 \times 12040 + 64.715 \times 1120 + 313.389 \times 840)}{1,000,000} \right]$$

$$TF = 6.73$$

Because the pavement is a Class I road with tied curb and gutter, a subbase is optional (see Figure 44-2E, Note 1). From Figure 44-2E, a stabilized subbase is may be used with a minimum thickness of 4 in.

The pre-adjusted rigid pavement thickness is determined from Figure 44-2B, gives a value of 8.12 in. Based on Figure 44-2C, the thickness adjustment factors are -0.25 in. (fair subgrade), -0.25 in. (stabilized subbase), and -0.25 in. (12 ft lane width). The pre-adjusted rigid pavement thickness is 8.12 in. with adjustments of -0.75 in. for a value of 7.37 in.; this is rounded to the next highest ¼ in. or a final thickness of 7.50 in.

A check of Figure 44-2D, a 12 ft transverse joint spacing is required. Dowels are required because the pavement thickness is greater than 7 in. [Section 44-2.03(d)]. Based on Figure 44-2H, the dowel bar diameter is 1.00 in.

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

44-2-16

June 2018

Date: _____

County: Lake

Calculations by: _____

LPA: _____

Checked by: _____

Section: _____

Route: _____

Location: _____

Limits of Analysis:

From: _____

To: _____

Length: _____ Feet _____ Miles

Percent / Count *(Figure 44-1A as needed)*

Structural Design Traffic: *(Section 44-1.03(c))*

Number of Lanes: 4 Width: 12 ft

ADT: 14,000

Class of Road or Street: I *(Section 44-1.01)*

PV: _____ 86 % / _____ 12,040

SU: _____ 8 % / _____ 1,120

MU: _____ 6 % / _____ 840

HCV: _____ 1960

Traffic Factor (Show Calculations): *(Figure 44-2A)*

$$TF = 20 \left[\frac{(0.047 \times 12040 + 64.715 \times 1120 + 313.389 \times 840)}{1,000,000} \right]$$

Traffic Factor: _____ 6.73

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair Granular *(Section 44-2.02(f) and Figure 44-6A)*

Pre-Adjusted Rigid Pavement Thickness: *(Figure 44-2B or Figure 44-2G)* _____ 8.12 in.

Reliability: *(Figure 44-2F)* 75% or 90%

Adjustments: *(Section 44-2.03(c) and Figure 44-2C)*

75% Reliability *Section 44-2.02(h)* -0.50 _____ N/A in.

15 ft Joint Spacing ($0.1 \leq TF \leq 5$) / ($5 \leq TF \leq 20$) +1.00 / +1.25 _____ N/A in.

Untied Shoulder +0.35 _____ N/A in.

Fair Subgrade / Granular Subgrade -0.25 / -0.50 _____ -0.25 in.

Stabilized Subbase / Existing Pavement as Subbase -0.25 / -0.50 _____ -0.25 in.

10 ft Lane Width / 12 ft Lane Width +0.25 / -0.25 _____ -0.25 in.

Total Adjustment: _____ -0.75 in.

Adjusted Rigid Pavement Thickness _____ 7.37 in.

Transverse Joint Spacing *(Figure 44-2D)* 12 ft or 15 ft

Final Pavement Thickness *(Rounded to next 1/4 in.) (Minimum Thickness 6.0 in.)* _____ 7.50 in.

Dowel Bars: Yes No *(Section 44-2.03(d))* Size: *(Figure 44-2H)* _____ 1.00 in.

Comments: A 4 in. stabilized subbase is required.

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

EXAMPLE 1 – RIGID PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES

Figure 44-2L

44-2.06(b) Example Calculation 2 (Blue) – Class III RoadProblem:

Design a jointed concrete pavement for the given conditions.

Given: (Section 44-1.08(b))

Class III Road, Two Lane Pavement (Section 44-1.01)

11 ft Lanes with Paved HMA Shoulders

Design Traffic: ADT = 1,800

PV's 90%, SU's 6%, MU's 4% (if unknown see Section 44-1.03(c))

Sangamon County

Design Subgrade Support Rating – Poor

Posted Speed Limit – 40 MPH with No Bus Stops

Solution:

Use Figure 44-2A and determine the TF equation for a two-lane Class III road.

2 or 3 Lane Pavements

$$TF = DP \left[\frac{(0.073PV + 64.790SU + 281.235MU)}{1,000,000} \right]$$

$$TF = 20 \left[\frac{(0.073 \times 1620 + 64.790 \times 108 + 281.235 \times 72)}{1,000,000} \right]$$

$$TF = 0.547$$

Because the pavement is a Class III road with a TF < 5.0, a subbase is optional (see Figure 44-2E). From Figure 44-2E, if a subbase is required or desired the minimum thickness is 4 in. For this example the LPA decided to use a 4 in. granular subbase.

The required pre-adjusted rigid pavement thickness is determined from Figure 44-2B, which gives us a value of 7.4 in. Based on Figure 44-2C, the thickness adjustment factors are +0.35 in. (untied shoulders) and no adjustments for poor subgrade or using a 4 in. granular subbase. The LPA decided to use the higher reliability of 90% providing no additional adjustment. The pre-adjusted rigid pavement thickness of 7.4 in. and adjustments of +0.35 in. for a value of 7.75 in.; which does not need to be rounded to the next highest ¼ in.

A check of Figure 44-2D, a 15 ft transverse joint spacing is not allowed, therefore; a 12 ft transverse joint spacing will be used. Dowels are required because the pavement thickness required is greater than 7 in. [Section 44-2.03(d)]. Based on Figure 44-2H, the dowel bar diameter is 1.00 in.

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

44-2-18

June 2018

Date: _____

County: Sangamon

Calculations by: _____

LPA: _____

Checked by: _____

Section: _____

Route: _____

Location: _____

Limits of Analysis:

From: _____

To: _____

Length: _____ Feet _____ Miles

Percent / Count *(Figure 44-1A as needed)*

Structural Design Traffic: *(Section 44-1.03(c))*

Number of Lanes: 2 Width: 11 ft

ADT: 1,800

Class of Road or Street: III *(Section 44-1.01)*

PV: _____ 90 % / _____ 1,620

SU: _____ 6 % / _____ 108

MU: _____ 4 % / _____ 72

HCV: _____ 180

Traffic Factor (Show Calculations): *(Figure 44-2A)*

$$TF = 20 \left[\frac{(0.073 \times 1620 + 64.790 \times 108 + 281.235 \times 72)}{1,000,000} \right]$$

Traffic Factor: _____ 0.547

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair Granular *(Section 44-2.02(f) and Figure 44-6A)*

Pre-Adjusted Rigid Pavement Thickness: *(Figure 44-2B or Figure 44-2G)* _____ 7.40 in.

Reliability: *(Figure 44-2F)* 75% or 90%

Adjustments: *(Section 44-2.03(c) and Figure 44-2C)*

75% Reliability *Section 44-2.02(h)* -0.50 _____ N/A in.

15 ft Joint Spacing (0.1 ≤ TF ≤ 5) / (5 ≤ TF ≤ 20) +1.00 / +1.25 _____ N/A in.

Untied Shoulder +0.35 _____ +0.35 in.

Fair Subgrade / Granular Subgrade -0.25 / -0.50 _____ 0.00 in.

Stabilized Subbase / Existing Pavement as Subbase -0.25 / -0.50 _____ N/A in.

10 ft Lane Width / 12 ft Lane Width +0.25 / -0.25 _____ N/A in.

Total Adjustment: _____ +0.35 in.

Adjusted Rigid Pavement Thickness _____ 7.75 in.

Transverse Joint Spacing *(Figure 44-2D)* 12 ft or 15 ft

Final Pavement Thickness *(Rounded to next ¼ in.) (Minimum Thickness 6.0 in.)* _____ 7.75 in.

Dowel Bars: Yes No *(Section 44-2.03(d))* Size: *(Figure 44-2H)* _____ 1.00 in.

Comments: _____

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

EXAMPLE 2 – RIGID PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES

Figure 44-2L

44-2.06(c) Example Calculation 3 (Green) – Class IV Road

Problem:

Design a jointed concrete pavement for the given conditions.

Given: (Section 44-1.08(c))

Class IV Road, Two Lane Pavement (Section 44-1.01)

11 ft Lanes with Aggregate Shoulders

Design Traffic: ADT = 350

PV's 88%, SU's 7%, MU's 5% (if unknown see Section 44-1.03(c))

City of Marion, Williamson County

Design Subgrade Support Rating – Poor

Posted Speed Limit – 55 MPH with No Bus Stops

Solution:

Determine the HCV which is the SU (24) + MU (18) for a value of 42. With the $HCV \leq 48$, the required pre-adjusted slab thickness is determined from Figure 44-2G, which gives a value of 7.0 in. The minimum rigid pavement thickness is 6.0 in. per Section 44-2.03(a).

Based on Figure 44-2C, the thickness adjustment factors are +0.35 in. (untied shoulders) and the LPA decided to use the lower reliability of 75% providing an adjustment factor of -0.50 in. The pre-adjusted rigid pavement thickness of 7.0 in. and adjustments of -0.15 in. for a value of 6.85 in. This gives a final thickness of 7.00 in.

A check of Figure 44-2D, a 12 ft transverse joint spacing is required. Dowels are not required because it is on a Class IV Road [Section 44-2.03(d)]. If dowel bars were desired the diameter would be 1.00 in. (Figure 44-2H).

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

44-2-20

June 2018

Date: _____

County: Williamson

Calculations by: _____

LPA: City of Marion

Checked by: _____

Section: _____

Route: _____

Location: _____

Limits of Analysis:

From: _____

To: _____

Length: _____ Feet _____ Miles

Percent / Count *(Figure 44-1A as needed)*

Structural Design Traffic: *(Section 44-1.03(c))*

Number of Lanes: 2 Width: 11 ft

ADT: 350

Class of Road or Street: IV *(Section 44-1.01)*

PV: _____ 88 % / _____ 308

SU: _____ 7 % / _____ 24

MU: _____ 5 % / _____ 18

HCV: _____ 42

Traffic Factor (Show Calculations): *(Figure 44-2A)*

With the HCV < 48, the required pre-adjusted slab thickness is determined from Figure 44-2G, which gives a value of 7.0 in. The minimum slab thickness is 6.0 in. per Section 44-2.03(a).

Traffic Factor: _____ N/A

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair Granular *(Section 44-2.02(f) and Figure 44-6A)*

Pre-Adjusted Rigid Pavement Thickness: *(Figure 44-2B or Figure 44-2G)* _____ 7.0 in.

Reliability: *(Figure 44-2F)* 75% or 90%

Adjustments: *(Section 44-2.03(c) and Figure 44-2C)*

Applicable Adjustments

75% Reliability *Section 44-2.02(h)* _____ -0.50 _____ -0.50 in.

15 ft Joint Spacing ($0.1 \leq TF \leq 5$) / ($5 \leq TF \leq 20$) _____ +1.00 / +1.25 _____ N/A in.

Untied Shoulder _____ +0.35 _____ +0.35 in.

Fair Subgrade / Granular Subgrade _____ -0.25 / -0.50 _____ 0.00 in.

Stabilized Subbase / Existing Pavement as Subbase _____ -0.25 / -0.50 _____ N/A in.

10 ft Lane Width / 12 ft Lane Width _____ +0.25 / -0.25 _____ N/A in.

Total Adjustment: _____ -0.15 in.

Adjusted Rigid Pavement Thickness _____ 6.85 in.

Transverse Joint Spacing *(Figure 44-2D)* 12 ft or 15 ft

Final Pavement Thickness *(Rounded to next 1/4 in.) (Minimum Thickness 6.0 in.)* _____ 7.00 in.

Dowel Bars: Yes No *(Section 44-2.03(d))* Size: *(Figure 44-2H)* _____ N/A in.

Comments: Dowel bars are not required because it is on a Class IV Road.

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

EXAMPLE 3 – RIGID PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES

Figure 44-2L

44-3 CONVENTIONAL FLEXIBLE PAVEMENT DESIGN FOR LOCAL PUBLIC AGENCIES

44-3.01 Introduction

A conventional flexible pavement is a HMA surface in combination with a granular base and, if required, additional subbase layers. Conventional flexible pavements are allowed for traffic factors (TF) up to 0.50.

The design criteria for conventional flexible pavements are HMA fatigue and subgrade stress. A Subgrade modulus (E_{RI}) is used to accommodate subgrade rutting considerations, see Section 44-3.02(e). The conventional flexible design procedure is based on 18-kip ESAL's and 80 psi tire pressure conditions.

44-3.02 Basic Design Elements

44-3.02(a) **Minimum Material Requirements**

HMA binder and surface course are required for conventional flexible pavement design. Use a minimum thickness of 3 in. of HMA.

All HMA lifts must comply with the minimum thicknesses in Section 44-1.05.

Use a minimum thickness of 8 in. of aggregate base course, Type A material. A modified soil layer (8 in. minimum) or subbase granular material, Type B (4 in. minimum) may be used at a 1:1 ratio to satisfy granular layer thickness requirements more than 8 in. For example, a 12 in. base requirement could be satisfied by using 12 in. of aggregate base course, Type A material or 8 in. of aggregate base course, Type A and 4 in. of subbase granular material, Type B.

Class IV pavements with less than 24 HCV's per day may use an aggregate base course, Type B material in place of the aggregate base course, Type A material for the entire base thickness required.

44-3.02(b) **Traffic Factors**

The maximum allowable Traffic Factor (TF) for conventional flexible pavements is 0.50. For Class I, II, and III roads and streets, the design TF for flexible pavements can be determined for various DP's from the 80,000 lb load limit formulas shown in Figure 44-3A. The formulas shown are based on the statewide average distribution of vehicle types and axle loadings, which are directly applicable to most roads and streets.

However, cases will arise in which the average formula should not be used (e.g., a highway where HCV's entering and leaving a site generally travel empty in one direction and fully loaded in the other). These cases should be referred to the CBLRS for special analysis. The LPA must provide the CBLRS with the structural design traffic; the DP; traffic distribution by PV, SU, and MU; and loading condition of HCV traffic.

BUREAU OF LOCAL ROADS & STREETS

For Class IV roads and streets, thicknesses are provided in Section 44-3.03(b) based on the daily volume of HCV's; therefore, a design TF is not necessary.

Class I Roads and Streets	
4 or 5 Lane Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.047PV + 59.625SU + 217.139MU)}{1,000,000} \right]$
6 or More Lane Pavements (Rural)	$TF = DP \left[\frac{(0.029PV + 53.000SU + 193.012MU)}{1,000,000} \right]$
6 or More Lane Pavements (Urban)	$TF = DP \left[\frac{(0.012PV + 49.025SU + 178.536MU)}{1,000,000} \right]$
One-way Streets and Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.073PV + 66.250SU + 241.265MU)}{1,000,000} \right]$
Class II Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 56.030SU + 192.720MU)}{1,000,000} \right]$
Class III Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 54.570SU + 192.175MU)}{1,000,000} \right]$

TRAFFIC FACTOR EQUATIONS (80,000 LB LOAD LIMIT)

Figure 44-3A

44-3.02(c) Stage Construction

Stage construction is the planned construction of the pavement structure in two or more stages, such as placing the lower lifts in one construction season and the surface in the next construction season. Stage construction will be allowed on conventional flexible pavements with a design TF greater than 0.1 and with the approval of the district. The maximum period that may elapse between the completion of the first stage and the scheduled construction date of the final stage is two years.

If a HMA mixture is not part of the initial stage, place an A-2 or A-3 surface treatment over the aggregate base. The aggregate base thickness will be determined according to Section 44-8.

If HMA (base or surface course) is part of the initial stage, provide a minimum HMA thickness of 3 in. The total HMA thickness resulting from the stages will be the HMA design thickness plus an additional 0.5 in.

Any evidence of fatigue cracking, raveling, or other deterioration prior to the construction of the final stage will necessitate a re-evaluation of the structural design of the pavement.

44-3.02(d) PG Binder Grade Selection

The PG binder grade may affect the performance of a HMA mixture. The conventional flexible pavement design procedure assumes that HMA rutting and thermal cracking are adequately considered in the material selection and mixture design process. Selection of the appropriate binder grade can impact the ability of the mix to resist rutting at higher temperatures and thermal cracking at lower temperatures. Both high and low temperature levels need to be considered when selecting the appropriate binder grade for conventional flexible pavements.

Conventional flexible pavements should use the grades shown in Figure 44-3B. Most conventional flexible pavements should use the grades shown for a standard traffic level. Areas of slow moving or standing traffic (e.g., intersections, bus stops, city streets) warrant the use of stiffer binders to resist rutting. PG binder grade adjustments should be made according to Figure 44-3B. PG binder grade adjustments, where applicable, should be applied to the surface and top binder lift.

The LPA must request a variance from the CBLRS to use a different PG binder than specified in Figure 44-3B.

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PAVEMENT DESIGN

44-3-4

June 2018

PG Binder Grade Selection⁽¹⁾			
Districts 1 – 4	Traffic Loading Rate (Adjustment)		
	Standard ⁽²⁾	Slow ⁽³⁾	Standing ⁽⁴⁾
Surface ⁽⁵⁾	PG 58-28	PG 64-28 or SBS PG 64-28	SBS PG 70-28
Remaining Lifts ⁽⁵⁾	PG 64-22 or PG 58-22	PG 64-22 or PG 58-22	PG 64-22 or PG 58-22
Districts 5 – 9			
Surface ⁽⁵⁾	PG 64-22	PG 70-22 or SBS PG 70-22	SBS PG 76-22
Remaining Lifts ⁽⁵⁾	PG 64-22	PG 64-22	PG 64-22

Notes:

1. The binder grades provided in Figure 44-3B are based on the recommendations given in Illinois-Modified AASHTO MP-2, Table 1, "Binder Selection on the Basis of Traffic Speed and Traffic Level."
2. Standard traffic is used where the average traffic speed is greater than 43 mph (70 km/h).
3. Slow traffic is used where the average traffic speed ranges from 12 to 43 mph (20 to 70 km/h).
4. Standing traffic is used where the average traffic speed is less than 12 mph (20 km/h).
5. Surface includes the top 2 in. (50 mm) of HMA. The remaining lifts of HMA may be the same PG binder grade as surface; however, this may increase or decrease the pavement design thickness. If multiple PG Binder grades are used in a HMA design, the predominant PG Binder grade should be used for determining HMA Modulus on Figure 44-3E.

PG BINDER GRADE SELECTION FOR CONVENTIONAL FLEXIBLE PAVEMENTS

Figure 44-3B

44-3.02(e) Subgrade Inputs

The general physical characteristics of the roadbed soils affect the design thickness and performance of the pavement structure. For full-depth HMA pavements, the thickness of the pavement structure is sufficient to reduce the subgrade vertical compression stresses to an acceptable level. An improved subgrade under a full-depth HMA pavement functions primarily as a working platform. However, in conventional flexible pavement design, the roadbed soil plays a critical role in the load-carrying capacity of the pavement. Therefore, a careful examination of the subgrade soil characteristics is necessary.

For the design of conventional flexible pavements, the critical subgrade modulus (E_{Ri}) is used. The critical E_{Ri} is the expected spring season E_{Ri} value (usually when the water table is highest and after the spring thaw). The critical E_{Ri} can be determined using one of the methods outlined in Section 44-6.

E_{Ri} values less than 2 ksi require subgrade stabilization. Subgrade soils suspected of having modulus values this low require a soils investigation.

The designer should take into consideration the susceptibility of the roadbed soil to excessive volume changes, permanent deformation, excessive deflection and rebound, frost heave, and non-uniform support. The designer should use Section 44-7 to address these types of issues by recommending corrective actions (e.g., undercutting, moisture density control, soil modification) in the design plans and specifications. "Soil Modification" should be used in lieu of the "Lime-Modified Soils" section of the [IDOT Standard Specifications](#) (Section 302). Necessary corrective measures would be in addition to the subbase requirements of the pavement design.

Pavement thickness adjustments are not necessary for sandy/granular subgrade materials, which typically have a modulus greater than 3 ksi. The designer is cautioned against assuming an E_{Ri} value greater than 3 ksi if there are no test results to support the assumption.

44-3.02(f) Base and Subbase

A subbase under a pavement serves two purposes. Initially, it provides a stable construction platform for the base and surface courses. After construction, it can improve the pavement performance by alleviating pumping of fine-grained soils and providing positive drainage for the pavement system.

1. Thickness. Use a minimum thickness of 8 in. of aggregate base course, Type A material. A modified soil layer (8 in. minimum) or subbase granular material, Type B (4 in. minimum) may be used at a 1:1 ratio to satisfy granular layer thickness requirements more than 8 in. For example, a 12 in. base requirement could be satisfied by using 12 in. of aggregate base course, Type A material or 8 in. of aggregate base course, Type A and 4 in. of subbase granular material, Type B.

Class IV pavements with less than 24 HCV's per day may use an aggregate base course, Type B material in place of the aggregate base course, Type A material for the entire base thickness required.

2. Width. Aggregate subbase and base course shall be at least 2 ft wider than the HMA surface course. If curb and gutter is used, this may be reduced to 1 ft.

44-3.02(g) Design Reliability

Design reliability is considered through traffic factor multipliers applied to the design TF. These traffic multipliers are built into the design HMA strain curve in Figure 44-3F. The minimum reliability levels by class of road for $TF \leq 0.5$ are given in Figure 44-3C.

Road Class	Minimum Reliability Level	Reliability (%)
Class I, II, III, and IV	Medium	~ 75%

Note: The estimated percent reliability is based on a representative 9-kip Falling Weight Deflectometer surface deflection coefficient of 25%.

RELIABILITY LEVEL ($TF \leq 0.5$)

Figure 44-3C

44-3.03 Thickness Design – HMA Mixtures

44-3.03(a) Class I, II, and III Roads and Streets

The following applies to facilities using HMA mixtures:

1. Design HMA Mixture Temperature. The HMA mixture temperatures are given in Figure 44-3D based on geographic locations in Illinois. The design mixture temperature should be interpolated to the nearest 0.5°F. The minimum design mixture temperature is 72°F.

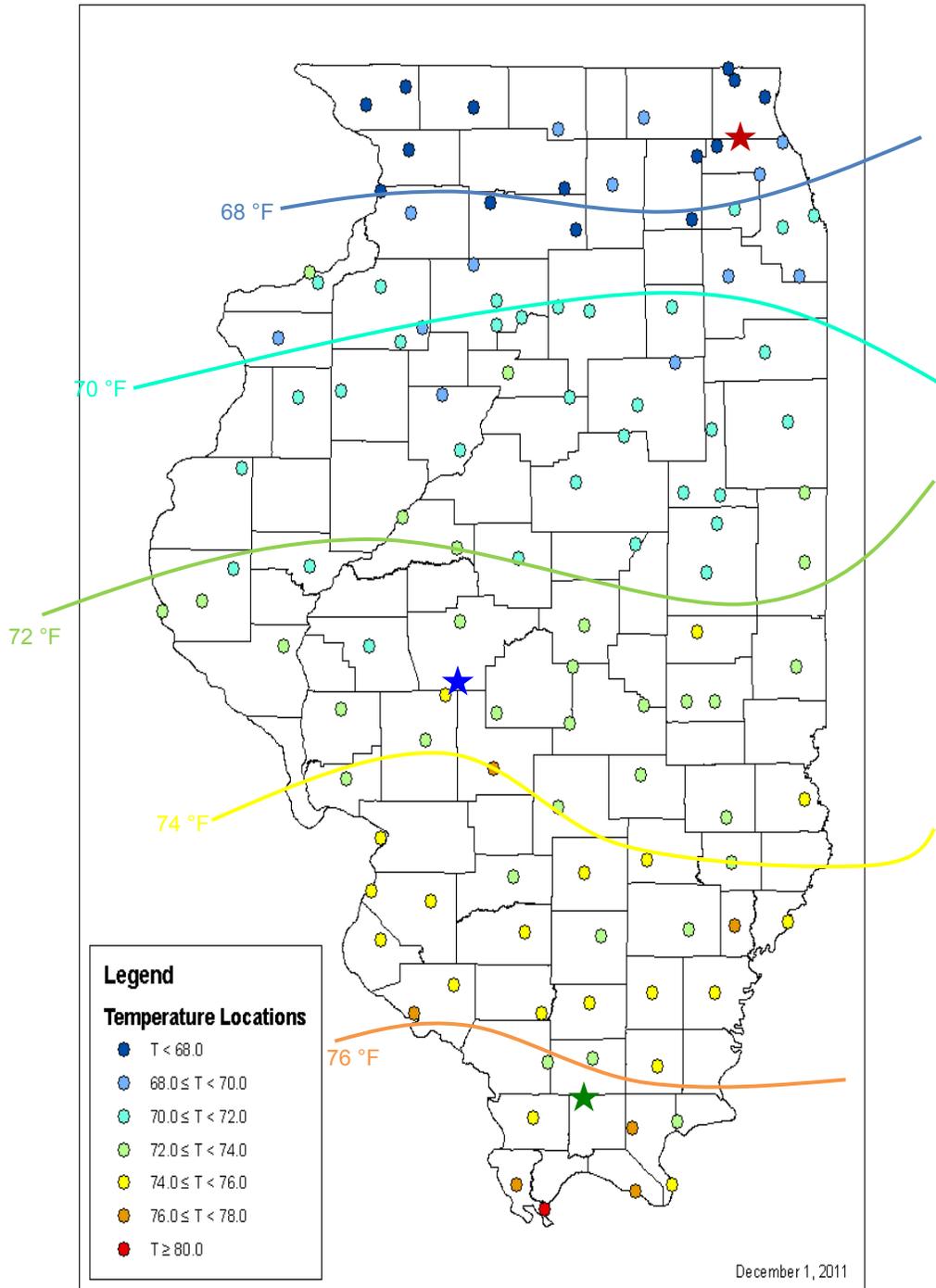
Note: The design HMA mixture temperatures for conventional flexible and full-depth HMA pavements are not the same. For the same location, the conventional flexible HMA design mixture temperature is lower than the full-depth HMA design mixture temperature, because conventional flexible design time dates occur earlier in the spring.

2. Design HMA Modulus (E_{HMA}). The design E_{HMA} is the HMA modulus that corresponds to the design mixture temperature. Determine the design E_{HMA} value from Figure 44-3E for typical Superpave mixtures with PG 58-XX, PG 64-XX, PG 70-XX, or PG 76-XX.
3. Design HMA Strain. The design HMA strain is the tensile strain at the bottom of the HMA pavement layer. Use Figure 44-3F in conjunction with the design TF to determine the design strain.
4. Thickness Requirements. Use Figure 44-3G in conjunction with the design HMA modulus from Step 2 and the design HMA strain from Step 3 to determine the thickness of HMA mixture required. The thicknesses from Figure 44-3G are based on an 8 in. minimum Type A aggregate base thickness and an E_{Ri} of 3 ksi.
5. Subbase Thickness Adjustments. The fine-grained soils that predominate in Illinois commonly have an E_{Ri} greater than 3 ksi. For pavements with an E_{Ri} of 3 ksi or greater, an 8 in. aggregate base course, Type A material is structurally adequate; therefore, no pavement structure thickness adjustment is necessary. For subgrades with an E_{Ri} value equal to or greater than 2 ksi and less than 3 ksi, Figure 44-3H should be used to determine the appropriate structure enhancement category for the pavement. Subgrades with an E_{Ri} less than 2 ksi must follow Section 44-7.

44-3.03(b) Class IV Roads and Streets Thickness Requirements

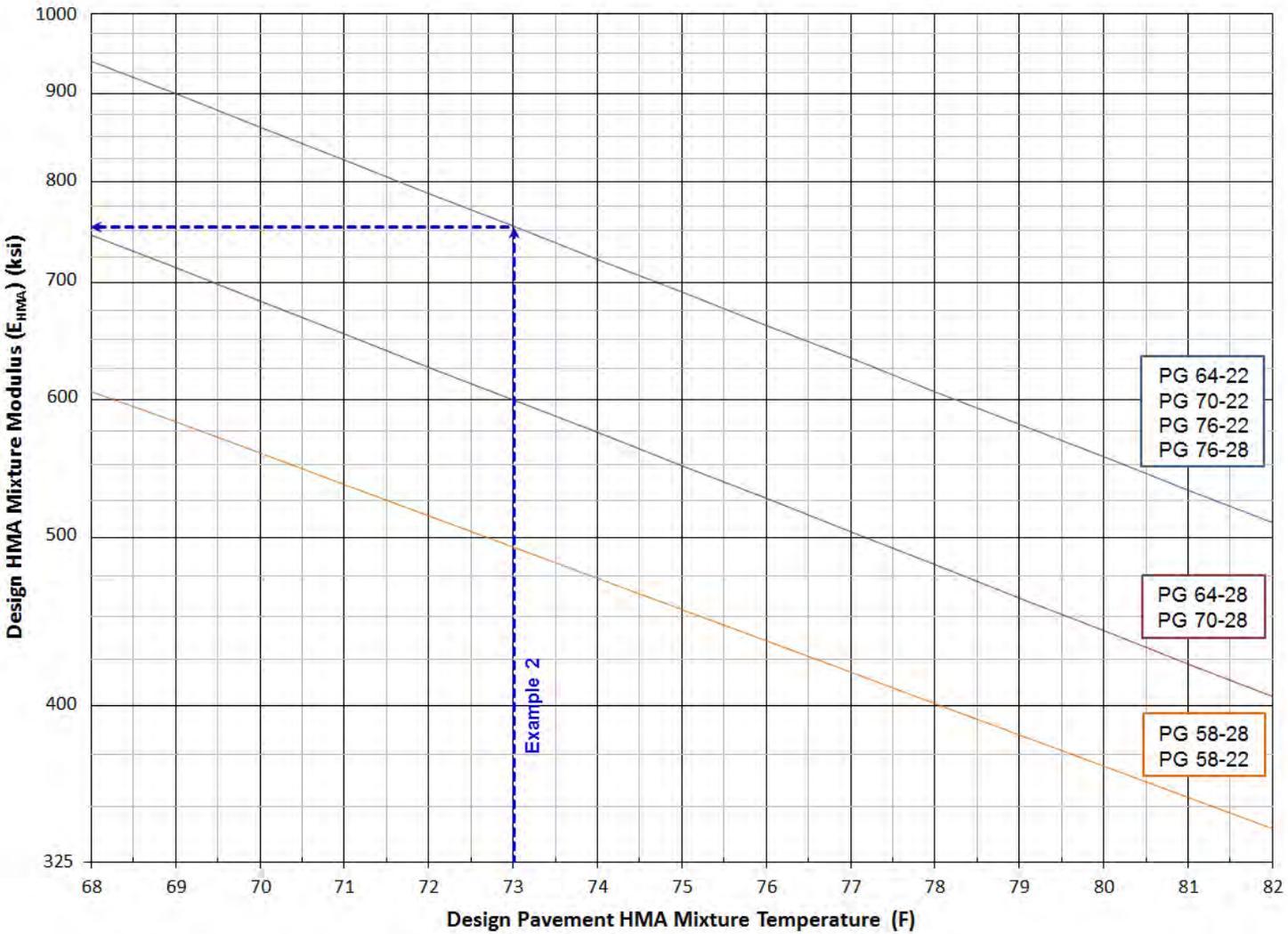
Figures 44-3I and 44-3J provide the HMA and aggregate base thicknesses for various E_{Ri} values and traffic levels. Pavements with less than 24 HCV's per day may use aggregate base course, Type B material in lieu of aggregate base course, Type A material. Pavements with greater than 48 HCV's use a Class III TF equation and design procedure.

When 4 in. or more of HMA are used, 8 in. of aggregate base course, Type A material is satisfactory for all combinations of soil types and traffic levels for all districts.



CONVENTIONAL FLEXIBLE HMA MIXTURE TEMPERATURE

Figure 44-3D

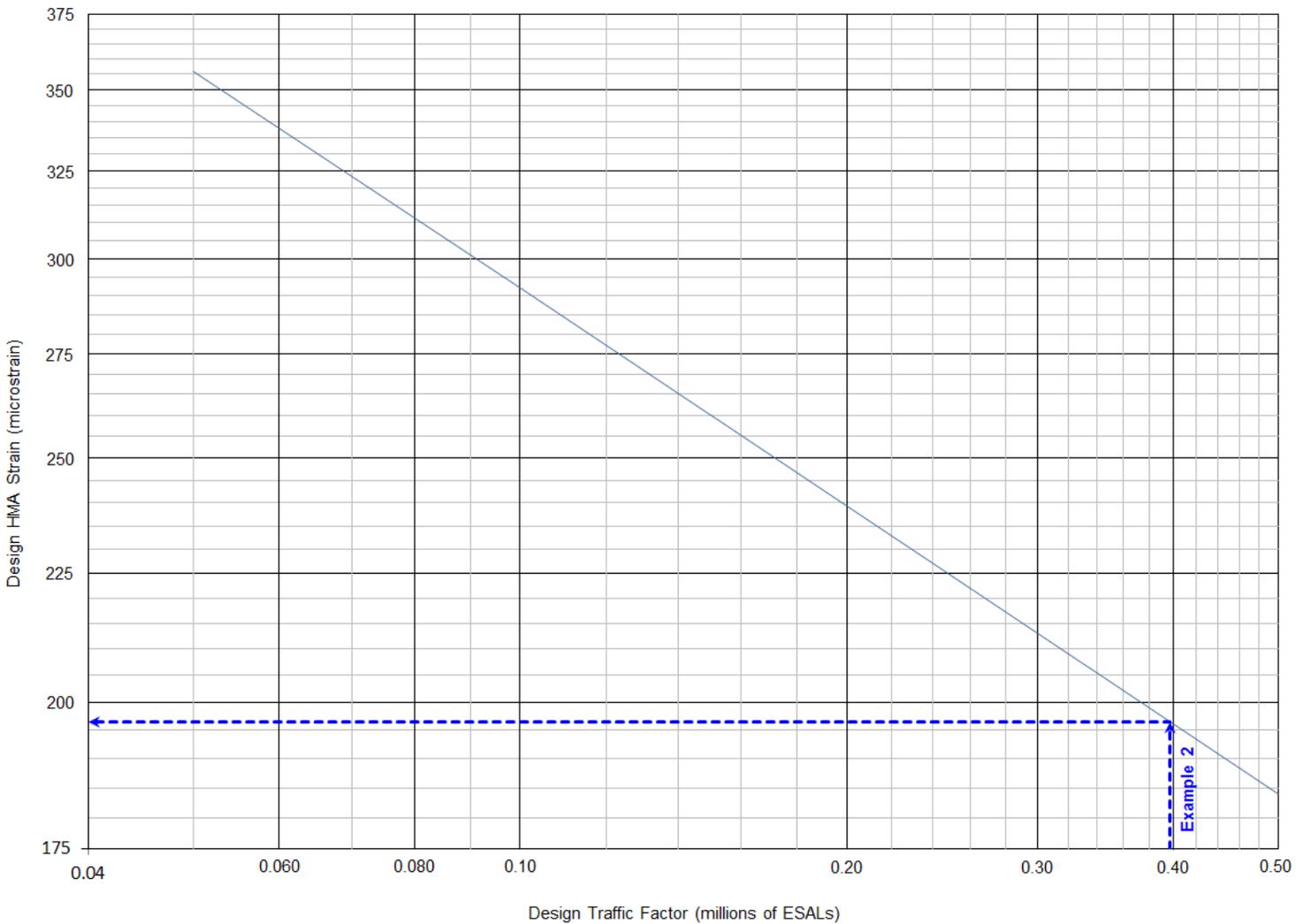


DESIGN HMA MIXTURE MODULUS (E_{HMA}) (ksi)

Figure 44-3E

Example 1 – Since the $TF > 0.5$, Conventional Pavement Design is not allowed.

Example 3 – Since the HCV's per day ≤ 48 , Figures 44-3I or 44-3J may be used.

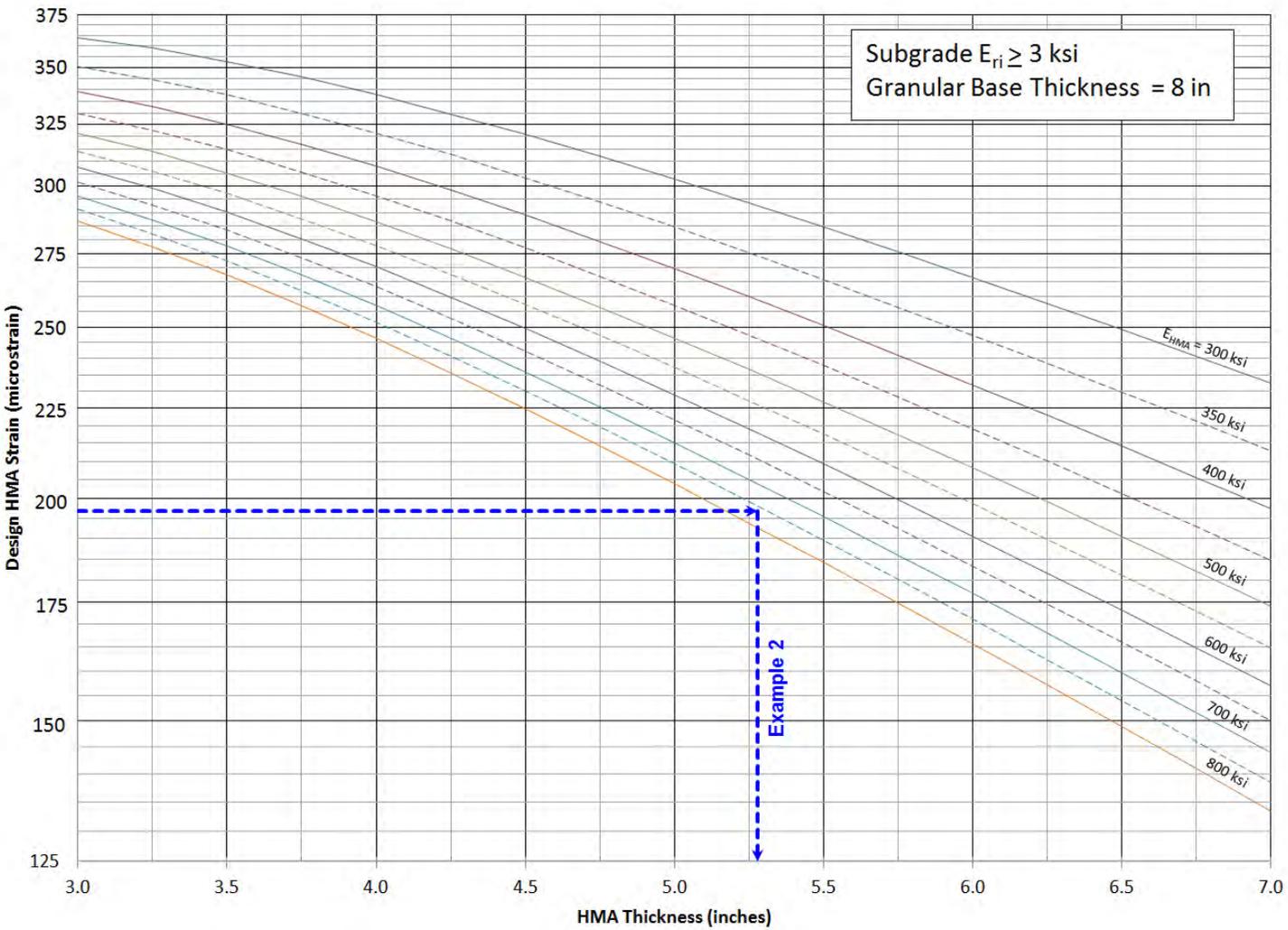


**DESIGN HMA STRAIN
(Traffic Factor Relation for HMA Mixes)**

Figure 44-3F

Example 1 – Since the TF > 0.5, Conventional Pavement Design is not allowed.

Example 3 – Since the HCV's per day ≤ 48, Figures 44-3I or 44-3J may be used.



CONVENTIONAL FLEXIBLE PAVEMENT DESIGN CHART

Figure 44-3G

Example 1 – Since the TF > 0.5, Conventional Pavement Design is not allowed.

Example 3 – Since the HCV's per day ≤ 48 , Figures 44-3I or 44-3J may be used.

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

44-3-12

June 2018

Original HMA Design Thickness (in.)	Design HMA Modulus, E_{HMA} (ksi)				
	400	500	600	700	800
3.0 – 3.49	E ⁽²⁾	E ⁽²⁾	E ⁽²⁾	E ⁽¹⁾	E ⁽¹⁾
3.5 – 3.99	E ⁽²⁾	E ⁽¹⁾	E ⁽¹⁾	O	O
≥ 4.0	O	O	O	O	O

E: Enhancement of the pavement structure is required.

O: Enhancement of the pavement structure is optional. If no enhancement is desired, an 8 in. aggregate base course, Type A is required.

Notes: If the subgrade E_{Ri} is less than 2 ksi, use Section 44-7 to determine the appropriate subgrade treatment necessary.

A pavement structure consisting of an 8 in. aggregate base course, Type A based on the appropriate category from the above table, can be enhanced by one of the following alternatives:

1. E⁽¹⁾. Use one or more of the following:
 - Increase the HMA thickness by 0.5 in.
 - Increase the aggregate base course, Type A thickness by 2 in.
 - Add a 4 in. minimum granular subbase course, Type B.
 - Add an 8 in. minimum modified soil layer.

2. E⁽²⁾. Use one or more of the following:
 - Increase the HMA thickness by 1.0 in.
 - Increase the aggregate base course, Type A thickness by 4 in.
 - Add a 4 in. minimum granular subbase course, Type B.
 - Add an 8 in. minimum modified soil layer.

**SUPERPAVE HMA — CLASS I, II, AND III ROADS AND STREETS PAVEMENT
 STRUCTURE ENHANCEMENT ($E_{Ri} \geq 2$ KSI AND < 3 KSI)**

Figure 44-3H

**BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN**

June 2018

44-3-13

District	1 – 4		5 – 6		7 – 9	
Traffic Level	E _{Ri} (ksi)		E _{Ri} (ksi)		E _{Ri} (ksi)	
	2 – 2.99	≥ 3	2 – 2.99	≥ 3	2 – 2.99	≥ 3
< 12 HCV's	11 in	8 in	11 in	8 in	12 in	8 in
12 – 23 HCV's	11 in	8 in	11 in	8 in	12 in	8 in
24 – 48 HCV's	11 in	8 in	11 in	10 in	14 in	13 in

Note: E_{Ri} values less than 2 ksi require use of Section 44-7.

**CLASS IV PAVEMENTS
AGGREGATE BASE THICKNESS NECESSARY
FOR A 3.0 IN. OR 3.25 IN. HMA SURFACE**

Figure 44-3I

District	1 – 4		5 – 6		7 – 9	
Traffic Level	E _{Ri} (ksi)		E _{Ri} (ksi)		E _{Ri} (ksi)	
	2 – 2.99	≥ 3	2 – 2.99	≥ 3	2 – 2.99	≥ 3
< 12 HCV's	8 in	8 in	9 in	8 in	10 in	8 in
12 – 23 HCV's	8 in	8 in	9 in	8 in	10 in	8 in
24 – 48 HCV's	8 in	8 in	9 in	8 in	12 in	11 in

Note: E_{Ri} values less than 2 ksi require use of Section 44-7.

**CLASS IV PAVEMENTS
AGGREGATE BASE THICKNESS NECESSARY
FOR A 3.5 IN. OR 3.75 IN. HMA SURFACE**

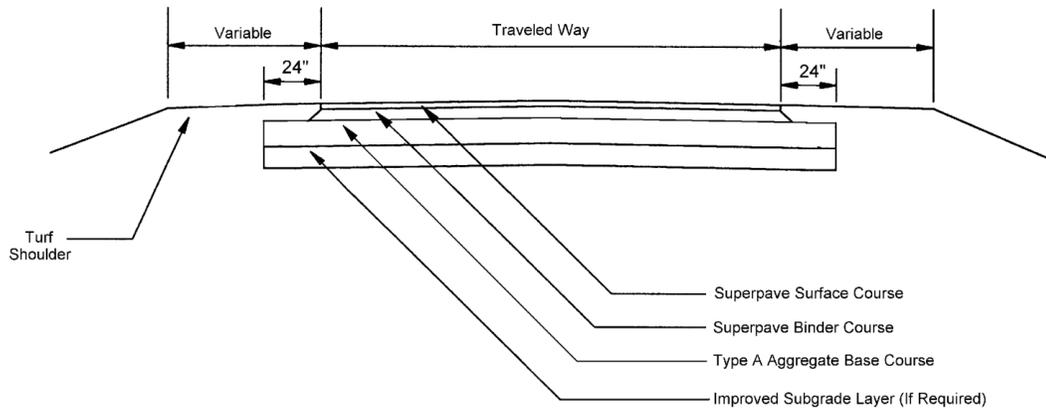
Figure 44-3J

44-3.04 Typical Sections

Figures 44-3K and 44-3L illustrate typical LPA conventional flexible pavement designs.

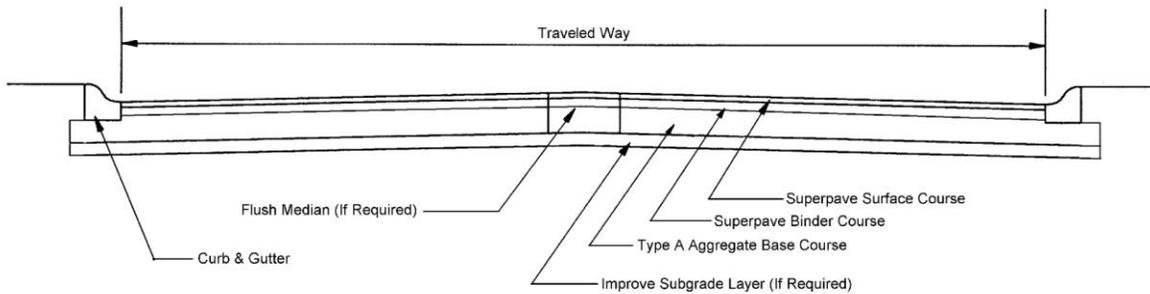
44-3.05 Worksheet

Figure 44-3M represents a worksheet for documenting the conventional flexible pavement design calculations.



TYPICAL CONVENTIONAL FLEXIBLE RURAL DESIGN

Figure 44-3K



Note: Raised median with curb and gutter may be used in lieu of a flush median.

TYPICAL CONVENTIONAL FLEXIBLE URBAN DESIGN

Figure 44-3L

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

June 2018

44-3-15

Date: _____ County: _____
Calculations by: _____ LPA: _____
Checked by: _____ Section: _____
Route: _____
Location: _____

Limits of Analysis:

From: _____

To: _____

Length: _____ Feet _____ Miles

Percent / Count (Figure 44-1A as needed)

Structural Design Traffic: (Section 44-1.03(c))

Number of Lanes: _____

ADT: _____

Class of Road or Street: _____ (Section 44-1.01)

PV: _____ % / _____

SU: _____ % / _____

MU: _____ % / _____

HCV: _____

Traffic Factor (Show Calculations): (Figure 44-3A)

Traffic Factor: _____

(Traffic Factor must ≤ 0.50 to qualify for Conventional Flexible Pavement Design Procedures)

Pavement Design:

Subgrade Modulus (E_{RI}): (Section 44-3.02(e) and Section 44-6) _____ ksi

Selected Design PG Binder (Figure 44-3B)

Surface: _____

Remaining Lifts: _____

Design Pavement HMA Temp: (Figure 44-3D) _____ °F

Design HMA Modulus (E_{HMA}): (Figure 44-3E) _____ ksi

Design HMA Microstrain: (Figure 44-3F) _____

Pavement Thickness: (Figure 44-3G) _____ in.

Pavement Structure Enhancements: (if $2 \text{ ksi} \leq E_{RI} < 3 \text{ ksi}$ use Figure 44-3H) _____

For Class IV Pavements: (Figure 44-3I or 44-3J) _____

Minimum Material Requirements (Section 44-3.02(a)) _____

Comments: _____

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

CONVENTIONAL FLEXIBLE PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES

Figure 44-3M

44-3.06 Example Calculations

44-3.06(a) Example Calculation 1 (Red) – Class I Road

Problem:

Design a conventional flexible pavement with a HMA surface for the given conditions.

Given: (Section 44-1.08(a))

Class I Road, Four Lane Pavement (Urban) (Section 44-1.01)

12 ft Lanes with Concrete Curb and Gutter

Design Traffic: ADT = 14,000

PV's 86%, SU's 8%, MU's 6% (if unknown see Section 44-1.03(c))

Lake County

Design Subgrade Modulus (E_{RI}) – 5.0 ksi

Posted Speed Limit – 30 MPH with Bus Stops

Solution:

From Figure 44-3A, use the TF equation for a four-lane Class I road.

4 or 5 Lane Pavements (Rural and Urban):

$$TF = DP \left[\frac{(0.047PV + 59.625SU + 217.139MU)}{1,000,000} \right]$$

$$TF = 20 \left[\frac{(0.047 \times 12040 + 59.625 \times 1120 + 217.139 \times 840)}{1,000,000} \right]$$

$$TF = 4.99$$

Per Section 44-3.01, conventional flexible pavements are allowed for TF up to 0.50. Since the TF is 4.99 for this example, a conventional flexible pavement is not allowed.

* * * * *

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

June 2018

44-3-17

Date: _____ County: Lake
 Calculations by: _____ LPA: _____
 Checked by: _____ Section: _____
 Route: _____
 Location: _____

Limits of Analysis:

From: _____
 To: _____
 Length: _____ Feet _____ Miles

Percent / Count *(Figure 44-1A as needed)*

Structural Design Traffic: *(Section 44-1.03(c))* PV: _____ 86 % / _____ 12,040
 Number of Lanes: 4 SU: _____ 8 % / _____ 1,120
 ADT: 14,000 MU: _____ 6 % / _____ 840
 Class of Road or Street: I *(Section 44-1.01)* HCV: _____ 1,960

Traffic Factor (Show Calculations): *(Figure 44-3A)*

$$TF = 20 \left[\frac{(0.047 \times 12040 + 59.625 \times 1120 + 217.139 \times 840)}{1,000,000} \right]$$

Traffic Factor: _____ 4.99

(Traffic Factor must \leq 0.50 to qualify for Conventional Flexible Pavement Design Procedures)

Pavement Design:

Subgrade Modulus (E_{RI}): *(Section 44-3.02(e) and Section 44-6)* _____ ksi
 Selected Design PG Binder *(Figure 44-3B)* _____
 Surface: _____
 Remaining Lifts: _____

Design Pavement HMA Temp: *(Figure 44-3D)* _____ °F
 Design HMA Modulus (E_{HMA}): *(Figure 44-3E)* _____ ksi
 Design HMA Microstrain: *(Figure 44-3F)* _____
 Pavement Thickness: *(Figure 44-3G)* _____ in.

Pavement Structure Enhancements: *(if $2 \text{ ksi} \leq E_{RI} < 3 \text{ ksi}$ use Figure 44-3H)* _____

For Class IV Pavements: *(Figure 44-3I or 44-3J)* _____

Minimum Material Requirements *(Section 44-3.02(a))* _____

Comments: Since the TF is greater than 0.50, a conventional flexible pavement is not allowed.

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

**EXAMPLE 1 – CONVENTIONAL FLEXIBLE PAVEMENT
 DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES**

Figure 44-3M

44-3.06(b) Example Calculation 2 (Blue) – Class III Road

Problem:

Design a conventional flexible pavement with a HMA surface for the given conditions.

Given: (Section 44-1.08(b))

Class III Road, Two Lane Pavement (Section 44-1.01)

11 ft Lanes with Paved HMA Shoulders

Design Traffic: ADT = 1,800

PV's 90%, SU's 6%, MU's 4% (if unknown see Section 44-1.03(c))

Sangamon County

Design Subgrade Modulus (E_{RI}) – 2.5 ksi

Posted Speed Limit – 40 MPH with No Bus Stops

Solution:

From Figure 44-3A, use the TF equation for a two-lane Class III road.

2 or 3-Lane Pavements:

$$TF = DP \left[\frac{(0.073PV + 54.570SU + 192.175MU)}{1,000,000} \right]$$

$$TF = 20 \left[\frac{(0.073 \times 1620 + 54.570 \times 108 + 192.175 \times 72)}{1,000,000} \right]$$

$$TF = 0.397$$

Based on a site investigation an E_{RI} value of 2.5 ksi was determined.

With a posted speed limit of 40 mph, the Traffic Loading Rate is "Slow" and from Figure 44-3B, use a PG 70-22 or SBS PG 70-22 for the surface and a PG 64-22 for the remaining lifts.

The conventional flexible HMA mixture temperature from Figure 44-3D is 73°F.

The design HMA modulus (E_{HMA}) from Figure 44-3E would be 755 ksi.

The design HMA strain from Figure 44-3F would be 197 microstrain.

HMA thickness from Figure 44-3G is 5.3 in; therefore, round the HMA thickness up to 5.50 in. Per Figure 44-3H the 4 in. granular subbase is optional, however; Section 44-3.02(a) requires an 8 in. aggregate base course, Type A.

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PAVEMENT DESIGN

June 2018

44-3-19

Date: _____ County: Sangamon
 Calculations by: _____ LPA: _____
 Checked by: _____ Section: _____
 Route: _____
 Location: _____

Limits of Analysis:

From: _____
 To: _____
 Length: _____ Feet _____ Miles

Percent / Count (Figure 44-1A as needed)

Structural Design Traffic: (Section 44-1.03(c)) PV: _____ 90 % / _____ 1,620
 Number of Lanes: 2 SU: _____ 6 % / _____ 108
 ADT: 1,800 MU: _____ 4 % / _____ 72
 Class of Road or Street: III (Section 44-1.01) HCV: _____ 180

Traffic Factor (Show Calculations): (Figure 44-3A)

$$TF = 20 \left[\frac{(0.073 \times 1620 + 54.570 \times 108 + 192.175 \times 72)}{1,000,000} \right]$$

Traffic Factor: _____ 0.397

(Traffic Factor must \leq 0.50 to qualify for Conventional Flexible Pavement Design Procedures)

Pavement Design:

Subgrade Modulus (E_{RI}): (Section 44-3.02(e) and Section 44-6) _____ 2.5 ksi
 Selected Design PG Binder (Figure 44-3B) _____
 Surface: PG 70-22 or SBS PG 70-22
 Remaining Lifts: PG 64-22

Design Pavement HMA Temp: (Figure 44-3D) _____ 73 °F
 Design HMA Modulus (E_{HMA}): (Figure 44-3E) _____ 755 ksi
 Design HMA Microstrain: (Figure 44-3F) _____ 197
 Pavement Thickness: (Figure 44-3G) _____ 5.50 in.

Pavement Structure Enhancements: (if $2 \text{ ksi} \leq E_{RI} < 3 \text{ ksi}$ use Figure 44-3H) _____

For Class IV Pavements: (Figure 44-3I or 44-3J) _____

Minimum Material Requirements (Section 44-3.02(a)) An 8 in. Type A base course is required.

Comments: Pavement structure will be 5.50 in. of HMA on an 8 in. aggregate base course, Type A.

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

**EXAMPLE 2 – CONVENTIONAL FLEXIBLE PAVEMENT
 DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES**

Figure 44-3M

44-3.06(c) Example Calculation 3 (Green) – Class IV Road

Problem:

Design a conventional flexible pavement with a HMA surface assuming an E_{RI} value between 2 and 3 with the following given conditions.

Given: (Section 44-1.08(c))

Class IV Road, Two Lane Pavement (Section 44-1.01)

11 ft Lanes with Aggregate Shoulders

Design Traffic: ADT = 350

PV's 88%, SU's 7%, MU's 5% (if unknown see Section 44-1.03(c))

City of Marion, Williamson County

Design Subgrade Modulus (E_{RI}) – 2.5 ksi

Posted Speed Limit – 55 MPH with No Bus Stops

Solution:

Based on a site investigation an E_{RI} value of 2.5 ksi was determined.

Determine the HCV which is the SU (24) + MU (18) for a value of 42. With the $HCV \leq 48$, Figures 44-3I or 44-3J may be used. With an E_{RI} value between 2 and 3 and the project located in District 9, the designer has the option of:

- 1) Figure 44-3I resulting in a 3.0 in. or 3.25 in. of HMA surface over a 14 in. aggregate base, or
- 2) Figure 44-3J resulting in a 3.5 in. or 3.75 in. of HMA surface over a 12 in. aggregate base.

From Figure 44-3B with a standard traffic loading, use a PG 64-22 for the surface and a PG 64-22 for the remaining lifts.

From Section 44-3.02(a), the minimum HMA thickness is 3 in. Since the HCV is > 24 , an aggregate base course, Type A material must be used.

* * * * *

BUREAU OF LOCAL ROADS & STREETS

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PAVEMENT DESIGN

44-3-21

Date: _____ County: Williamson

Calculations by: _____ LPA: City of Marion

Checked by: _____ Section: _____

Route: _____

Location: _____

Limits of Analysis:

From: _____

To: _____

Length: _____ Feet _____ Miles

Percent / Count (Figure 44-1A as needed)

Structural Design Traffic: (Section 44-1.03(c))

Number of Lanes: 2

ADT: 350

Class of Road or Street: IV (Section 44-1.01)

PV: 88 % / 308

SU: 7 % / 24

MU: 5 % / 18

HCV: 42

Traffic Factor (Show Calculations): (Figure 44-3A)

N/A – Class IV Road with HCV ≤ 48

Traffic Factor: _____ N/A

(Traffic Factor must ≤ 0.50 to qualify for Conventional Flexible Pavement Design Procedures)

Pavement Design:

Subgrade Modulus (E_{RI}): (Section 44-3.02(e) and Section 44-6) _____ 2.5 ksi

Selected Design PG Binder (Figure 44-3B)

Surface: PG 64-22

Remaining Lifts: PG 64-22

Design Pavement HMA Temp: (Figure 44-3D) _____ N/A °F

Design HMA Modulus (E_{HMA}): (Figure 44-3E) _____ N/A ksi

Design HMA Microstrain: (Figure 44-3F) _____ N/A

Pavement Thickness: (Figure 44-3G) _____ N/A in.

Pavement Structure Enhancements: (if 2ksi ≤ E_{RI} < 3 ksi use Figure 44-3H) N/A

For Class IV Pavements: (Figure 44-3I or 44-3J) With the HCV < 48, Figures 44-3I or 44-3J may be used. The designer decided to use Figure 44-3J resulting in a 3.75 in. HMA over a 12 in. aggregate base.

Minimum Material Requirements (Section 44-3.02(a)) 3 in. HMA with an 8 in. aggregate base course, Type A.

Comments: Pavement structure will be 3.75 in. of HMA over a 12 in. aggregate base course, Type A.

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

EXAMPLE 3 – CONVENTIONAL FLEXIBLE PAVEMENT DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES

Figure 44-3M

44-4 FULL-DEPTH HMA PAVEMENT DESIGN FOR LOCAL PUBLIC AGENCIES

44-4.01 Introduction

44-4.01(a) Design of Full-Depth HMA Pavements

Full-depth HMA pavements are those pavement structures whose surface and principal load-carrying component is HMA. This design procedure assumes that HMA rutting and thermal cracking are adequately considered in the material selection and mixture design process. The design procedure controls subgrade rutting by limiting the deviator stress at the HMA-subgrade interface to an acceptable level. The governing design criterion is the HMA tensile strain. Reduced strain corresponds to increased fatigue life.

44-4.01(b) Usage of Procedure

Use the pavement design procedure in this Section for all local road and street projects where a full-depth HMA pavement is desired. If the LPA intends to transfer jurisdiction following pavement construction, both agencies involved in the jurisdictional transfer should agree on the design.

The pertinent charts, tables, equations, limitations, and requirements of the policy are included in this procedure, as well as specific instructions to be followed in applying the method of design to full-depth HMA pavements for LPA projects involving MFT and Federal funds. Do not use this procedure for the design of projects on the State Highway System.

When small quantities of pavement are to be constructed, a soil investigation is not required, unless field conditions warrant. Small quantities are as follows:

- less than one city block in length,
- less than 3000 yd², or
- widening less than one lane-width.

When small quantities are to be constructed adjacent to or in extension of an existing pavement, the designer should:

- design a new section assuming a poor subgrade support rating, and
- provide a minimum thickness of 6.0 in.

44-4.02 Basic Design Elements

44-4.02(a) Minimum Material Requirements

HMA surface and binder courses are allowed. Any combination of surface course or binder course may be used to arrive at the total HMA design thickness. However, all HMA lifts must comply with the minimum thicknesses in Section 44-1.05.

44-4.02(b) Traffic Factors

For Class I, II, and III roads and streets, the design Traffic Factor (TF) for flexible pavements can be determined for various DP's and Classes of roads and streets from the 80,000 lb load limit formulas in Figure 44-4A. The formulas shown are based on the statewide average distribution of vehicle types and axle loadings, which are directly applicable to most roads and streets.

However, cases will arise in which the average formula should not be used (e.g., a highway where HCV's entering and leaving a site generally travel empty in one direction and fully loaded in the other). These cases should be referred to the CBLRS for special analysis. The LPA must provide the CBLRS with the structural design traffic, the DP, traffic distribution by PV, SU, MU, and loading conditions of HCV traffic.

For Class IV roads and streets, thicknesses are determined based on the volume of HCV's per day. A design TF is not necessary, if under 48 HCV's per day. However; if the HCV's per day is greater than 48, use a Class III TF equation and design procedure.

44-4.02(c) Subgrade Support Rating (SSR)

There are three subgrade support ratings (SSR) used in this design procedure — poor, fair, and granular. The designer should use Section 44-6 to determine the SSR. The SSR should represent the average or majority rating classification within the design section.

44-4.02(d) Subgrade Working Platform

Roadbed soils that are susceptible to excessive volume changes, permanent deformation, excessive deflection and rebound, frost heave, and/or non-uniform support can affect pavement performance. An improved subgrade layer provides a working platform and uniform support for pavement layer construction. Without the minimum required improved subgrade layer, it may be difficult to ensure adequate density in HMA. A modified soil layer or granular material may be used to satisfy the improved subgrade layer requirement. In urban areas, use of granular material may be more practical than a modified soil layer due to concerns about dust pollution. Subgrade working platform requirements are outlined in Figure 44-4B.

The improved subgrade layer will not be structurally credited in the design procedure. Its purpose is solely to provide a working platform on which to construct a quality pavement structure. A 12 in. layer is adequate for this purpose in most, but not all, cases. Use of additional improved layer thickness will not reduce the HMA pavement thickness.

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44-4-3

Class I Roads and Streets	
4 or 5 Lane Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.047PV + 59.625SU + 217.139MU)}{1,000,000} \right]$
6 or More Lane Pavements (Rural)	$TF = DP \left[\frac{(0.029PV + 53.000SU + 193.012MU)}{1,000,000} \right]$
6 or More Lane Pavements (Urban)	$TF = DP \left[\frac{(0.012PV + 49.025SU + 178.536MU)}{1,000,000} \right]$
One-way Streets and Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.073PV + 66.250SU + 241.265MU)}{1,000,000} \right]$
Class II Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 56.030SU + 192.720MU)}{1,000,000} \right]$
Class III Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 54.570SU + 192.175MU)}{1,000,000} \right]$

FLEXIBLE TRAFFIC FACTOR EQUATIONS (80,000 LB LOAD LIMIT)

Figure 44-4A

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

44-4-4

June 2018

Road Class	Improved Working Platform Material	Usage	Minimum Thickness (in.)
Class I and II	Modified Soil Layer or Granular Material	Required ⁽¹⁾	12 ⁽³⁾
Class III and IV	Modified Soil Layer or Granular Material	Optional ⁽²⁾ Optional ⁽²⁾	12 ⁽³⁾

Notes:

1. For Class I and II roads, a 12 in. minimum improved subgrade layer is required, unless the existing subgrade is granular. Where an existing granular subgrade is encountered, the LPA may obtain a waiver to the subgrade working platform requirement from CBLRS by documenting the subgrade suitability.
2. For Class III and IV roads, the 12 in. minimum improved subgrade layer is optional if documentation can be provided to the district that indicates the subgrade will provide suitable support during construction in accordance with Section 44-7. Because an improved subgrade layer should improve the constructability and possibly the performance of the pavement, its use should be considered.
3. In some cases, soft subgrades may require more than 12 in. of improved subgrade to provide a stable working platform and uniform support. The designer should review Section 44-7 in order to determine the required thickness of improved subgrade.

SUBGRADE WORKING PLATFORM REQUIREMENTS

Figure 44-4B

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

June 2018

44-4-5

PG Binder Grade Selection ⁽¹⁾			
Districts 1 – 4	Traffic Loading Rate (Adjustment)		
	Standard Traffic ⁽²⁾	Slow Traffic ⁽³⁾	Standing Traffic ⁽⁴⁾
Surface ⁽⁵⁾	PG 58-28 ⁽⁶⁾⁽⁷⁾	PG 64-28 or SBS PG 64-28	SBS PG 70-28
Remaining Lifts ⁽⁵⁾	PG 64-22 or PG 58-22	PG 64-22 or PG 58-22	PG 64-22 or PG 58-22
Districts 5 – 9			
Surface ⁽⁵⁾	PG 64-22 ⁽⁶⁾⁽⁷⁾	PG 70-22 or SBS PG 70-22	SBS PG 76-22
Remaining Lifts ⁽⁵⁾	PG 64-22	PG 64-22	PG 64-22

Notes:

1. The binder grades provided in this table are based on the recommendations given in Illinois-Modified AASHTO MP-2, Table 1, "Binder Selection on the Basis of Traffic Speed and Traffic Level."
2. Standard traffic is used where the average traffic speed is greater than 43 mph (70 km/h).
3. Slow traffic is used where the average traffic speed ranges from 12 to 43 mph (20 to 70 km/h).
4. Standing traffic is used where the average traffic speed is less than 12 mph (20 km/h).
5. Consideration should be given to increasing the high temperature grade by one grade equivalent when $10 \leq T.F. \leq 30$. For example, if use of a PG 64-22 is specified for standard traffic, a PG 70-22 or a SBS PG 70-22 should be specified.
6. Surface includes the top 2 in. (50 mm) of HMA. The remaining lifts of HMA may be the same PG binder grade as surface; however, this may increase or decrease the pavement design thickness. If multiple PG Binder grades are used in a HMA design, the predominant PG Binder grade should be used for determining HMA Modulus on Figure 44-4H.
7. The high temperature grade should be increased by one grade equivalent when $T.F. > 30$. For example, if use of a PG 64-22 is specified for standard traffic, a PG 70-22 or a SBS PG 70-22 should be specified.

PG BINDER GRADE SELECTION FOR FULL-DEPTH HMA PAVEMENTS

Figure 44-4C

44-4.02(e) PG Binder Selection

The PG binder grade may affect the performance of a HMA mixture. The full-depth HMA pavement design procedure assumes that HMA rutting and thermal cracking are adequately considered in the material selection and mixture design process. Selection of the appropriate binder grade can impact the ability of the mix to resist rutting at higher temperatures and thermal cracking at lower temperatures. Both high and low temperature levels need to be considered when selecting the appropriate binder grade for full-depth HMA pavements.

Full-depth HMA pavements should use the PG binder grades shown in Figure 44-4C. Most full-depth HMA pavements should use the grades shown for a standard traffic level. Adjustments to the standard traffic level are made if conditions of slow moving traffic or standing traffic warrant. Areas of slow moving or standing traffic, such as intersections or bus stops, warrant the use of stiffer binders to resist rutting and shoving. Adjustments, where applicable, should be applied to the surface and top binder lift. This keeps the same PG grade in these two lifts.

Binder grade adjustments may also be warranted based on extremely high ESALs levels. The appropriate grade of binder should be reported on the plans.

Note: The PG binder grade selection tables for full-depth HMA pavements for LPA pavement design differ from the tables used for the state system. A lower level of reliability is used for LPA design than for the state system.

The LPA must request a variance from the CBLRS to use a different PG binder than that specified in Figure 44-4C.

44-4.02(f) Stage Construction

Stage construction is the planned construction of the pavement structure in two or more stages, such as placing the lower lifts in one construction season and the surface in the next construction season. Stage construction is not allowed on full-depth HMA pavements.

44-4.02(g) Design Reliability

Design reliability is considered through traffic factor multipliers applied to the design TF. These traffic multipliers are built into the design HMA strain curves in Figures 44-4F and 44-4G. The minimum reliability levels by class of road are given in Figure 44-4D.

Road Class	Minimum Reliability Level	Reliability (%)
Class I, II, III, and IV	High	90's

DESIGN RELIABILITY

Figure 44-4D

44-4.03 Thickness Design

The following processes are used to determine the design thickness:

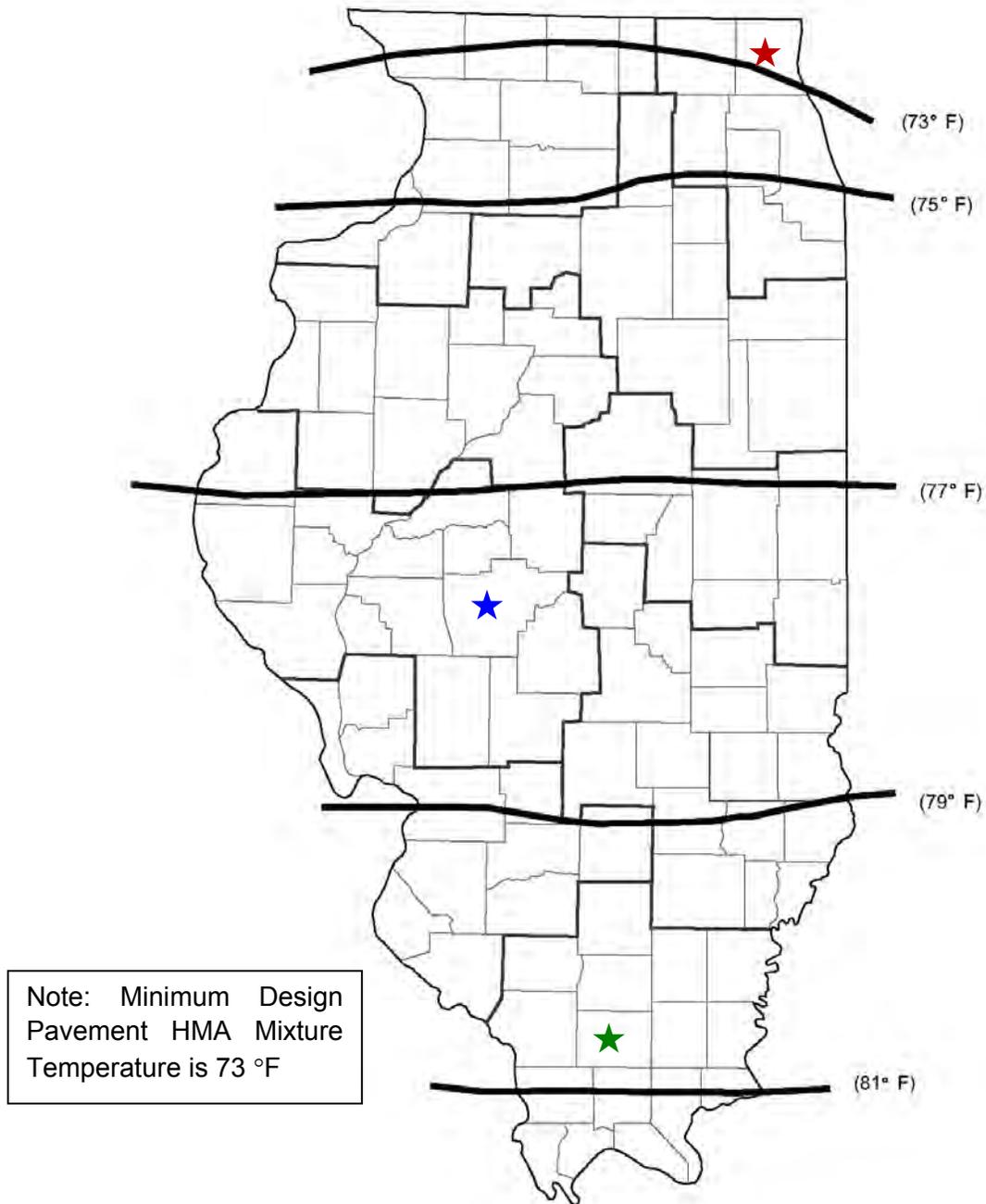
1. Class I, II and III Roads and Streets. The design procedure is as follows:
 - Calculate the TF from the appropriate equation found in Figure 44-4A.
 - Use Figure 44-6A in conjunction with the subgrade soil grain-size analysis to determine the subgrade support rating.
 - Use Figure 44-4C in conjunction with traffic speed and location to determine the PG binder grade.
 - Use Figure 44-4E to determine the HMA pavement mixture temperature. The design mixture temperature should be interpolated to the nearest 0.5°F.
Note: The design HMA mixture temperatures for conventional flexible and full-depth HMA pavements are not the same. For the same location, the conventional flexible HMA design mixture temperature is lower than the full-depth HMA design mixture temperature, because conventional flexible design time dates occur earlier in the spring.
 - Use Figure 44-4F (TF < 0.5) or Figure 44-4G (TF ≥ 0.5) to determine the design HMA strain.
 - Use Figure 44-4H to determine the design pavement HMA modulus (E_{HMA}).
 - Use Figures 44-4I, 44-4J, or 44-4K, depending on the subgrade support rating, to determine the design HMA thickness. Round the final design thickness to the next highest 0.25 in.
 - The minimum full-depth HMA design thickness is 6 in.
 - A 12 in. improved subgrade is required for Class I and II pavements and is optional for Class III pavements. Class III pavement subgrades must satisfy the requirements of Section 44-7 during construction.
2. Class IV Roads and Streets. The following procedure applies:
 - If HCV's per day ≤ 48, use a minimum 5 in. HMA pavement. A 12 in. improved subgrade layer is optional. Class IV pavement subgrades must satisfy the requirements of Section 44-7 during construction.
 - If HCV's per day > 48, use a Class III TF equation and design procedure.

44-4.04 Typical Sections

Figures 44-4L and 44-4M illustrate typical LPA full-depth HMA pavement designs.

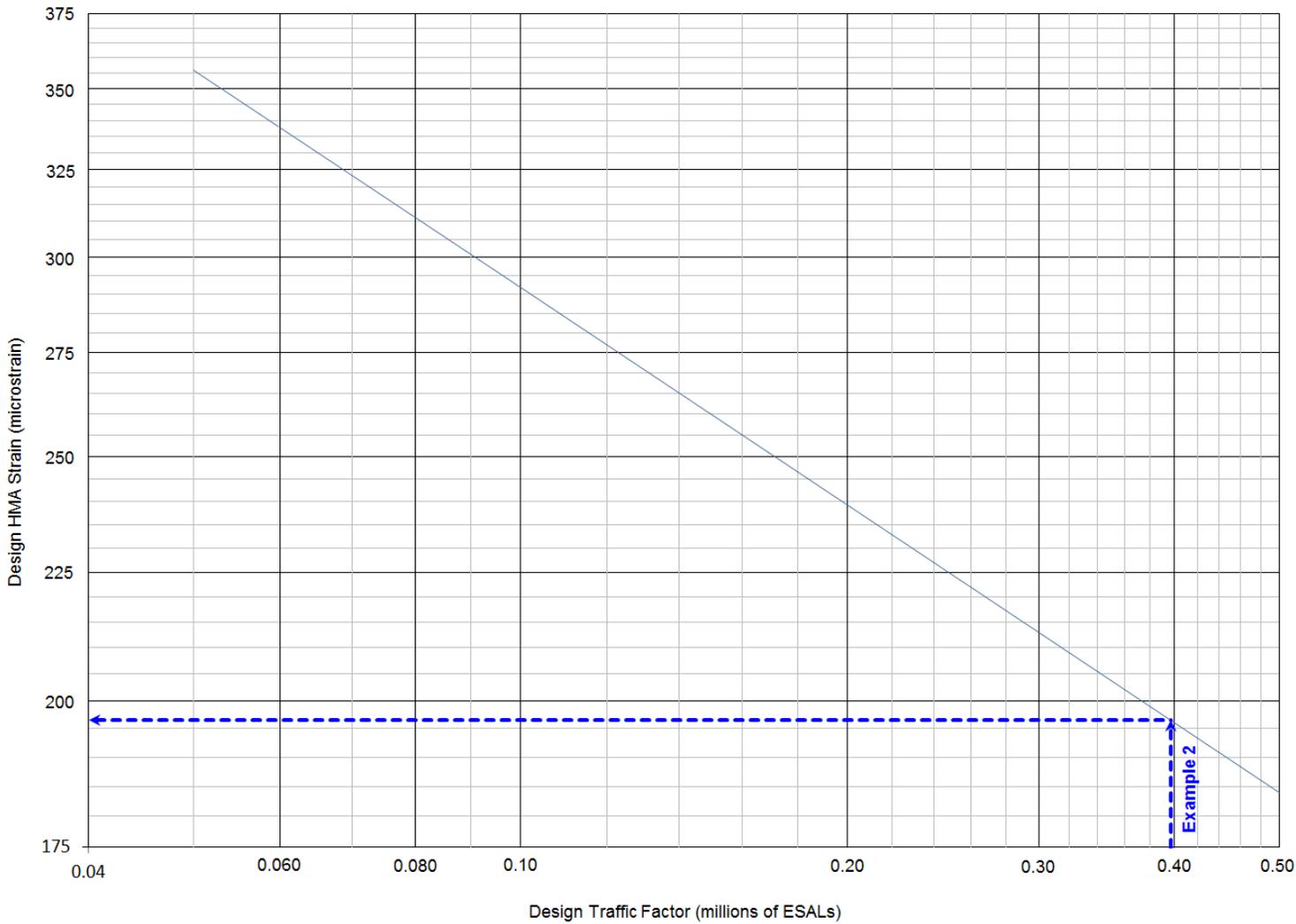
44-4.05 Worksheet

Figure 44-4N represents a worksheet for documenting the full-depth HMA pavement design calculations.



**DESIGN PAVEMENT HMA MIXTURE TEMPERATURE
(Full Depth)**

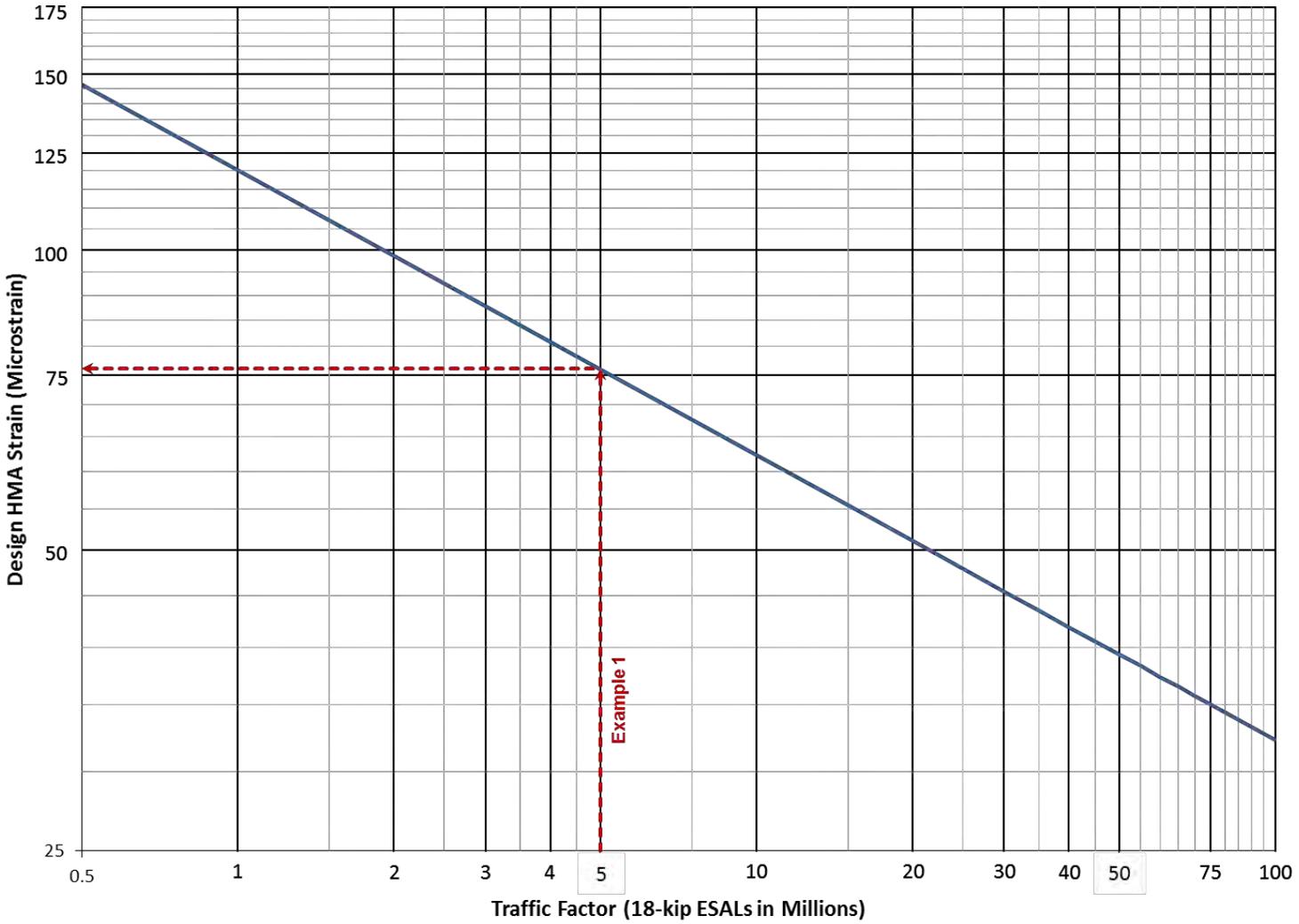
Figure 44-4E



DESIGN HMA STRAIN
(Traffic Factor Relation for Traffic Factor < 0.5)

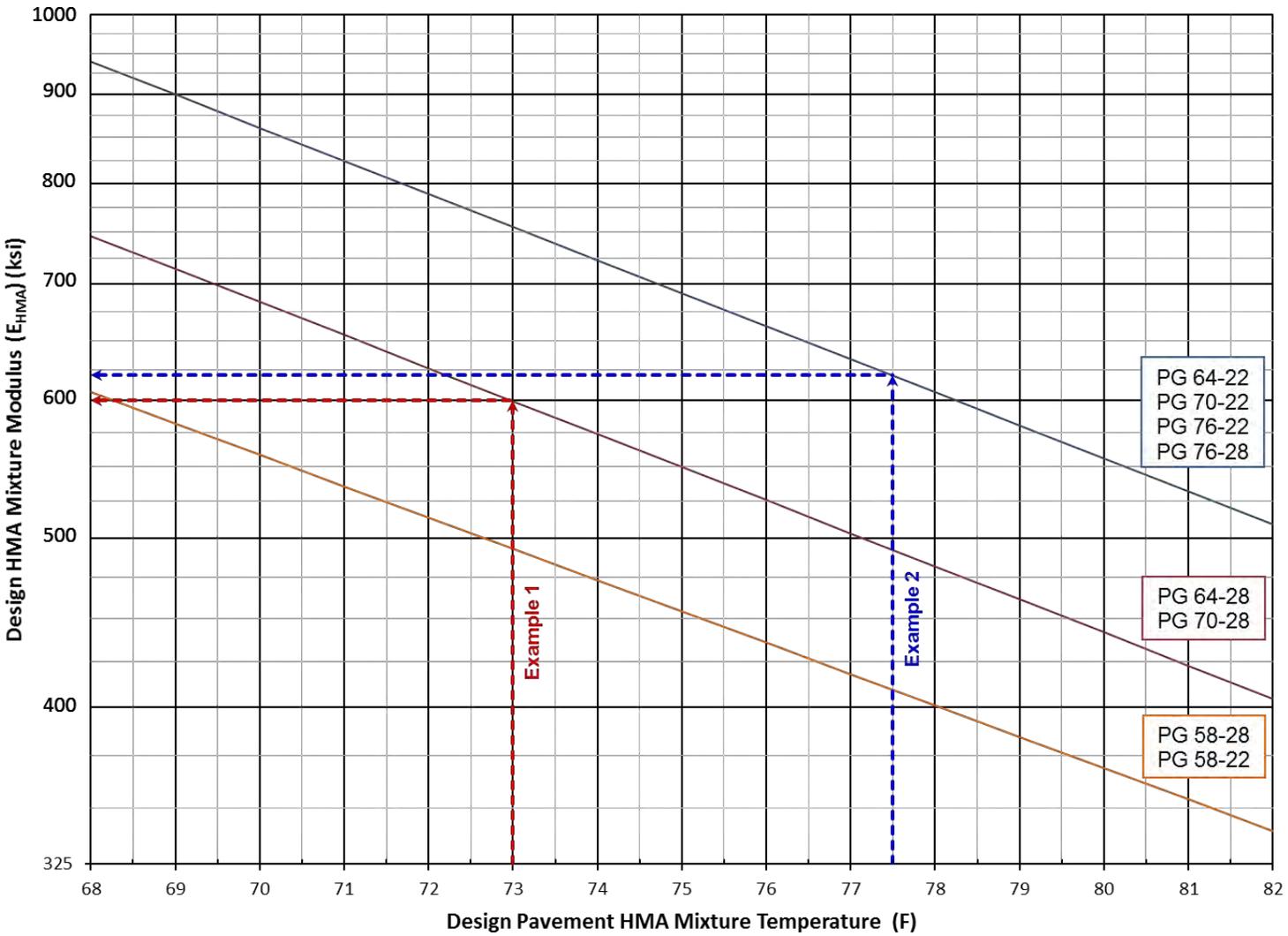
Figure 44-4F

Example 3 – Since the HCV's per day ≤ 48 , use a minimum 5 in. HMA pavement.



DESIGN HMA STRAIN
(Traffic Factor Relation for Traffic Factor ≥ 0.5)

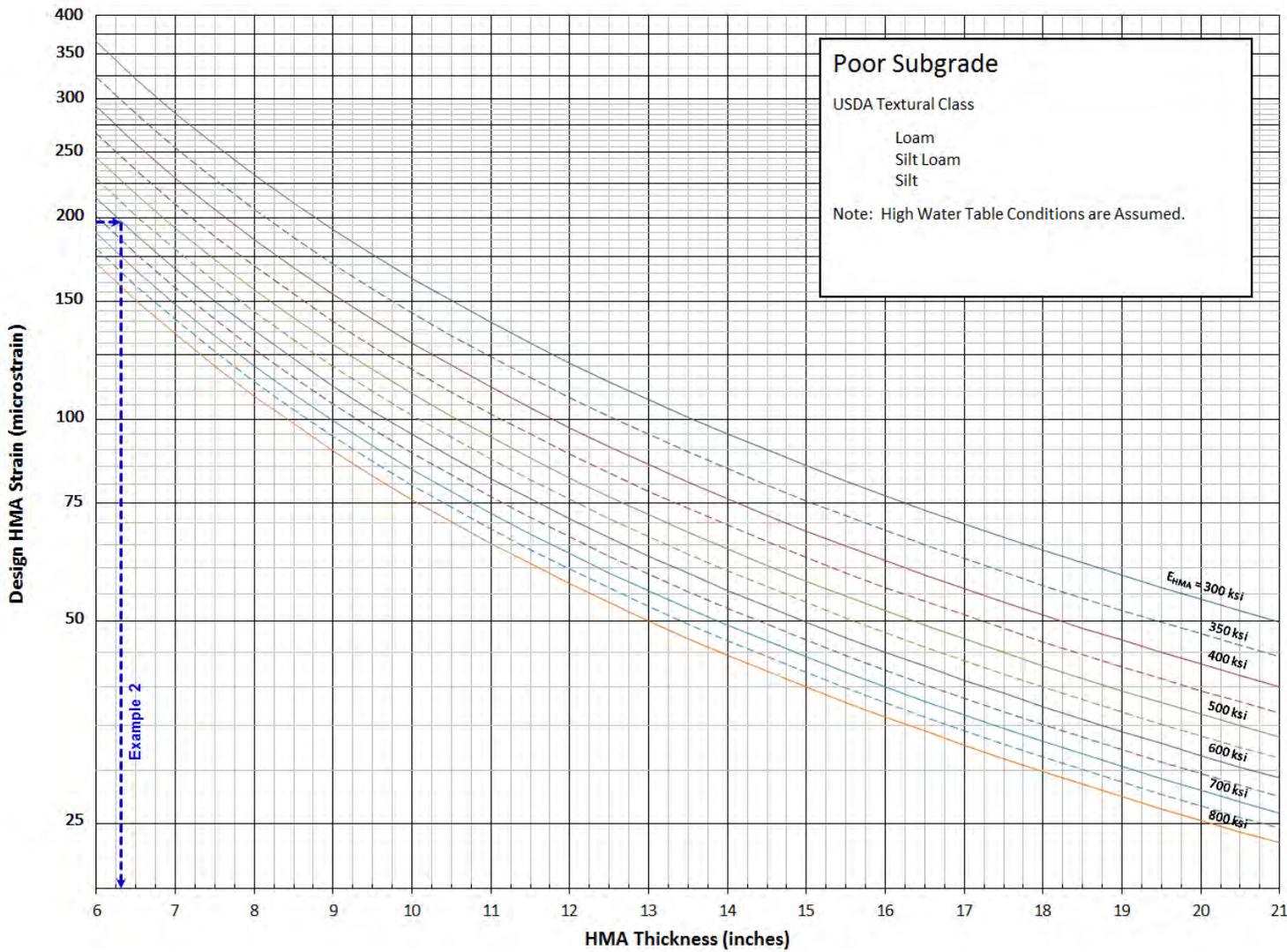
Figure 44-4G



HMA MIXTURE MODULUS (E_{HMA})

Figure 44-4H

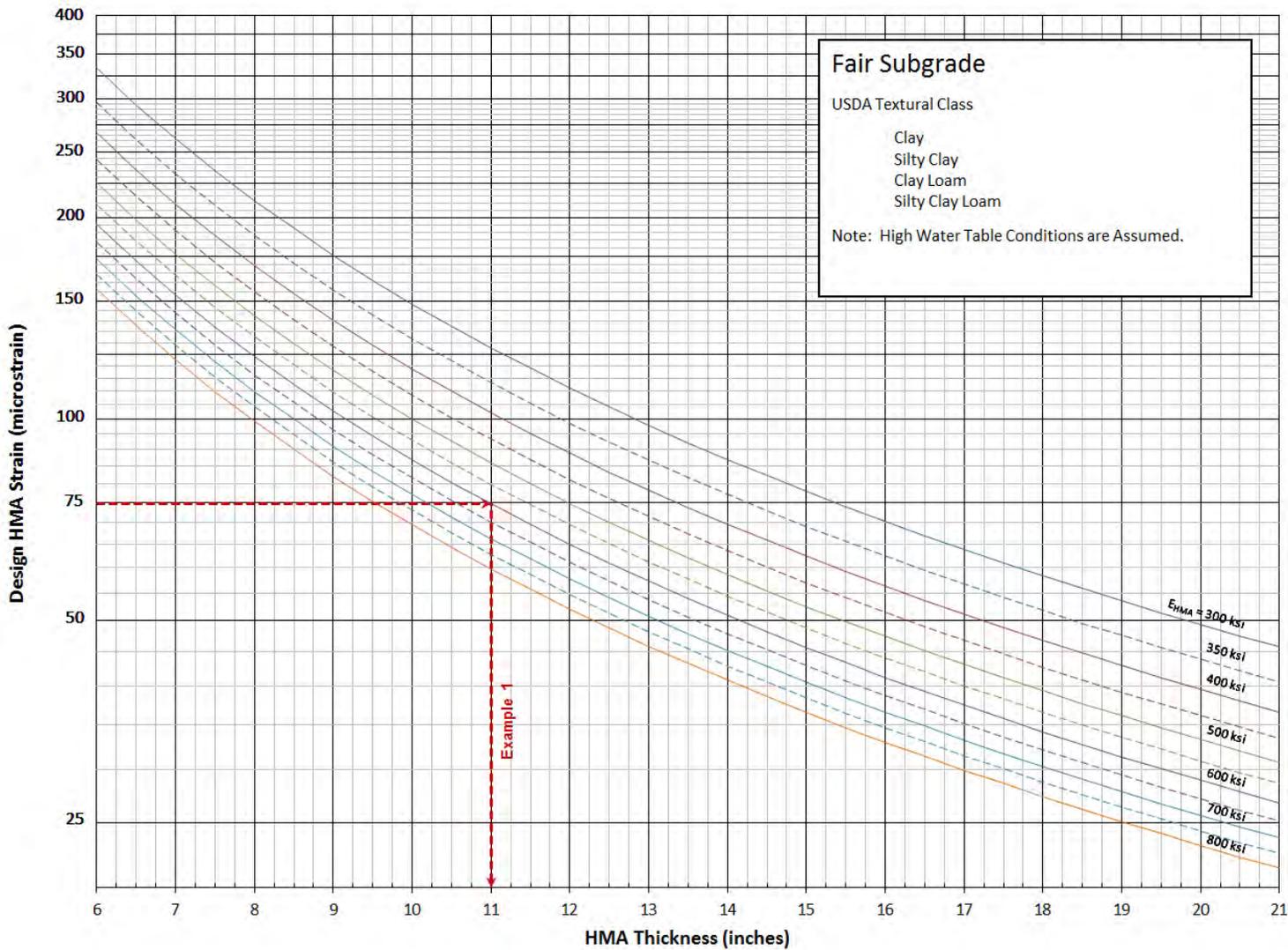
Example 3 – Since the HCV's per day ≤ 48 , use a minimum 5 in. HMA pavement.



Example 3 – Since the HCV's per day ≤ 48 , use a minimum 5 in. HMA pavement.

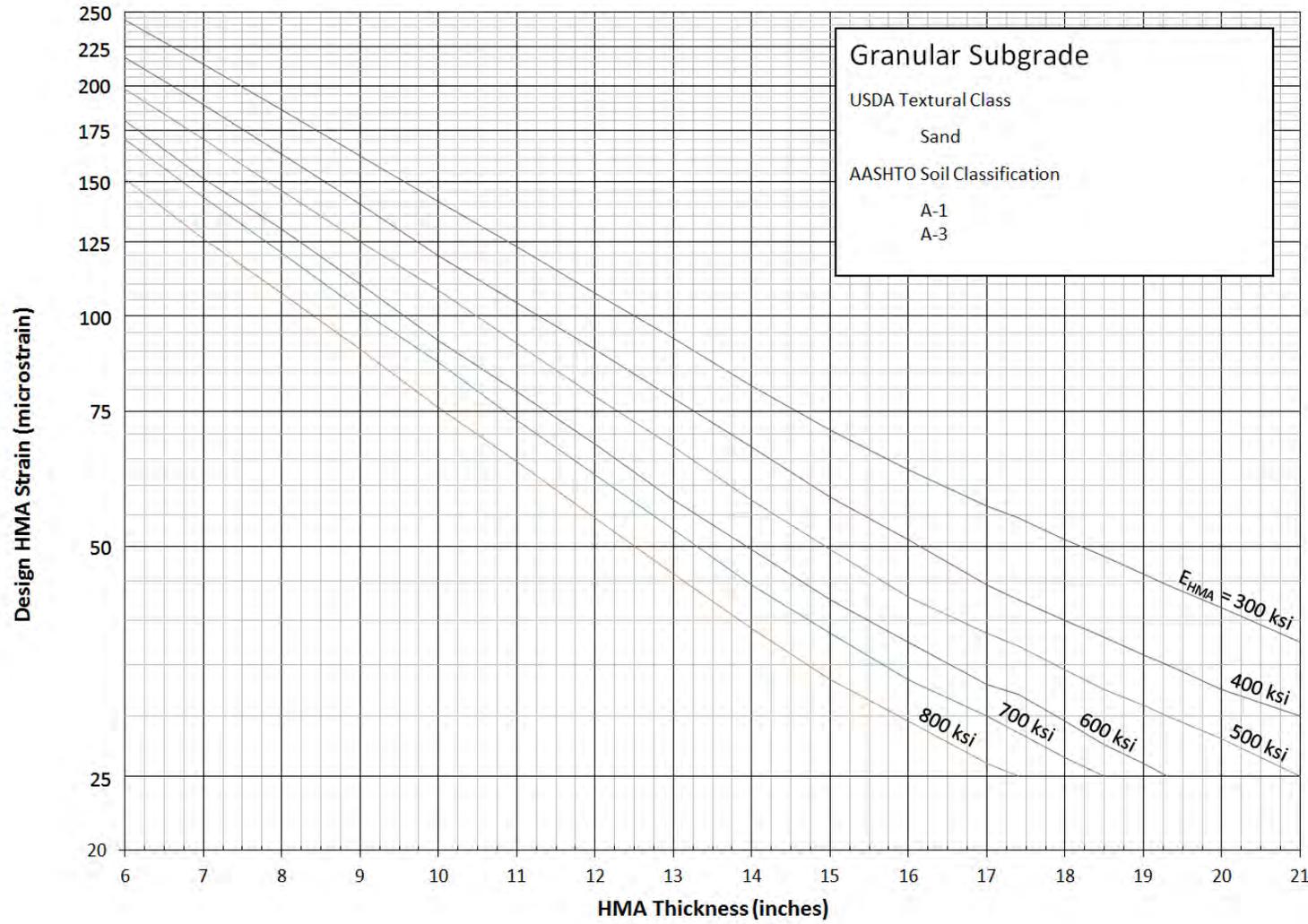
POOR SUBGRADE DESIGN CHART

Figure 44-4I



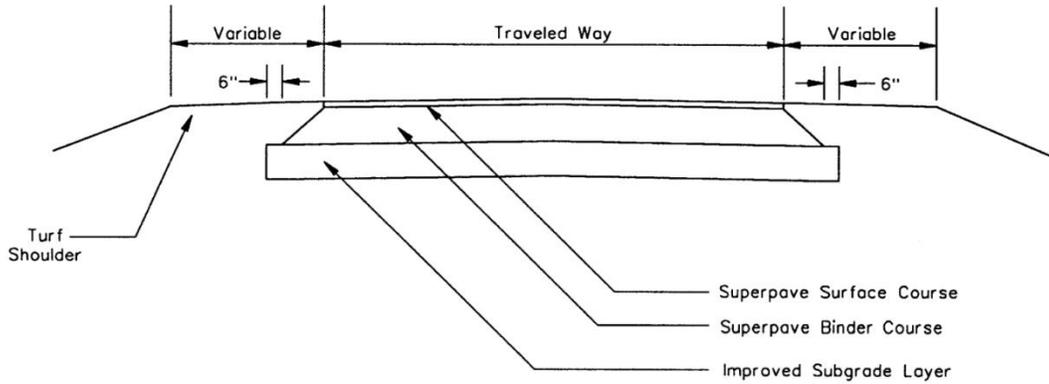
FAIR SUBGRADE DESIGN CHART

Figure 44-4J



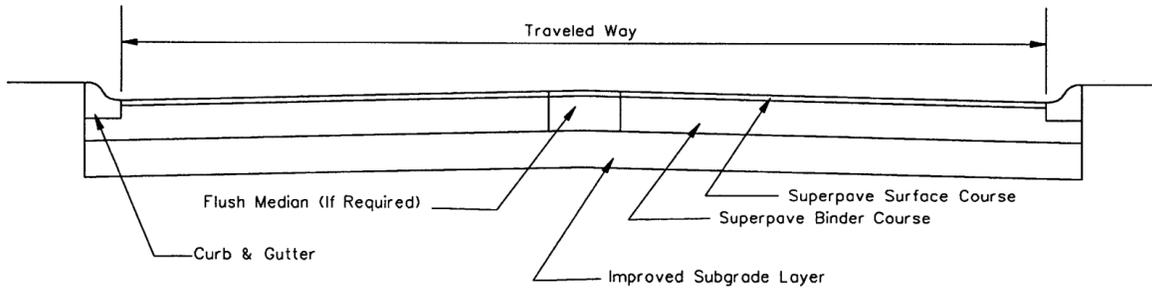
GRANULAR SUBGRADE DESIGN CHART

Figure 44-4K



TYPICAL FULL-DEPTH RURAL DESIGN

Figure 44-4L



Note: Raised median with curb and gutter may be used in lieu of a flush median

TYPICAL FULL-DEPTH URBAN DESIGN

Figure 44-4M

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

June 2018

44-4-17

Date: _____
Calculations by: _____
Checked by: _____

County: _____
LPA: _____
Section: _____
Route: _____
Location: _____

Limits of Analysis:

From: _____
To: _____
Length: _____ Feet _____ Miles

Percent / Count (Figure 44-1A as needed)

Structural Design Traffic: (Section 44-1.03(c))
Number of Lanes: _____
ADT: _____
Class of Road or Street: _____ (Section 44-1.01)

PV: _____ % / _____
SU: _____ % / _____
MU: _____ % / _____
HCV: _____

Traffic Factor (Show Calculations): (Figure 44-4A)

Traffic Factor: _____

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair Granular (Section 44-4.02(c) and Figure 44-6A)
Working Platform: (Figure 44-4B) _____
Selected Design PG Binder (Figure 44-4C) _____

Surface: _____
Remaining Lifts: _____

Design Pavement HMA Temp: (Figure 44-4E) _____ °F
Design HMA Microstrain: (Figure 44-4F or 44-4G) _____
Design HMA Modulus (E_{HMA}): (Figure 44-4H) _____ ksi
Pavement Thickness: (Section 44-4.03) (Minimum of 6.0 in.) _____ in.

Comments: _____

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

FULL-DEPTH HMA PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES
Figure 44-4N

44-4.06 Example Calculations

44-4.06(a) Example Calculation 1 (Red) – Class I Road

Problem:

Design a full-depth HMA pavement for the given conditions.

Given: (Section 44-1.08(a))

Class I Road, Four Lane Pavement (Urban) (Section 44-1.01)

12 ft Lanes with Concrete Curb and Gutter

Design Traffic: ADT = 14,000

PV's 86%, SU's 8%, MU's 6% (if unknown see Section 44-1.03(c))

Lake County

Design Subgrade Support Rating – Fair

Posted Speed Limit – 30 MPH with Bus Stops

Solution:

From Figure 44-4A use the TF equation for a four-lane Class I road; 4 or 5 Lane Pavement (Rural and Urban):

$$TF = DP \left[\frac{(0.047PV + 59.625SU + 217.139MU)}{1,000,000} \right]$$

$$TF = 20 \left[\frac{(0.047 \times 12,040 + 59.625 \times 1,120 + 217.139 \times 840)}{1,000,000} \right]$$

$$TF = 4.99$$

From Figure 44-4B, a 12 in. improved subgrade is required for all Class I and II full-depth HMA projects unless built upon a granular subgrade.

Since the road includes bus stops a Traffic Load Rate of “Standing Traffic” and from Figure 44-4C, the surface should be SBS PG 70-28 on the surface. The remaining lifts should be PG 64-22 or PG 58-22.

From Figure 44-4E, the design pavement HMA temperature would be 73°F.

Use Figure 44-4G (TF ≥ 0.5) in conjunction with the design TF of 4.99 to determine that the Design HMA strain is 76 microstrain.

Use Figure 44-4H in conjunction with a design pavement HMA temperature of 73°F to determine that the design HMA modulus is 600 ksi for PG 70-28.

Use Figure 44-4J (subgrade support rating is fair) in conjunction with the HMA strain of 76 microstrain and the design modulus of 600 ksi to determine a design HMA thickness of 11.0 in. This is the thickness after rounding to the next higher 0.25 in.

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

June 2018

44-4-19

Date: _____ County: Lake
 Calculations by: _____ LPA: _____
 Checked by: _____ Section: _____
 Route: _____
 Location: _____

Limits of Analysis:

From: _____

To: _____

Length: _____ Feet _____ Miles

Percent / Count (Figure 44-1A as needed)

Structural Design Traffic: (Section 44-1.03(c))	PV: <u>86 %</u> / <u>12,040</u>
Number of Lanes: <u>4</u>	SU: <u>8 %</u> / <u>1,120</u>
ADT: <u>14,000</u>	MU: <u>6 %</u> / <u>840</u>
Class of Road or Street: <u>I</u> (Section 44-1.01)	HCV: <u>1,960</u>

Traffic Factor (Show Calculations): (Figure 44-4A)

$$TF = 20 \left[\frac{(0.047 \times 12,040 + 59.625 \times 1,120 + 217.139 \times 840)}{1,000,000} \right]$$

Traffic Factor: 4.99

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair Granular (Section 44-4.02(c) and Figure 44-6A)

Working Platform: (Figure 44-4B) A 12 in. improved subgrade is required.

Selected Design PG Binder (Figure 44-4C)

Surface: SBS PG 70-28

Remaining Lifts: PG 64-22 or PG 58-22

Design Pavement HMA Temp: (Figure 44-4E) 73°F

Design HMA Microstrain: (Figure 44-4F or 44-4G) 76

Design HMA Modulus (E_{HMA}): (Figure 44-4H) 600 ksi

Pavement Thickness: (Section 44-4.03) (Minimum of 6.0 in.) 11 in.

Comments: _____

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

EXAMPLE 1 – FULL-DEPTH HMA PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES

Figure 44-4N

44-4.06(b) Example Calculation 2 (Blue) – Class III Road

Problem:

Design a full-depth HMA pavement for the given conditions.

Given: (Section 44-1.08(b))

Class III Road, Two Lane Pavement (Section 44-1.01)

11 ft Lanes with Paved HMA Shoulders

Design Traffic: ADT = 1,800

PV's 90%, SU's 6%, MU's 4% (if unknown see Section 44-1.03(c))

Sangamon County

Design Subgrade Support Rating – Poor

Posted Speed Limit – 40 MPH with No Bus Stops

Solution:

From Figure 44-4A use the TF equation for a two-lane Class III road:

$$TF = DP \left[\frac{(0.073PV + 54.570SU + 192.175MU)}{1,000,000} \right]$$

$$TF = 20 \left[\frac{(0.073 \times 1,620 + 54.570 \times 108 + 192.175 \times 72)}{1,000,000} \right]$$

$$TF = 0.397$$

From Figure 44-4B, a 12 in. improved subgrade is optional.

From Figure 44-4C, the surface should be PG 70-22 or SBS PG 70-22 on the surface. The remaining lifts should be PG 64-22.

From Figure 44-4E, the design pavement HMA temperature would be 77.5°F.

Use Figure 44-4F (TF < 0.5) in conjunction with the design TF of 0.397 to determine that the Design HMA strain is 197 microstrain.

Use Figure 44-4H in conjunction with a design pavement HMA temperature of 77.5°F to determine that the design HMA modulus is 621 ksi for PG 70-22 or PG 64-22.

Use Figure 44-4I (subgrade support rating is poor) in conjunction with the HMA strain of 197 microstrain and the design modulus of 621 ksi to determine a design HMA thickness of 6.30 in. After rounding to the next higher 0.25 in, the thickness is 6.5 in. Based on the microstrain of 197, a modulus 621, a poor subgrade support, and the ADT close to a Class II road, it is recommended to improve the subgrade with 12 in. of modified soil or granular layer.

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PAVEMENT DESIGN

June 2018

44-4-21

Date: _____ County: Sangamon

Calculations by: _____ LPA: _____

Checked by: _____ Section: _____

Route: _____

Location: _____

Limits of Analysis:

From: _____

To: _____

Length: _____ Feet _____ Miles

Percent / Count *(Figure 44-1A as needed)*

Structural Design Traffic: *(Section 44-1.03(c))* PV: _____ 90 % / _____ 1,620

Number of Lanes: 2 SU: _____ 6 % / _____ 108

ADT: 1,800 MU: _____ 4 % / _____ 72

Class of Road or Street: III *(Section 44-1.01)* HCV: _____ 180

Traffic Factor (Show Calculations): *(Figure 44-4A)*

$$TF = 20 \left[\frac{(0.073 \times 1,620 + 54.570 \times 108 + 192.175 \times 72)}{1,000,000} \right]$$

Traffic Factor: _____ 0.397

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair Granular *(Section 44-4.02(c) and Figure 44-6A)*

Working Platform: *(Figure 44-4B)* A 12 in. improved subgrade is optional, however; see below.

Selected Design PG Binder *(Figure 44-4C)*

Surface: PG 70-22 or SBS PG 70-22

Remaining Lifts: PG 64-22

Design Pavement HMA Temp: *(Figure 44-4E)* _____ 77.5°F

Design HMA Microstrain: *(Figure 44-4F or 44-4G)* _____ 197

Design HMA Modulus (E_{HMA}): *(Figure 44-4H)* _____ 621 ksi

Pavement Thickness: *(Section 44-4.03) (Minimum of 6.0 in.)* _____ 6.50 in.

Comments: Based on the microstrain of 197, a modulus 621, a poor subgrade support, and the ADT close to a Class II road, it is recommended to improve the subgrade with 12 in. of modified soil or granular layer.

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

EXAMPLE 2 – FULL-DEPTH HMA PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES

Figure 44-4N

44-4.06(c) Example Calculation 3 (Green) – Class IV Road

Problem:

Design a full-depth HMA pavement for the given conditions.

Given: (Section 44-1.08(c))

Class IV Road, Two Lane Pavement (Section 44-1.01)

11 ft Lanes with Aggregate Shoulders

Design Traffic: ADT = 350

PV's 88%, SU's 7%, MU's 5% (if unknown see Section 44-1.03(c))

City of Marion, Williamson County

Design Subgrade Support Rating – Poor

Posted Speed Limit – 55 MPH with No Bus Stops

Solution:

Since the HCV's per day is less than 48, use a minimum 5 in. HMA pavement. A 12 in. improved subgrade layer is optional. Class IV pavement subgrades must satisfy the requirements of Section 44-7 during construction. See Section 44-4.03 Item 2.

From Figure 44-4B, a 12 in. improved subgrade is shown as optional. Check the subgrade value with a dynamic cone penetrometer (DCP). If the Immediate Bearing Value (IBV) value is less than 6, an improved subgrade should be provided; see Section 44-7.02.

From Figure 44-4C, the surface should be PG 64-22 on the surface. The remaining lifts should be PG 64-22.

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

June 2018

44-4-23

Date: _____ County: Williamson
Calculations by: _____ LPA: City of Marion
Checked by: _____ Section: _____
Route: _____
Location: _____

Limits of Analysis:

From: _____

To: _____

Length: _____ Feet _____ Miles

Percent / Count (Figure 44-1A as needed)

Structural Design Traffic: (Section 44-1.03(c)) PV: _____ 88 % / _____ 306
Number of Lanes: 2 SU: _____ 7 % / _____ 24
ADT: 350 MU: _____ 5 % / _____ 18
Class of Road or Street: IV (Section 44-1.01) HCV: _____ 42

Traffic Factor (Show Calculations): (Figure 44-4A)

Since the HCV's per day ≤ 48 , use a minimum 5 in. HMA pavement. A 12 in. improved subgrade layer is optional. Class IV pavement subgrades must satisfy the requirements of Section 44-7 during construction.

Traffic Factor: _____ N/A

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair Granular (Section 44-4.02(c) and Figure 44-6A)

Working Platform: (Figure 44-4B) A 12 in. improved subgrade is optional. See Section 44-7.

Selected Design PG Binder (Figure 44-4C)

Surface: PG 64-22

Remaining Lifts: PG 64-22

Design Pavement HMA Temp: (Figure 44-4E) _____ N/A °F

Design HMA Microstrain: (Figure 44-4F or 44-4G) _____ N/A

Design HMA Modulus (E_{HMA}): (Figure 44-4H) _____ N/A ksi

Pavement Thickness: (Section 44-4.03) (Minimum of 6.0 in.) _____ 5.0 in.

Comments: Check the subgrade value with a dynamic cone penetrometer (DCP). If the Immediate Bearing Value (IBV) value is less than 6, an improved subgrade should be provided; see Section 44-7.02.

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

EXAMPLE 3 – FULL-DEPTH HMA PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES

Figure 44-4N

44-5 COMPOSITE PAVEMENT DESIGN FOR LOCAL PUBLIC AGENCIES

44-5.01 Introduction

44-5.01(a) Design of Composite Pavements

A composite pavement consists of a HMA surface layer over a Portland cement concrete (PCC) or roller-compacted concrete (RCC) slab. Advantages of placing the HMA layer over the concrete slab include a reduced slab thickness because of the structural contribution of the HMA, and a more uniform surface appearance if pavement patches are used to repair utility cuts, or due to widening or otherwise modifying the existing pavement. The HMA surface layer also reduces the thermal gradients through the concrete slab. These reduced thermal effects also allow for increased spacing between joints in the underlying concrete slab. RCC can only be used for structural designs with $TF \leq 3.0$ without prior approval from CBLRS.

Ultra-thin whitetopping or bonded concrete overlay of asphalt, a thin PCC overlay over an existing HMA surfaced pavement, is not considered a composite pavement, but rather is a special design covered in [Section 46-5](#).

44-5.01(b) Usage of Procedure

The composite pavement design procedure may be used for new construction, reconstruction (removal and replacement using the same alignment), or add lanes.

A pavement design is not required when small quantities of pavement are to be constructed. Small quantities are defined as follows:

- less than one city block in length, or
- less than 3000 yd², or
- widening less than one lane width.

When small quantities are to be constructed adjacent to existing pavements, the designer should:

- duplicate the existing total pavement structure, or
- provide a structurally equivalent pavement, or
- design assuming a “poor” subgrade support rating.

Stage construction is the planned construction of the pavement structure in two or more stages. If stage construction of a composite pavement is planned for separate contracts, the designer should design the concrete slab thickness and joint spacing using the rigid pavement design procedure.

44-5.02 Basic Design Elements**44-5.02(a) Minimum Material Requirements**

The Portland cement concrete must meet the requirements for Class PV concrete, as specified in the [IDOT Standard Specifications](#). All HMA lifts must comply with the minimum thicknesses in Section 44-1.05. Type A granular subbase, according to the requirements of the [IDOT Standard Specifications](#), must be used where granular subbase is specified.

44-5.02(b) Traffic Factors

For composite pavements, two Traffic Factors (TF) are required; one to determine the PCC slab thickness and the other to select the PG Binder. For Class I, II, and III roads and streets, the design TF for the PCC slab portion of the composite pavements is determined from the 80,000 lb load limit formulas shown in Figure 44-5A. Use Figure 44-5E to determine the TF for the HMA portion and to select the PG Binder.

The formulas shown are based on the statewide average distribution of vehicle types and axle loadings, which are directly applicable to most roads and streets. However, cases will arise in which a formula cannot be used, and a special analysis will be necessary (e.g., a highway adjacent to an industrial site with Heavy Commercial Vehicles (HCV's) entering and leaving the site generally traveling empty in one direction and fully loaded in the other). These cases should be referred to the CBLRS for special analysis. It will be necessary for the LPA to provide the CBLRS with the structural design traffic, the design period, and traffic distribution by PV, SU, and MU vehicles.

For Class IV composite pavements, a design TF is not necessary to determine the PCC slab thickness. A pre-adjusted PCC slab thickness of 6.5 in. with 2 in. of HMA should be used for all Class IV composite pavements. However, to select the PG Binder a design TF is required using Figure 44-5E.

44-5.02(c) Transverse Pavement Joints

For composite pavements, 12 to 15 ft transverse joint spacings are available to the designer. Joint spacing of 20 ft and greater can result in intermediate slab cracking and/or premature reflective cracking in the HMA surface layer.

The volume of traffic the pavement will carry determines the type of load transfer device necessary to control faulting at the joints. Mechanical load transfer devices (e.g., dowel bars) are required on pavements that have a PCC slab thickness ≥ 7 in. For PCC slab thickness less than 7 in., the designer has the option of using dowel bars or relying on aggregate interlock for load transfer.

Transverse joints in the concrete slab will result in reflective cracking in the HMA surface. Sawed and sealed joints in the HMA surface should be considered over all transverse concrete joints in order to facilitate future maintenance.

Class I Roads and Streets	
4 or 5 Lane Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.047PV + 64.715SU + 313.389MU)}{1,000,000} \right]$
6 or More Lane Pavements (Rural)	$TF = DP \left[\frac{(0.029PV + 57.524SU + 278.568MU)}{1,000,000} \right]$
6 or More Lane Pavements (Urban)	$TF = DP \left[\frac{(0.012PV + 53.210SU + 257.675MU)}{1,000,000} \right]$
One-way Street Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.073PV + 71.905SU + 348.210MU)}{1,000,000} \right]$
Class II Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 67.890SU + 283.605MU)}{1,000,000} \right]$
Class III Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 64.790SU + 281.235MU)}{1,000,000} \right]$ TF minimum = 0.5

PCC SLAB TRAFFIC FACTOR EQUATIONS (80,000 LB LOAD LIMIT)

Figure 44-5A

44-5.02(d) Subgrade

Roadbed soils that are susceptible to excessive volume changes, permanent deformation, excessive deflection and rebound, frost heave, and/or non-uniform support can affect pavement performance. For Class I and II roads, the designer is required to follow the guidelines found in Section 44-7. Use of Section 44-7 is optional for all Class III and IV roadways. In situ soils that do not develop an Immediate Bearing Value (IBV) more than 6.0 when compacted at, or wet of, optimum moisture content require corrective action. The designer should recommend corrective actions (e.g., undercutting, moisture density control, modified soil layer) in the design plans and specifications.

Necessary corrective actions as required by Section 44-7 will be in addition to the subbase requirements of the pavement design.

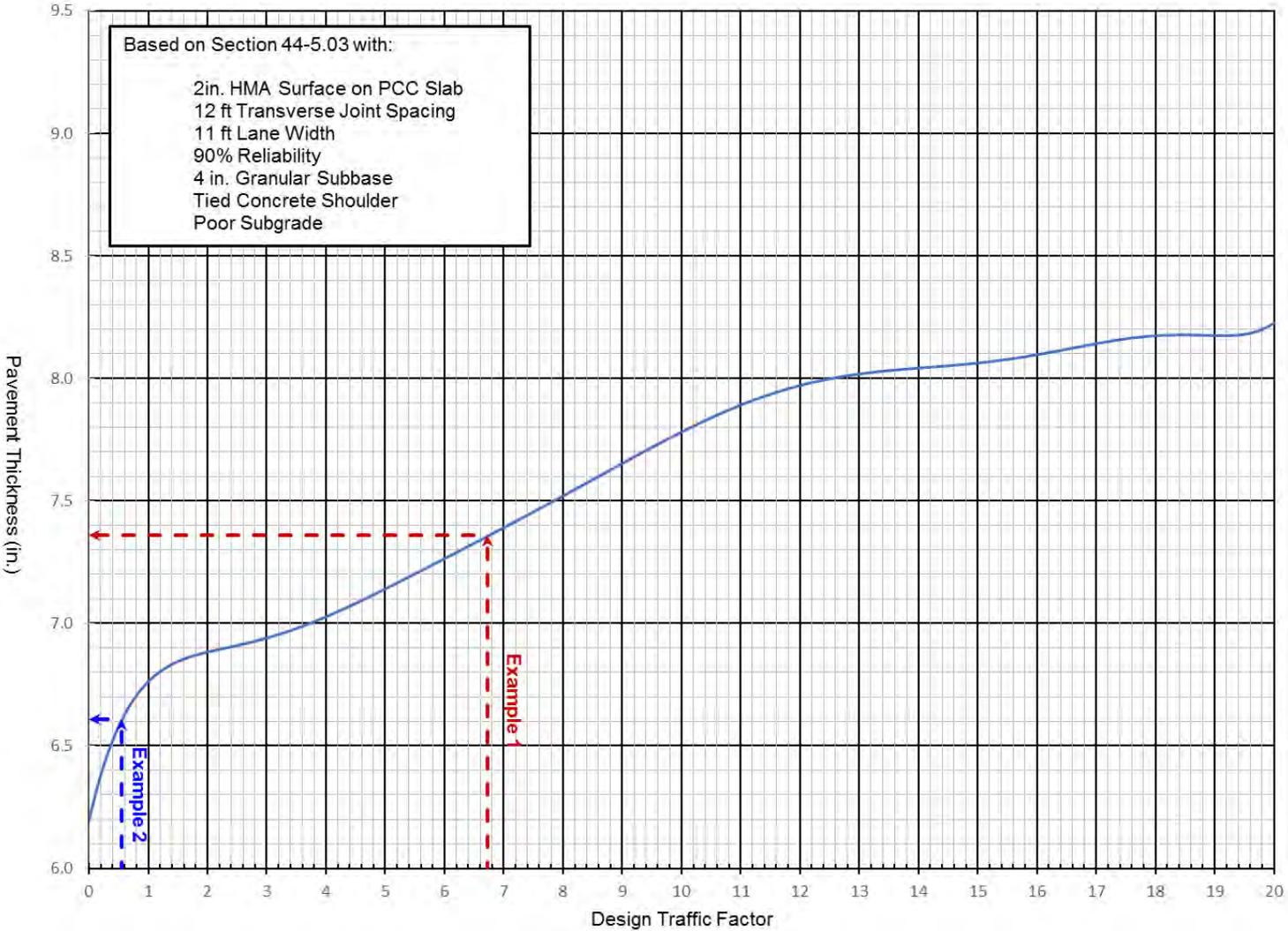
44-5.02(e) Subgrade Support Rating (SSR)

The general physical characteristics of the roadbed soil affect the design thickness and performance of the pavement structure. For pavement design purposes there are three subgrade support ratings (SSR) — poor, fair, and granular. The SSR is determined by using Section 44-6. The SSR should represent the average/majority classification within the design section. The pavement thickness design curves in Figure 44-5B are based on a poor SSR. Adjustments in the design thickness are made for the fair and granular subgrades.

44-5.02(f) Subbase

A subbase under a pavement serves two purposes. Initially, it provides a stable construction platform for the base and surface courses. After construction, it can improve the pavement performance by alleviating pumping of fine-grained soils and providing positive drainage for the pavement system. The usage and thickness requirements are shown in Figure 44-5E.

When placing a composite pavement directly over a flexible pavement with a HMA surface, consult with the CBLRS for design assistance.



PRE-ADJUSTED PCC SLAB THICKNESS

Figure 44-5B

Example 3 – The pre-adjusted slab thickness is 6.5 in. with adjustments of -0.15 in. providing a final thickness of 6.5 in. which exceeds the minimum of 5.5 in. with a 2.0 in. HMA surface for composite pavements.

Adjustment Factor	PCC Slab Thickness Adjustment (in.)
75% Reliability	-0.50
15 ft Joint Spacing	+1.00
Untied Shoulder	+0.35
Fair Subgrade	-0.25
Granular Subgrade	-0.50
Stabilized Subbase	-0.25
Existing Pavement as Subbase	-0.50
10 ft Lane Width	+0.25
12 ft Lane Width	-0.25
Surface HMA Layer Thickness	See Figure 44-5I

THICKNESS ADJUSTMENT FACTOR

Figure 44-5C

Road Class	Subbase Material	Usage⁽¹⁾	Minimum Thickness (in.)
Class I and II TF ≥ 5.0 TF < 5.0	Stabilized Subbase ⁽²⁾	Required	4
	Granular ⁽³⁾	Required	4
Class III & IV T.F. ≥ 5.0 T.F. < 5.0	Granular ⁽³⁾	Required Optional /	4
	Granular ⁽³⁾	Optional	4

Notes:

- Subbase is not required for urban sections having curbs and gutters and storm sewer systems. However, at the designer's option, a 4 in. minimum subbase may be used to serve as a working platform where poor soil conditions exist.*
- Stabilized subbase according to the requirements of the [IDOT Standard Specifications](#) or any applicable special provision.*
- Use Type A granular subbase according to the requirements of the [IDOT Standard Specifications](#).*

SUBBASE REQUIREMENTS

Figure 44-5D

44-5.02(g) PG Binder Grade Selection

The PG binder grade can affect the performance of a HMA mixture. Rutting or permanent deformation of the HMA surface is a distress common to composite pavements. This design procedure assumes that HMA rutting is considered in the material selection and mixture design process. Because the binder grade can impact the ability of the mix to resist rutting, selection of the appropriate high temperature grade is important. Thermal cracking is not a failure mode for composite pavements, and so the lower temperature grade is not as critical. That is why PG XX-22 binders are specified for composite pavements rather than the PG XX-28 grades appropriate for full-depth HMA pavements, where thermal cracking is of concern.

Composite pavements should use the grades shown in Figures 44-5F and 44-5G. Areas of slow moving or standing traffic (e.g., intersections, bus stops, city streets) warrant the use of stiffer binders to resist rutting. These adjustments should be made according to Figures 44-5F and 44-5G for the corresponding N_{design} number, provided by the district, and/or design ESALs. The appropriate grade of binder should be reported on the plans.

Note that the PG binder grade selection tables for composite pavements for LPA pavement design differ from the tables used for the State system. A lower level of reliability is used for LPA design than for the State system.

The LPA must request a variance from CBLRS to use a different PG binder than specified in Figure 44-5F and Figure 44-5G.

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Class I Roads and Streets	
4 or 5 Lane Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.047PV + 59.625SU + 217.139MU)}{1,000,000} \right]$
6 or More Lane Pavements (Rural)	$TF = DP \left[\frac{(0.029PV + 53.000SU + 193.012MU)}{1,000,000} \right]$
6 or More Lane Pavements (Urban)	$TF = DP \left[\frac{(0.012PV + 49.025SU + 178.536MU)}{1,000,000} \right]$
One-way Streets and Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.073PV + 66.250SU + 241.265MU)}{1,000,000} \right]$
Class II Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 56.030SU + 192.720MU)}{1,000,000} \right]$
Class III and IV Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 54.570SU + 192.175MU)}{1,000,000} \right]$
	$TF = DP \left[\frac{(0.073PV + 54.570SU + 192.175MU)}{1,000,000} \right]$

FLEXIBLE TRAFFIC FACTOR EQUATIONS (80,000 LB LOAD LIMIT)

Figure 44-5E

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

June 2018

44-5-9

Illinois N_{design} Number	Flexible Design ESALs, millions ⁽¹⁾ (Flexible TF)	PG Binder Grade Selection ⁽²⁾⁽³⁾		
		Traffic Loading Rate (Adjustment)		
		Standard ⁽⁴⁾	Slow ⁽⁵⁾	Standing ⁽⁶⁾
30	< 0.3	PG 58-22	PG 58-22 ⁽⁷⁾	PG 64-22 ⁽⁷⁾
50	0.3 to < 3	PG 58-22	PG 64-22	PG 70-22 or SBS PG 70-22
70	3 to < 10	PG 58-22	PG 64-22	PG 70-22 or SBS PG 70-22
90	10 to < 30	PG 58-22 ⁽⁷⁾	PG 64-22 ⁽⁷⁾	PG 70-22 or SBS PG 70-22

Notes:

1. Design ESALs are the anticipated project traffic level expected on the design lane over a 20 year period. Regardless of the actual design life of the roadway, determine the design ESALs for 20 years and choose the appropriate N_{design} level. For N_{design} and PG binder grade selection purposes only, the design ESALs are calculated using the flexible traffic factor equations given in Figure 44-5E. Rigid traffic factors given in Figure 44-5A thru Figure 44-5C are required to determine the PCC slab thickness portion of the composite pavement design.
2. The binder grades provided in Figure 44-5F are based on the recommendations given in Illinois-Modified AASHTO MP-2, Table 1, "Binder Selection on the Basis of Traffic Speed and Traffic Level".
3. Use these grades for composite pavements and all overlays.
4. Standard traffic is used where the average traffic speed is greater than 43 mph (70 km/h).
5. Slow traffic is used where the average traffic speed ranges from 12 to 43 mph (20 to 70 km/h).
6. Standing traffic is used where the average traffic speed is less than 12 mph (20 km/h).
7. Consideration should be given to increasing the high temperature grade by one grade equivalent.

**PG BINDER GRADE SELECTION FOR COMPOSITE PAVEMENTS
(DISTRICTS 1-4)**

Figure 44-5F

BUREAU OF LOCAL ROADS & STREETS

44-5-10

PAVEMENT DESIGN

June 2018

Illinois N_{design} Number	Flexible Design ESALs, millions ⁽¹⁾ (Flexible T.F.)	PG Binder Grade Selection ⁽²⁾⁽³⁾		
		Traffic Loading Rate (Adjustment)		
		Standard ⁽⁴⁾	Slow ⁽⁵⁾	Standing ⁽⁶⁾
30	< 0.3	PG 58-22	PG 64-22 ⁽⁷⁾	PG 64-22 ⁽⁷⁾
50	0.3 to < 3	PG 64-22	PG 64-22 ⁽⁷⁾	PG 70-22 or SBS PG 70-22
70	3 to < 10	PG 64-22	PG 70-22 or SBS PG 70-22	SBS PG 76-22
90	10 to < 30	PG 64-22 ⁽⁷⁾	PG 70-22 or SBS PG 70-22	SBS PG 76-22

Notes:

1. Design ESALs are the anticipated project traffic level expected on the design lane over a 20 year period. Regardless of the actual design life of the roadway, determine the design ESALs for 20 years and choose the appropriate N_{design} level. For N_{design} and PG binder grade selection purposes only, the design ESALs are calculated using the flexible traffic factor equations given in Figure 44-5E. Rigid traffic factors given in Figure 44-5A thru Figure 44-5C are required to determine the PCC slab thickness portion of the composite pavement design.
2. The binder grades provided in Figure 44-5F are based on the recommendations given in Illinois-Modified AASHTO MP-2, Table 1, "Binder Selection on the Basis of Traffic Speed and Traffic Level."
3. Use these grades for composite pavements and all overlays.
4. Standard traffic is used where the average traffic speed is greater than 43 mph (70 km/h).
5. Slow traffic is used where the average traffic speed ranges from 12 to 43 mph (20 to 70 km/h).
6. Standing traffic is used where the average traffic speed is less than 12 mph (20 km/h).
7. Consideration should be given to increasing the high temperature grade by one grade equivalent.

**PG BINDER GRADE SELECTION FOR COMPOSITE PAVEMENTS
(DISTRICTS 5-9)**

Figure 44-5G

44-5.02(h) Design Reliability

Design reliability is considered through traffic multipliers applied to the design TF. These traffic multipliers are built into the PCC slab thickness design curves in Figure 44-5B, which is for high reliability levels. The minimum reliability levels by road class are shown in 44-5H. The thickness adjustment factor for medium reliability are provided in Figure 44-4C.

Road Class	Minimum Reliability Levels	Percent Reliability
Class I and II	High	90
Class III & IV	Medium	75

RELIABILITY LEVELS**Figure 44-5H****44-5.03 PCC Slab Thickness Design****44-5.03(a) Minimum Design Thickness**

Once all PCC slab thickness adjustments have been made, the minimum design must have at least 2 in. of HMA over 5.5 in. of PCC or at least 3 in. of HMA over 5.0 in. of PCC.

44-5.03(b) Pre-adjusted PCC Slab Thickness

The composite thickness design procedure is based on determining the thickness of the pre-adjusted PCC slab assuming a poor SSR, 2 in. of HMA surface, 12 ft joint spacing, 11 ft lane width, a 90% Reliability, 4 in. granular subbase, and a tied PCC shoulder. Using the design TF, the PCC slab thickness is determined from the design curves shown in Figure 44-5B. For Class IV pavements, the pre-adjusted PCC slab thickness is 6.5 in. Adjustments to this basic PCC slab thickness can be made for other factors (e.g., subgrade support, subbase type, joint spacing, shoulder type, reliability, and HMA thickness). The final design thickness should be rounded to the next highest 0.25 in.

44-5.03(c) PCC Slab Thickness Adjustments

In determining any adjustments, consider the following:

1. Pavement Support. PCC slab thickness adjustments are based on the subgrade rating and whether the pavement structure will have a stabilized subbase or no subbase. The subgrade support and stabilized subbase adjustments factors are shown in Figure 44-5C.
2. Shoulder Type. With tied PCC shoulders, tied curb and gutter, integral curb and gutter, or widened outer lanes, no adjustments are required. PCC slab adjustments for untied PCC shoulders should be made according to Figure 44-5C. The tied shoulders must use the proper size of reinforcement bars to tie to the pavement, see the [Illinois Highway](#)

Standards to ensure that load transfer is obtained between the pavement and the curb/shoulder. Designers may specify smaller tie bars, but in these cases, additional PCC slab thickness is required.

3. Joint Spacing. Joint spacing of 15 ft instead of 12 ft may be used for composite pavements with the PCC slab thickness adjustment factor given in Figure 44-5C.
4. Lane Width. The standard chart in Figure 44-5B is for an 11 ft lane width. Thickness adjustment can be made for 10 ft and 12 ft lane width as shown in Figure 44-5C.
5. Reliability. Designs for lower reliability can be completed given the criteria in Figure 44-5H and thickness adjustment factor given in Figure 44-5C.
6. HMA Surface Layer Thickness. The pre-adjusted PCC slab thickness is based on a HMA surface layer of 2 in. placed over the PCC slab. If the HMA layer thickness is other than 2 in., adjust the thickness using Figure 44-5I.

HMA Layer Thickness (in.)	PCC Slab Thickness Adjustment (in.)
2	No adjustment
2.5	- 0.25
3	-0.50

ADJUSTMENTS FOR HMA THICKNESS

Figure 44-5I

44-5.03(d) Dowel Bars

The use of doweled joints will be required for pavement thicknesses that are 7 in. and greater on all Class I, Class II, and Class III roads and streets. Doweled joints will not be required for Class IV roads and streets. Dowel bar diameter requirements are given in Figure 44-5J. Normal dowel spacing is 12 in. However, with approval from the CBLRS, the dowels can be placed only in the wheel path area. There is no adjustment in pavement thickness with doweled transverse joints.

PCC Slab Thickness (in.)	Dowel Diameter (in.)
≥ 10.00	1.50
> 8.00 to 9.99	1.25
≤ 8.00	1.00

DOWEL DIAMETER

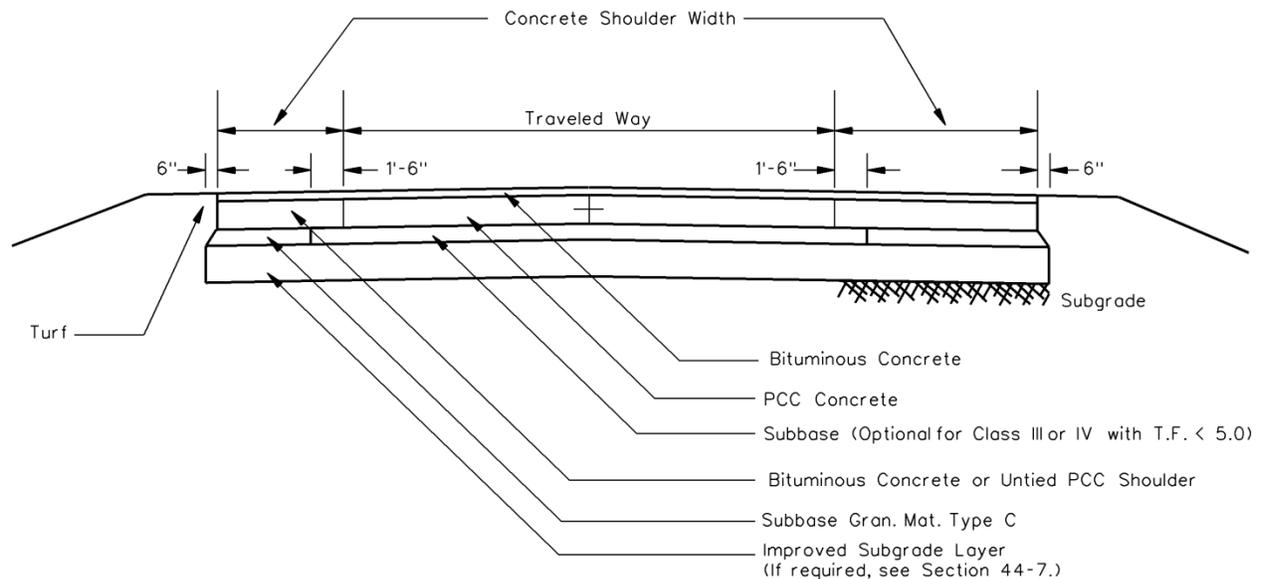
Figure 44-5J

44-5.04 Typical Sections

Figures 44-5K, 44-5L, and 44-5M illustrate typical LPA composite pavement designs.

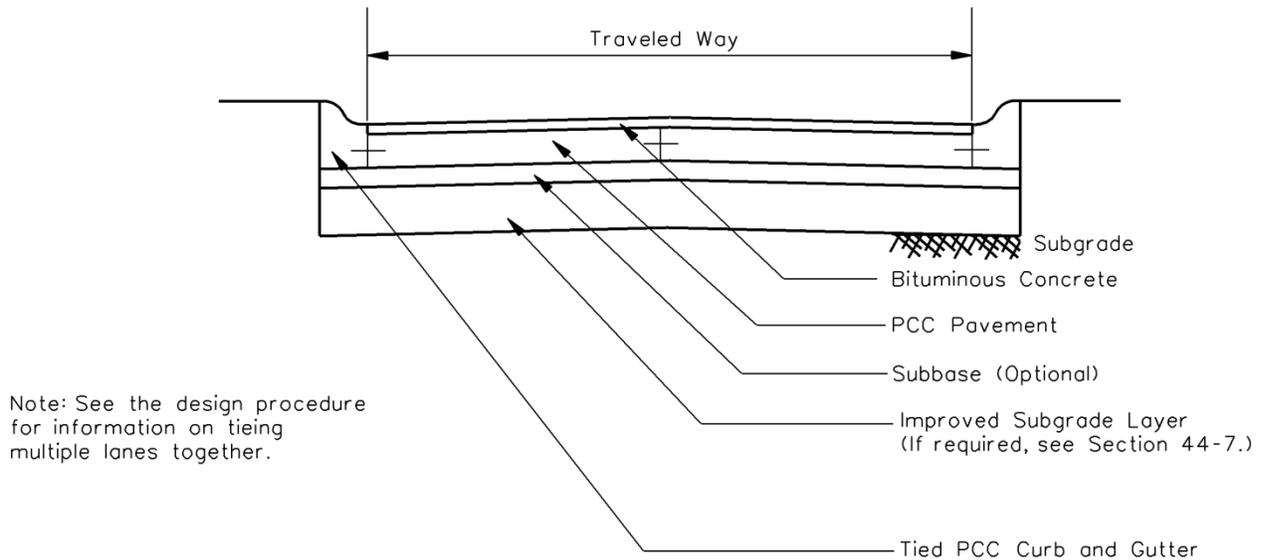
44-5.05 Worksheet

Figure 44-5N represents a worksheet for documenting the composite pavement design calculations.



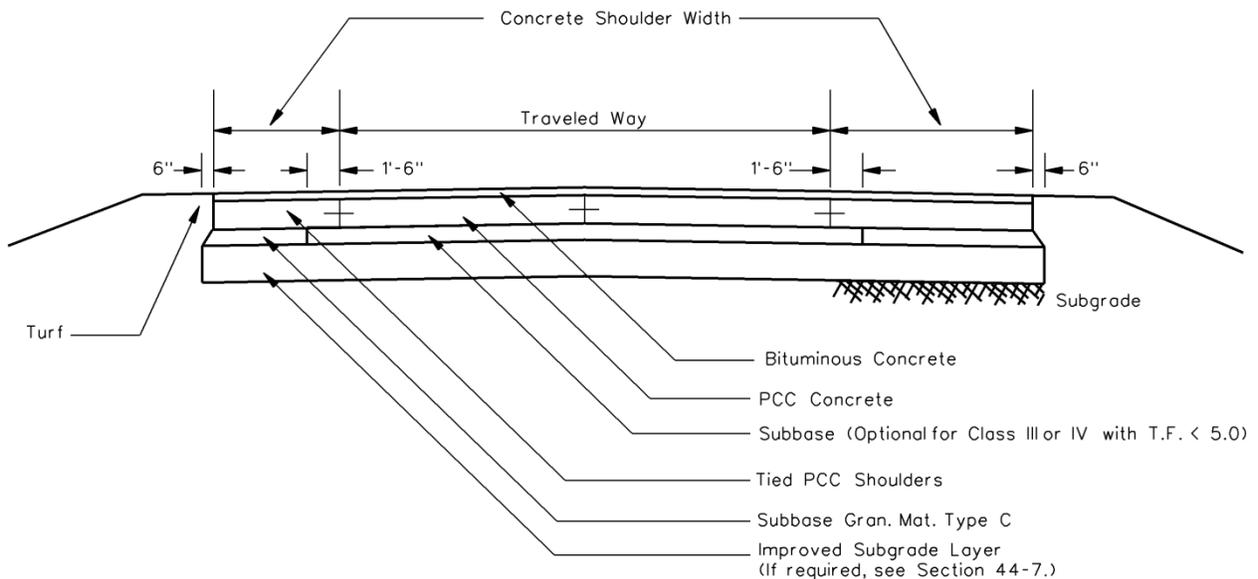
**TYPICAL COMPOSITE DESIGN
WITH UNTIED SHOULDERS**

Figure 44-5K



**TYPICAL COMPOSITE DESIGN
WITH TIED CURB AND GUTTERS**

Figure 44-5L



**TYPICAL COMPOSITE DESIGN
WITH TIED SHOULDERS**

Figure 44-5M

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

June 2018

44-5-15

Date: _____ County: _____
 Calculations by: _____ LPA: _____
 Checked by: _____ Section: _____
 Route: _____
 Location: _____

Limits of Analysis:

From: _____
 To: _____
 Length: _____ Feet _____ Miles

Percent / Count (Figure 44-1A as needed)

Structural Design Traffic: (Section 44-1.03(c))

Number of Lanes: _____
 ADT: _____
 Class of Road or Street: _____ (Section 44-1.01)

PV: _____ % / _____
 SU: _____ % / _____
 MU: _____ % / _____
 HCV: _____

Traffic Factor (Show Calculations):

PCC Slab Traffic Factor: (Figure 44-5A) _____ || HMA Traffic Factor: (Figure 44-5E) _____

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair Granular (Section 44-5.02(e) and Figure 44-6)
 Pre-Adjusted PCC Slab Thickness: _____ in. (Figure 44-5B)
 (Class IV use 6.50 in.)
 Reliability: _____ (Figure 44-5H) 75% or 90%

Adjustments: (Section 44-5.03(c) and Figure 44-5C)

75% Reliability (Section 44-5.02(h))	-0.50	_____ in.
15 ft Joint Spacing	+1.00	_____ in.
Untied Shoulder	+0.35	_____ in.
Fair Subgrade / Granular Subgrade	-0.25 / -0.50	_____ in.
Stabilized Subbase / Existing Pavement as	-0.25 / -0.50	_____ in.
10 ft Lane Width / 12 ft Lane Width	+0.25 / -0.25	_____ in.
HMA Surface Layer Thickness _____ in.	(See Figure 44-5I)	_____ in.
Total Adjustment:		_____ in.

Adjusted PCC Slab Thickness: (Section 44-5.03(a)) _____ in.
 Subbase Requirements: (Figure 44-5D) _____
 Select Binder: (Figure 44-5F or 44-5G) _____
 HMA Layer Thickness: (Figure 44-5I) _____ in.
 Final Pavement Thickness (Rounded to next 1/4 in.) _____ in.
 Dowel Bars: Yes No (Section 44-5.03(d)) Size: (Figure 44-5J) _____ in.
 Comments: _____

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

COMPOSITE PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES
Figure 44-5N

HARD COPIES UNCONTROLLED

44-5.06 Example Calculations

44-5.06(a) Example Calculation 1 (Red) – Class I Road

Problem:

Design a composite pavement for the given conditions.

Given: (Section 44-1.08(a))

Class I Road, Four Lane Pavement (Urban) (Section 44-1.01)

12 ft Lanes with Concrete Curb and Gutter

Design Traffic: ADT = 14,000

PV's 86%, SU's 8%, MU's 6% (if unknown see Section 44-1.03(c))

Lake County

Design Subgrade Support Rating – Fair

Posted Speed Limit – 30 MPH with Bus Stops

Solution:

Use Figure 44-5A and determine the TF equation for a four-lane Class I road; 4 or 5 Lane Pavement (Rural and Urban) to determine the PCC slab thickness:

$$TF = 20 \left[\frac{(0.047 \times 12040 + 64.715 \times 1120 + 313.389 \times 840)}{1,000,000} \right]$$

$$TF = 6.73$$

Because the pavement is a Class I road with tied curb and gutter, a subbase is optional (see Figure 44-5D, Note 1).

The pre-adjusted PCC slab thickness is determined from Figure 44-5B, gives a value of 7.36 in. Based on Figure 44-2C, the thickness adjustment factors are -0.25 in. (fair subgrade) and -0.25 in. (12 ft lane width). The pre-adjusted PCC slab thickness is 7.36 in. with adjustments of -0.50 in. for a value of 6.86 in; this is rounded to the next highest ¼ in. or a final thickness of 7.0 in. Alternative designs may be made by varying the HMA surface thickness, see Figure 44-5I. For this example, a 2 in. HMA overlay is used.

Dowels are required because the PCC slab thickness required 7 in. or greater [Section 44-5.02(c)]. Based on Figure 44-5J, the dowel bar diameter is 1.00 in.

Based on Figures 44-5E and 44-5F, a TF = 4.99, and bus stops along this road; an Illinois N₇₀ will result in specifying the binder as a PG 70-22 or SBS PG 70-22.

$$TF = 20 \left[\frac{(0.047 \times 12040 + 59.625 \times 1120 + 217.139 \times 840)}{1,000,000} \right]$$

$$TF = 4.99$$

* * * * *

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

June 2018

44-5-17

Date: _____

County: Lake

Calculations by: _____

LPA: _____

Checked by: _____

Section: _____

Route: _____

Location: _____

Limits of Analysis:

From: _____

To: _____

Length: _____ Feet _____ Miles

Percent / Count *(Figure 44-1A as needed)*

Structural Design Traffic: *(Section 44-1.03(c))*

Number of Lanes: 4

PV: _____ 86 % / _____ 12,040

ADT: 14,000

SU: _____ 8 % / _____ 1,120

Class of Road or Street: I *(Section 44-1.01)*

MU: _____ 6 % / _____ 840

HCV: _____ 1,960

Traffic Factor (Show Calculations):

$$TF = 20 \left[\frac{(0.047 \times 12040 + 64.715 \times 1120 + 313.389 \times 840)}{1,000,000} \right]$$

$$TF = 20 \left[\frac{(0.047 \times 12040 + 59.625 \times 1120 + 217.139 \times 840)}{1,000,000} \right]$$

PCC Slab Traffic Factor: *(Figure 44-5A)* 6.73

HMA Traffic Factor: *(Figure 44-5E)* 4.99

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair

Granular *(Section 44-5.02(e) and Figure 44-6)*

Pre-Adjusted PCC Slab Thickness:

(Figure 44-5B) _____ 7.36 in.

(Class IV use 6.50 in.)

Reliability:

(Figure 44-5H)

75% or 90%

Applicable Adjustments

Adjustments: *(Section 44-5.03(c) and Figure 44-5C)*

75% Reliability *(Section 44-5.02(h))*

-0.50 _____ N/A in.

15 ft Joint Spacing

+1.00 _____ N/A in.

Untied Shoulder

+0.35 _____ N/A in.

Fair Subgrade / Granular Subgrade

-0.25 / -0.50 _____ -0.25 in.

Stabilized Subbase / Existing Pavement as Subbase

-0.25 / -0.50 _____ N/A in.

10 ft Lane Width / 12 ft Lane Width

+0.25 / -0.25 _____ -0.25 in.

HMA Surface Layer Thickness _____ 2.0 in.

(See Figure 44-5I) _____ N/A in.

Total Adjustment: _____ -0.50 in.

Adjusted PCC Slab Thickness: *Section 44-5.03(a)* _____

6.86 use 7.0 in.

Subbase Requirements: *(Figure 44-5D)* A subbase is optional.

Select Binder: *(Figure 44-5F or 44-5G)* PG 70-22 or SBS PG 70-22

HMA Layer Thickness: *(Figure 44-5I)* _____

2.0 in.

Final Pavement Thickness *(Rounded to next 1/4 in.)* _____

9.0 in.

Dowel Bars: Yes No *(Section 44-5.03(d))*

Size: *(Figure 44-5J)* _____

1.00 in.

Comments: _____

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

EXAMPLE 1 – COMPOSITE PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES

Figure 44-5N

44-5.06(b) Example Calculation 2 (Blue) – Class III Road

Problem:

Design a composite pavement for the given conditions.

Given: (Section 44-1.08(b))

Class III Road, Two Lane Pavement (Section 44-1.01)

11 ft Lanes with Paved HMA Shoulders

Design Traffic: ADT = 1,800

PV's 90%, SU's 6%, MU's 4% (if unknown see Section 44-1.03(c))

Sangamon County

Design Subgrade Support Rating – Poor

Posted Speed Limit – 40 MPH with No Bus Stops

Solution:

Use Figure 44-5A and determine the TF equation for a two-lane Class III road:

$$TF = 20 \left[\frac{(0.073 \times 1620 + 64.790 \times 108 + 281.235 \times 72)}{1,000,000} \right]$$

$$TF = 0.547$$

Because the pavement is a Class III road with a TF < 5.0, a subbase is optional (see Figure 44-5D).

The pre-adjusted PCC slab thickness is determined from Figure 44-5B, gives a value of 6.61 in. Based on Figure 44-2C, the thickness adjustment factors are -0.50 (75% reliability) and +0.35 (untied shoulder). The pre-adjusted PCC slab thickness is 6.61 in. with adjustments of -0.15 in. for a value of 6.46 in; this is rounded to the next highest ¼ in. or a final thickness of 6.50 in. Alternative designs may be made by varying the HMA surface thickness, see Figure 44-5I. For this example, a 3 in. HMA overlay is used, reducing the PCC slab thickness an additional 0.5 in. to a final thickness of 6.0 in.

Dowels are not required because the PCC slab thickness required is less than 7 in [Section 44-5.02(d)].

Based on Figures 44-5E and 44-5G, a TF = 0.397, and a posted speed limit of 40 mph; an Illinois N₅₀ will result in specifying the binder as a PG 64-22.

$$TF = 20 \left[\frac{(0.073 \times 1620 + 54.570 \times 108 + 192.175 \times 72)}{1,000,000} \right]$$

$$TF = 0.397$$

* * * * *

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

June 2018

44-5-19

Date: _____

County: Sangamon

Calculations by: _____

LPA: _____

Checked by: _____

Section: _____

Route: _____

Location: _____

Limits of Analysis:

From: _____

To: _____

Length: _____ Feet _____ Miles

Percent / Count *(Figure 44-1A as needed)*

Structural Design Traffic: *(Section 44-1.03(c))*

Number of Lanes: 2

PV: _____ 90 % / _____ 1,620

ADT: 1,800

SU: _____ 6 % / _____ 108

Class of Road or Street: III *(Section 44-1.01)*

MU: _____ 4 % / _____ 72

HCV: _____ 180

Traffic Factor (Show Calculations):

$$TF = 20 \left[\frac{(0.073 \times 1620 + 64.790 \times 108 + 281.235 \times 72)}{1,000,000} \right]$$

$$TF = 20 \left[\frac{(0.073 \times 1620 + 54.570 \times 108 + 192.175 \times 72)}{1,000,000} \right]$$

PCC Slab Traffic Factor: *(Figure 44-5A)* 0.547

HMA Traffic Factor: *(Figure 44-5E)* 0.397

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair

Granular *(Section 44-5.02(e) and Figure 44-6)*

Pre-Adjusted PCC Slab Thickness:

(Figure 44-5B) _____ 6.61 in.

(Class IV use 6.50 in.)

Reliability:

(Figure 44-5H) 75% or 90%

Applicable Adjustments

Adjustments: *(Section 44-5.03(c) and Figure 44-5C)*

75% Reliability *(Section 44-5.02(h))*

-0.50 _____ -0.50 in.

15 ft Joint Spacing

+1.00 _____ N/A in.

Untied Shoulder

+0.35 _____ +0.35 in.

Fair Subgrade / Granular Subgrade

-0.25 / -0.50 _____ N/A in.

Stabilized Subbase / Existing Pavement as Subbase

-0.25 / -0.75 _____ N/A in.

10 ft Lane Width / 12 ft Lane Width

+0.25 / -0.25 _____ N/A in.

HMA Surface Layer Thickness _____ 3.0 in.

(See Figure 44-5I) _____ -0.50 in.

Total Adjustment: _____ -0.65 in.

Adjusted PCC Slab Thickness: *(Section 44-5.03(a))* _____

5.96 use 6.0 in.

Subbase Requirements: *(Figure 44-5D)* A subbase is optional.

Select Binder: *(Figure 44-5F or 44-5G)* PG 64-22

HMA Layer Thickness: *(Figure 44-5I)* _____

3.0 in.

Final Pavement Thickness *(Rounded to next 1/4 in.)* _____

9.0 in.

Dowel Bars: Yes No *(Section 44-5.03(d))*

Size: *(Figure 44-5J)* _____

N/A in.

Comments: _____

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

**EXAMPLE 2 – COMPOSITE PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES**

Figure 44-5N

44-5.06(c) Example Calculation 3 (Green) – Class IV Road

Problem:

Design a composite pavement for the given conditions.

Given: (Section 44-1.08(c))

Class IV Road, Two Lane Pavement (Section 44-1.01)

11 ft Lanes with Aggregate Shoulders

Design Traffic: ADT = 350

PV's 88%, SU's 7%, MU's 5% (if unknown see Section 44-1.03(c))

City of Marion, Williamson County

Design Subgrade Support Rating – Poor

Posted Speed Limit – 55 MPH with No Bus Stops

Solution:

Check the subgrade value with a dynamic cone penetrometer (DCP). If the Immediate Bearing Value (IBV) value is less than 6 an improved subgrade should be provided, see Section 44-7.02. A 4 in. granular subbase is recommended because of a poor subgrade support rating.

Per Section 44-5.02(b), Class IV composite pavements, a design TF is not necessary to determine the PCC slab thickness. A pre-adjusted PCC slab thickness of 6.5 in. should be used for all Class IV composite pavements.

Based on Figure 44-5C, the thickness adjustment factors are -0.50 in. (75% reliability) and +0.35 in. (untied shoulders). The pre-adjusted PCC slab thickness is 6.5 in. with adjustments of -0.15 in. for a value of 6.35 in; providing a final PCC slab thickness of 6.5 in. Alternative designs may be made by varying the HMA surface thickness, see Figure 44-5I. For this example, a 2 in. HMA overlay is used.

Dowels are not required because the PCC slab thickness is less than 7 in. [Section 44-5.03(d)].

Based on Figures 44-5E and 44-5G, a TF = 0.096, and a posted speed limit of 55 mph; an Illinois N₃₀ will result in specifying the binder as a PG 58-22.

$$TF = 20 \left[\frac{(0.073 \times 308 + 54.570 \times 24 + 192.175 \times 18)}{1,000,000} \right]$$

$$TF = 0.096$$

* * * * *

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

June 2018

44-5-21

Date: _____

County: Williamson

Calculations by: _____

LPA: City of Marion

Checked by: _____

Section: _____

Route: _____

Location: _____

Limits of Analysis:

From: _____

To: _____

Length: _____ Feet _____ Miles

Structural Design Traffic: (Section 44-1.03(c))

Number of Lanes: 2

ADT: 350

Class of Road or Street: IV (Section 44-1.01)

Percent / Count (Figure 44-1A as needed)

PV: 88 % / 308

SU: 7 % / 24

MU: 5 % / 18

HCV: 42

Traffic Factor (Show Calculations):

Per Section 44-5.02(b), Class IV composite pavements; a design TF is not necessary to determine the PCC slab thickness. A pre-adjusted PCC slab thickness of 6.5 in. should be used for all Class IV composite pavements.

PCC Slab Traffic Factor: (Figure 44-5A) N/A

$$TF = 20 \left[\frac{(0.073 \times 308 + 54.570 \times 24 + 192.175 \times 18)}{1,000,000} \right]$$

HMA Traffic Factor: (Figure 44-5E) 0.096

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair

Granular (Section 44-5.02(e) and Figure 44-6)

Pre-Adjusted PCC Slab Thickness:

(Figure 44-5B) 6.50 in.

(Class IV use 6.50 in.)

Reliability:

(Figure 44-5H) 75% or 90%

Applicable Adjustments

Adjustments: (Section 44-5.03(c) and Figure 44-5C)

75% Reliability (Section 44-5.02(h)) -0.50 -0.50 in.

15 ft Joint Spacing +1.00 N/A in.

Untied Shoulder +0.35 +0.35 in.

Fair Subgrade / Granular Subgrade -0.25 / -0.50 N/A in.

Stabilized Subbase / Existing Pavement as Subbase -0.25 / -0.50 N/A in.

10 ft Lane Width / 12 ft Lane Width +0.25 / -0.25 N/A in.

HMA Surface Layer Thickness 2.0 in. (See Figure 44-5I) N/A in.

Total Adjustment: -0.15 in.

Adjusted PCC Slab Thickness: (Section 44-5.03(a)) 6.35 use 6.50 in.

Subbase Requirements: (Figure 44-5D) _____

Select Binder: (Figure 44-5F or 44-5G) PG 58-22

HMA Layer Thickness: (Figure 44-5I) 2.0 in.

Final Pavement Thickness (Rounded to next 1/4 in.) 8.50 in.

Dowel Bars: Yes No (Section 44-5.03(d)) Size: (Figure 44-5J) N/A in.

Comments: Check the subgrade value with a dynamic cone penetrometer (DCP). If the Immediate Bearing Value (IBV) value is less than 6 an improved subgrade should be provided, see Section 44-7.02. A 4 in. granular subbase is recommended because of a poor subgrade support rating.

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

EXAMPLE 3 – COMPOSITE PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES

Figure 44-5N

44-6 SUBGRADE INPUTS FOR LOCAL ROAD PAVEMENT DESIGN

44-6.01 Introduction

The variability of in situ subgrade strengths can be quite large. Subgrade strength can vary with depth, distance along the roadway, or location across the pavement width. Knowledge of the soil present on the section of roadway being designed is essential to produce a satisfactory design. Flexible and rigid pavement designs require different subgrade design inputs.

44-6.01(a) Full-Depth Asphalt Concrete, Rigid, and Composite Pavements

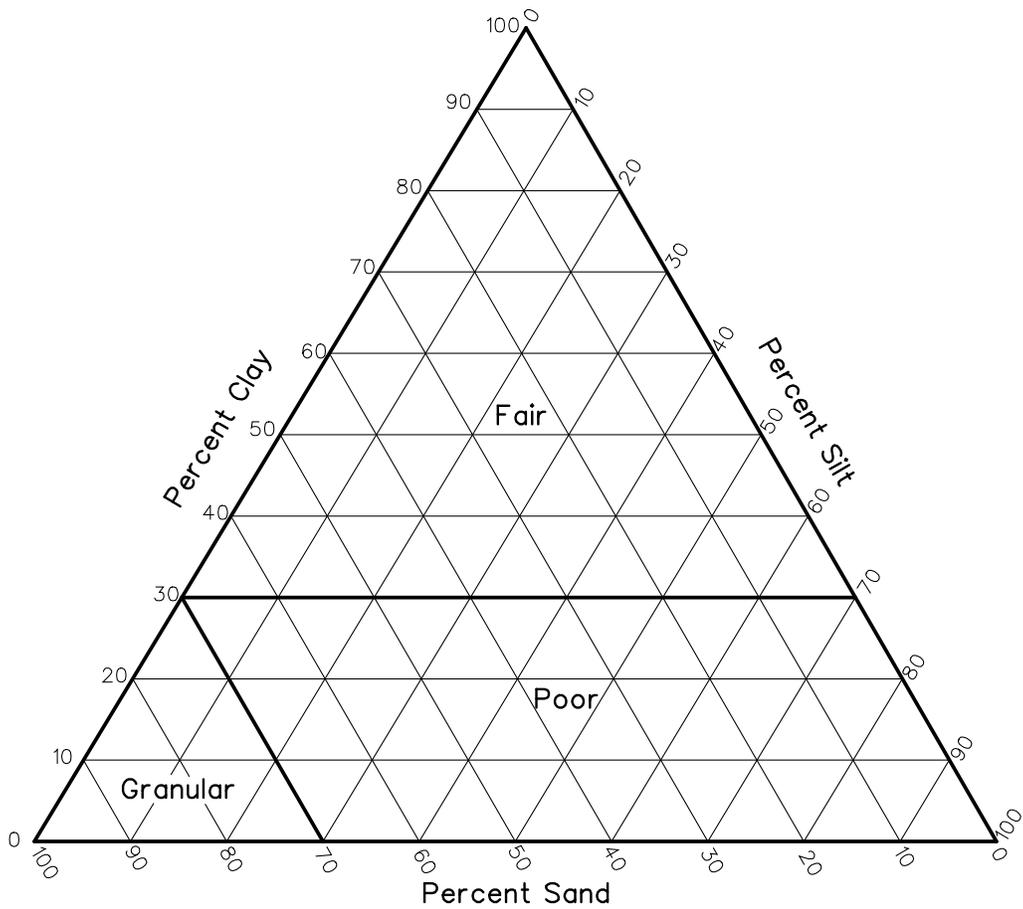
A Subgrade Support Rating is used as the design subgrade input for full-depth HMA, Rigid, and composite pavement designs. The SSR is based on a grain size analysis of the subgrade soil. Figure 44-6A is a graphical method to determine the SSR (poor, fair, or granular) based on the percentage of clay, silt, and sand in the subgrade soil.

44-6.01(b) Conventional Flexible Pavement Design

The procedures discussed in this Section do not apply to full-depth HMA pavements.

The majority of soils found in Illinois are fine-grained soils. The subgrade resilient modulus (E_{Ri}) is used as the design subgrade input for all flexible pavement designs except full-depth HMA. The E_{Ri} is an indicator of a soil's resilient behavior under loadings. Springtime E_{Ri} , which reflects high-moisture content and a thaw-weakened condition, is used for design purposes. Design E_{Ri} values can be obtained through field testing or laboratory testing, or estimated from soil property or strength data. The County Soil Report, prepared by the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service, can be an excellent source of information. The County Soil Report includes a soil report map and listings of engineering index properties and physical and chemical properties of the soils. The data are listed by soil series, which have similar profile features and characteristics wherever they are located.

1. Preliminary E_{Ri} Determination. Listed below are three methods and five procedures to determine preliminary E_{Ri} values, which are later adjusted for moisture. The methods vary in complexity from requiring field or laboratory tests to using county soil maps. The most accurate methods appear first in the listing. The results are acceptable in all cases, but are more accurate and reliable for the method involving field or laboratory tests. The five procedures are described below:
 - a. Method A. Requires obtaining soil samples to be tested in a laboratory.
 - i. Resilient Modulus Testing. The E_{Ri} of a soil may be determined by performing repeated unconfined compression testing in the laboratory. Subgrade specimens from in situ soil or laboratory-prepared specimens may be tested. Laboratory prepared specimens with a range of moisture contents and densities can be tested to simulate the variable conditions found in the field. The CBLRS may be contacted for additional information regarding a resilient modulus testing format.



Particle Size Limits

Sand	2.000 - 0.075 mm
Silt	0.075 - 0.002 mm
Clay	<0.002 mm

SUBGRADE SUPPORT RATING

Figure 44-6A

- b. Method B. Requires field testing of soils in situ.
- i. Falling Weight Deflectometer (FWD) Testing. Design E_{Ri} values can be back calculated from FWD data taken from existing pavements. County soil maps can be used to identify the major soil series found in an area. A FWD testing scheme that targets existing typical flexible pavements constructed in the major soil series of the area can be developed using this information. A county-wide FWD testing program that provides comprehensive coverage can be completed in 3 to 5 days in most cases. Springtime FWD testing is preferred, but a seasonal adjustment factor may be applied to the back calculated E_{Ri} if the FWD testing is conducted during other seasons. Contact the CBLRS if a seasonal adjustment factor is required. The average E_{Ri} back calculated from FWD testing should be used as the design E_{Ri} .

Design E_{Ri} values may be obtained from FWD testing in a cost-effective manner. Back calculated E_{Ri} values do not represent a single point location, but reflect the composite influence of a large volume of in situ soil, including the different soil horizons.

- ii. Estimating E_{Ri} from Strength Data. An E_{Ri} value can be estimated from strength data obtained with a Corps of Engineers hand-held cone penetrometer, or a dynamic cone penetrometer (DCP). Both the Corps of Engineers hand-held cone penetrometer and the DCP are field-testing devices used to rapidly evaluate the in situ strength of fine-grained and granular soils and granular base and subbase materials. The Corps of Engineers hand-held cone penetrometer is limited to an 18 in. depth of penetration and a maximum load of 150 lbs (IBV = 7.5). Data obtained from Corps of Engineers hand-held cone penetrometer and DCP testing can be used to estimate the IBV and E_{Ri} through the following equations:

$$IBV = \frac{CI}{40} \qquad \text{Equation 44-6.1}$$

Where: IBV = Immediate Bearing Value
CI = Corps of Engineers Cone Index, psi

$$\text{LOG IBV} = 0.84 - 1.26 \text{ LOG (PR)} \qquad \text{Equation 44-6.2}$$

Where: IBV = Immediate Bearing Value
PR = DCP penetration rate, in/blow

$$Q_u = 4.5 \text{ IBV} \qquad \text{Equation 44-6.3}$$

Where: Q_u = Unconfined compressive strength, psi
IBV = Immediate Bearing Value

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

44-6-4

June 2018

$$E_{Ri}^* = 0.86 + 0.307 Q_u \quad \text{Equation 44-6.4}$$

Where: E_{Ri}^* = Subgrade resilient modulus, ksi
 Q_u = Unconfined compressive strength, psi
*Moisture adjustment is necessary.

An E_{Ri} can be established with Corps of Engineers cone penetrometer or DCP testing at the project site or on existing flexible pavement sections constructed on the same soil series as the roadway being designed. Ideally, this testing should be conducted during the spring. If testing is not conducted during the spring, the E_{Ri} value calculated from Equation 44-6.4 will need to be corrected as discussed in Section 44-6.01(b).

- iii. Estimating E_{Ri} from Soil Properties. Design E_{Ri} values can be estimated based on a soil's clay content (< 2 micron) and plasticity index (PI). These values are easily obtainable from an analysis of the project's soils or the County Soil Report. Equation 44-6.5 may be used to predict E_{Ri} at optimum water content and 95% AASHTO T-99 maximum dry density:

$$E_{Ri}(\text{OPT})^* = 4.46 + 0.098 (\% \text{ Clay}) + 0.119 (\text{PI}) \quad \text{Equation 44-6.5}$$

Where: $E_{Ri}(\text{OPT})^*$ = E_{Ri} at optimum moisture content and 95% of AASHTO T-99 maximum dry density, ksi
% Clay = Clay content (<2 microns), %
PI = Plastic Index

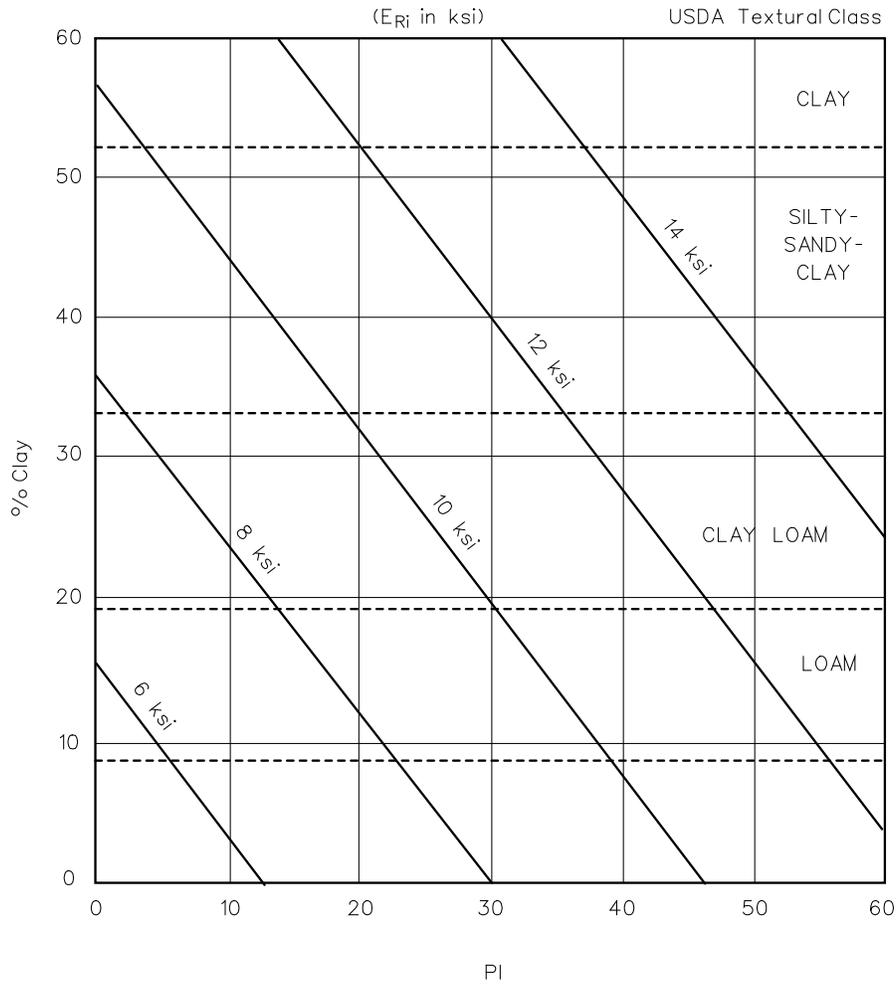
* Moisture adjustment is necessary.

Figure 44-6B is a graphical solution to Equation 44-6.5. If the County Soil Report is used to estimate the soil's clay content and PI, the designer should use the midpoint of clay content and PI values given.

- c. Method C. Requires the use of typical values based on AASHTO Soil Classification or USDA Textural Classification.

- i. Typical E_{Ri} Values. If data is not available to estimate E_{Ri} values using the previously discussed methods, Figures 44-6C or 44-6D may be used to estimate typical E_{Ri} values. If the water table and frost penetration levels are known, Figure 44-6C may be used to determine typical E_{Ri} values based on the AASHTO soil classification system.

If the frost penetration and water table levels are not known, the designer may use Figure 44-6D to estimate a typical E_{Ri} value. These E_{Ri} values were developed from resilient modulus testing of fine-grained Illinois soils, represent 95% of AASHTO T-99 maximum dry density and moisture contents 2% wet of optimum.



Subgrade E_{Ri} as a Function of %Clay, PI
 E_{Ri} in ksi, at w_{opt} and 95%Max γ_d (T-99)

GRAPHICAL SOLUTIONS OF E_{Ri} (OPT)

Figure 44-6B

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AASHTO Soil Classification	High-Water Table ⁽¹⁾		Low-Water Table ⁽²⁾	
	With Frost Penetration into Subgrade	Without Frost Penetration into Subgrade	With Frost Penetration into Subgrade	Without Frost Penetration into Subgrade
A-4, A-5, and A-6	2.0 ksi	4.0 ksi	3.0 ksi	6.0 ksi
A-7	2.0 ksi	5.0 ksi	3.5 ksi	7.0 ksi

- Notes: 1. Water table seasonally within 24 in. of subgrade surface.
2. Water table seasonally within 72 in. of subgrade surface.

AVERAGE E_{RI} VALUES BASED ON SOIL CLASSIFICATION, WATER TABLE DEPTH, AND FREEZE-THAW CONDITIONS

Figure 44-6C

AASHTO		USDA Textural Class	
Soil Classification	Average E_{RI} ⁽¹⁾ (ksi)	Soil Classification	Average E_{RI} ⁽²⁾ (ksi)
A-7-6	9.2	Silty Clay, Clay	9.5
A-7-5	6.3	Silty Clay Loam, Clay Loam	7.3
A-6	5.6	Silt Loam, Loam, Silt	6.2
A-4	3.8	Sandy Clay ⁽²⁾	9.0
A-5 ⁽²⁾	4.5	Sandy Clay Loam ⁽²⁾	7.0

95% of AASHTO T-99 maximum dry density and moisture contents 2% wet of optimum.

- Notes: 1. Moisture adjustment necessary.
2. Estimated.

AVERAGE E_{RI} VALUES FOR VARIOUS SOIL CLASSIFICATIONS

Figure 44-6D

2. Moisture Adjustment Procedure. The preliminary E_{RI} determined by one of the above procedures (except for the resilient modulus laboratory or FWD methods) should be corrected to reflect the in situ moisture present under springtime conditions, if the test data reflects conditions other than those of a normal spring. The following procedure will apply:
 - a. Known MDD and OMC. If the AASHTO T-99 maximum dry density (MDD), the optimum moisture content (OMC), and the specific gravity of soil solids (G_s) are known, Equation 44-6.6 can be used to calculate the moisture content for a given degree of saturation and 95% compaction.

$$MC_{\%SR} = \left[\frac{65.7}{MDD} - \frac{1}{G_s} \right] SR \quad \text{Equation 44-6.6}$$

Where: $MC_{\%SR}$ = Moisture content for a given degree of saturation, %
 MDD = AASHTO T-99 maximum dry density, pcf
 G_s = Specific gravity of soil solids
 SR = Degree of Saturation, % *

* For very poorly, poorly, and imperfectly drained soils, the E_{Ri} estimate should be adjusted to a 100% SR. All other drainage classes should be adjusted to a 90% SR. The drainage classification for a soil series can be found in the County Soil Report.

- b. Unknown MDD and OMC. If the MDD and OMC have not been determined, they can be estimated using Equations 44-6.7 and 44-6.8 and then used to solve Equation 44-6.6.

$$OMC = 1.86 + 0.499 (LL) - 0.354 (PI) + 0.044 (P_{200}) \quad \text{Equation 44-6.7}$$

$$MDD = 138.96 - 1.10 (LL) + 0.796 (PI) - 0.062(P_{200}) \quad \text{Equation 44-6.8}$$

Where: OMC = Optimum moisture content, %
 LL = Liquid limit, %*
 PI = Plasticity index *
 P_{200} = Percent passing #200 sieve *

* These inputs can be obtained from laboratory testing or selected from the midpoint of the range of values presented for the given soil series in the County Soil Report.

- c. Adjustment. Once the moisture content for the required degree of saturation is calculated, the field moisture adjustment and design E_{Ri} can be calculated.

$$FMA = MC_{\%SR} - OMC \quad \text{Equation 44-6.9}$$

Where: FMA = Field moisture adjustment, %
 $MC_{\%SR}$ = Moisture content for a given degree of saturation, %
 OMC = Optimum moisture content, %

$$\text{Design } E_{Ri} = E_{Ri} (\text{OPT}) - ((FMA)(MAF)) \quad \text{Equation 44-6.10}$$

Where: Design E_{Ri} = E_{Ri} for flexible pavement design, corrected for in situ moisture conditions, ksi
 $E_{Ri} (\text{OPT})$ = E_{Ri} at OMC and 95% of MDD, ksi
 FMA = Field moisture adjustment, %
 MAF = Moisture adjustment factor, E_{Ri} decrease per 1% moisture increase, ksi/% *

* MAF is selected from Figure 44-6E based on USDA soil textural classification.

USDA Textural Classification	E _{Ri} Decrease/1% Moisture Increase (ksi/%)
Clay, Silty Clay, Silty Clay Loam, Clay Loam, Sandy Clay*, Sandy Clay Loam*	0.7
Silt Loam, Sandy Loam	1.5
Loam, Silt	2.1

* *Estimated*

**E_{Ri} MOISTURE ADJUSTMENT FACTORS BASED ON
USDA TEXTURAL CLASSIFICATION**

Figure 44-6E

- d. Minimum Design E_{Ri} Values. A design E_{Ri} of 2 ksi is the lowest allowable design E_{Ri}. If the design E_{Ri} value calculated from Equation 44-6.10 is less than 2 ksi or does not reasonably compare with historical data for the soil series, other means for determining design E_{Ri} should be investigated. Soft subgrades with low E_{Ri} or IBV values may require remedial subgrade treatments as outlined in Section 44-7. Engineering judgment may also be required to decrease the design E_{Ri} to account for the effect of freeze-thaw cycles on the in situ springtime design condition.
3. Composite E_{Ri} Estimate. A soil profile (vertical sections) contains distinct soil layers, called horizons. The County Soil Report contains thicknesses and properties for each horizon in the soil series. In a typical flexible pavement, approximately 70% to 75% of the subgrade deflection occurs in the upper 60 in. of the subgrade. For this reason, a composite E_{Ri} which considers the contributing effect of the E_{Ri} values of the different soil horizons in the 60 in. zone should be calculated using Equation 44-6.11.

E_{Ri} values determined from FWD testing reflect the composite E_{Ri} value of the subgrade; therefore, no further adjustment for composite influences should be made.

$$\text{Design Composite } E_{Ri} \text{ (ksi)} = \sum_{i=1}^n (F_i)(T_i)(E_i) \quad \text{Equation 44-6.11}$$

- Where:
- i = Layer designator; i = 1 for the top layer
 - n = Number of layers
 - F_i = Deflection coefficient, see Figure 44-6F
 - T_i = Thickness of soil horizon in 60 in. depth zone, in.
 - E_i = E_{Ri} for the soil horizon, adjusted for springtime conditions, ksi

The design composite E_{Ri} value should be used as the design subgrade input in all pavement design procedures requiring the E_{Ri input} value.

Depth Zone* (in.)	F_i
1-12	0.038
12-24	0.015
24-36	0.008
36-60	0.011

*Depth measured from surface of subgrade.

DEFLECTION COEFFICIENTS AS A FUNCTION OF DEPTH

Figure 44-6F

44-6.02 Subgrade Design Input Examples

44-6.02(a) Grain Size Analysis

A grain size analysis shows that the subgrade soil contains 43% clay, 48% silt, and 9% sand. From Figure 44-6A, the Subgrade Support Rating is FAIR. An SSR value is necessary for rigid, full-depth HMA, and composite pavement design procedures.

44-6.02(b) Resilient Modulus (E_{Ri}) from Laboratory Testing

Repeated compression testing in the laboratory is performed on subgrade specimens from in situ soil sampled during the spring or on laboratory-prepared specimens. The results should be adjusted to reflect the composite influence of the soil layers. If the soil samples were not taken during the spring, moisture adjustment factors would need to be applied prior to correcting for the composite influence of the soil layers.

44-6.02(c) Estimating E_{Ri} from Strength Data

A DCP was used to evaluate the in situ strength of a subgrade soil. Average DCP penetration rates for the soil are given in Figure 44-6G. IBV, Q_u , and E_{Ri} were calculated using Equations 44-6.2, 44-6.3, and 44-6.4, respectively.

Depth (in.)	No. of Blows in the Field	DCP Penetration Rate (in/blow)	IBV	Q_u (psi)	E_{Ri} (ksi)
0 – 16	8 – 9	1.9	3.1	13.9	5.1
16 – 51	29	1.2	5.5	24.7	8.4
51 – 60	5 – 6	1.6	3.8	17.2	6.1

FIELD DATA EXAMPLE FOR ESTIMATING FROM STRENGTH DATA

Figure 44-6G

Corrections for springtime conditions (if DCP testing was done other than in springtime) and the composite influence of the soil layers should be made as shown in the Estimating E_{RI} from Soil Properties in Section 44-6.02(d).

The following are example calculations for estimating subgrade strength from DCP test results. The following calculations pertain to a depth of 16 in. to 51 in., requiring a total of 29 blows in Figure 44-6G.

Equation 44-6.2 for IBV

$$\begin{aligned} \text{LOG IBV} &= 0.84 - 1.26 \times \text{LOG (penetration rate)} \\ &= 0.84 - 1.26 \times \text{LOG (1.2)} \\ &= 0.84 - 1.26 \times 0.079181 \\ &= 0.84 - 0.0998 \\ \text{LOG IBV} &= 0.74023 \end{aligned}$$

$$\text{IBV} = 10^{0.74023} = 5.5$$

Equation 44-6.3 for Unconfined Compressive Strength

$$\begin{aligned} Q_u &= 4.5 \times \text{IBV} && \text{for IBV} = 5.5 \\ &= 4.5 \times 5.5 \end{aligned}$$

$$Q_u = 24.7 \text{ psi}$$

Equation 44-6.4 for Subgrade Resilient Modulus

$$\begin{aligned} E_{RI} &= 0.86 + 0.307 \times Q_u && \text{for } Q_u = 24.7 \text{ psi} \\ &= 0.86 + 0.307 \times 24.7 \end{aligned}$$

$$E_{RI} = 8.4 \text{ ksi}$$

44-6.02(d) Estimating E_{RI} from Soil Properties

The roadway being designed passes through the MIAMI soil series. From the County Soil Report, the information shown in Figure 44-6H is obtained.

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Soil Series	USDA Textural Class	Depth from Top of Subgrade (in.)	Clay (%)	PI	Liquid Limit	Percent Passing #200 Sieve
MIAMI*	Clay Loam, Silty Clay Loam	0 – 16	25 – 35	17 – 31	35 – 50	64 – 95
	Loam, Clay Loam, Sandy Loam	16 – 60	15 – 28	2 – 20	20 – 40	50 – 64

* Assumes that A horizon material has been stripped; remaining material is representative of B and C horizons.

ESTIMATING FROM SOIL PROPERTIES

Figure 44-6H

From Equation 44-6.5, E_{Ri} (OPT) is calculated for each of the two depths using the midpoint values from the County Soil Report:

0 in. - 16 in.: E_{Ri} (OPT) = 4.46 + 0.098 (30) + 0.119 (24)
 E_{Ri} (OPT) = 10.2 ksi

16 in. - 60 in.: E_{Ri} (OPT) = 4.46 + 0.098 (22) + 0.119 (11)
 E_{Ri} (OPT) = 7.9 ksi

These values must be corrected to reflect the springtime design condition. Figure 44-6I summarizes the moisture adjustment procedure.

The design E_{Ri} values adjusted to reflect springtime design conditions in Figure 44-6I must be combined into a composite E_{Ri} that considers the effect of the 60 in. zone under the load. This can be accomplished using Equation 44-6.11 and Figure 44-6F.

Design Composite

$$E_{Ri} = (0.038)(12)(7.6) + (0.015)(4)(7.6) + (0.015)(8)(2.0) + (0.008)(12)(2.0) + (0.011)(24)(2.0)$$

$$E_{Ri} = 4.9 \text{ ksi}$$

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Depth (in.)	E_{Ri} (OPT) ⁽¹⁾ (ksi)	Optimum Moisture Content ⁽²⁾ (%)	Maximum Dry Density ⁽³⁾ (PCF)	Moisture Content for Given Saturation ⁽⁴⁾ (%)	Field Moisture Adjustment ⁽⁵⁾ (%)	Moisture Adjustment Factor ⁽⁶⁾	Design E_{Ri} ⁽⁷⁾ (ksi)
0 – 16	10.2	17.8	106.9	21.7	3.9	0.7	7.6
16 – 60	7.9	15.4	111.2	19.6	4.2	1.5	1.6(2.0) ⁽⁸⁾

Notes:

1. From Equation 44-6.5; use midpoint range values from the County Soil Report.
2. From Equation 44-6.7; use midpoint range values from the County Soil Report.
3. From Equation 44-6.8; use midpoint range values from the County Soil Report.
4. From Equation 44-6.6; degree of saturation equals 90%, because Miami soil series is well-drained; estimate G_s as 2.68.
5. From Equation 44-6.9.
6. From Figure 44-6E.
7. From Equation 44-6.10.
8. 2.0 ksi is the lowest allowable design E_{Ri} .

**MOISTURE ADJUSTMENT PROCEDURE
SPRINGTIME DESIGN CONDITION**

Figure 44-6I

44-6.02(e) Typical E_{Ri} Values

From the County Soil Report, the depth and USDA textural and AASHTO classification data are shown in Figure 44-6J. Average E_{Ri} values based on soil classification are shown.

Average E_{Ri} values calculated using Figure 44-6J, Notes 2(a) and 2(b) need to be corrected for springtime testing conditions, if necessary, and the composite influence of the soil layers. Average E_{Ri} values calculated with Note 2(c) reflect springtime testing conditions, but still need to be adjusted to reflect the composite influence of the soil layers.

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Soil Series	Depth (in.)	USDA Textural Class	AASHTO Class	Average E_{Ri} (ksi) ⁽¹⁾		Average E_{Ri} (ksi) Springtime Conditions
				2(a)	2(b)	2(c)
Tama ⁽²⁾	0 – 35	Silty Clay Loam	A-7	7.3	6.3	2.0
	35 – 60	Silty Clay Loam, Silt Loam	A-6	6.2	5.6	2.0

Notes:

1. 95% of AASHTO T-99 Maximum Dry Density and Moisture Contents 2% Wet of Optimum.
2. Assumes that A horizon has been stripped; remaining material is representative of the B and C horizons.
 - (a) From Figure 44-6D, based on USDA textural class.
 - (b) From Figure 44-6D, based on AASHTO class.
 - (c) From Figure 44-6C, assuming high-water table and frost penetration.

AVERAGE E_{Ri} VALUES BASED ON SOIL CLASSIFICATION

Figure 44-6J

44-7 SUBGRADE STABILITY REQUIREMENTS FOR LOCAL ROADS

44-7.01 Introduction

This is a condensation of IDOT's [Subgrade Stability Manual](#) and has been prepared to give the designer guidance on identifying and treating unsuitable subgrade material. The designer is required to use it for all Class I and II roadways. Its use is optional for all Class III and IV roadways.

Subgrade stability plays a critical role in the construction and performance of a pavement. A pavement's performance is directly related to the physical properties of the roadbed soils as well as the materials used in the pavement structure. Subgrade stability is a function of a soil's strength and its behavior under repeated loading. Both properties significantly influence pavement construction operations and the long-term performance of the subgrade. The subgrade should be sufficiently stable to:

- prevent excessive rutting and shoving during construction,
- provide good support for placement and compaction of pavement layers,
- limit pavement resilient (rebound) deflections to acceptable limits, and
- restrict the development of excessive permanent deformation accumulation (rutting) in the subgrade during the service life of the pavement.

While the effect of less satisfactory soils can be reduced by increasing the thickness of the pavement structure, it may be necessary to take other steps to ensure adequate support for the operation of construction equipment and placement and compaction of the pavement layers.

44-7.02 Subgrade Stability Procedures

Many typical fine-grained Illinois soils do not develop an Immediate Bearing Value (IBV) more than 6.0 when compacted at, or wet of, optimum moisture content. Therefore, the designer must use one of the remedial procedures listed below when the in situ soil does not develop an IBV more than 6.0:

- undercut and backfill,
- modify soil layer, or
- moisture-density control.

Moisture-density control is the least permanent remedial procedure.

For pavement design purposes, use the in situ IBV prior to the remedial subgrade treatment.

In situ IBV may be determined by use of a Corps of Engineers hand-held cone penetrometer, or a dynamic cone penetrometer (DCP). Correlations relating Corps of Engineers cone penetrometer and DCP test results to IBV values are summarized in Figure 44-7A. CBLRS can be contacted for additional help in determining a field IBV value.

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Static Cone Penetrometer	Dynamic Cone Penetrometer	Equivalent IBV
Corps of Engineers Cone Index (psi) ⁽¹⁾	DCP Penetration Rate (in./blow) ⁽²⁾	
40	4.6	1
80	2.7	2
120	1.9	3
160	1.5	4
200	1.3	5
240	1.1	6
280	1.0	7
320	0.9	8
360	0.8	9

Notes:

1. $IBV = \frac{\text{Cone Index}}{40}, \text{ psi}$
2. $LOG IBV = 0.84 - 1.26 LOG (\text{Penetration Rate, in. / blow})$

SUBGRADE STRENGTH RELATIONSHIPS

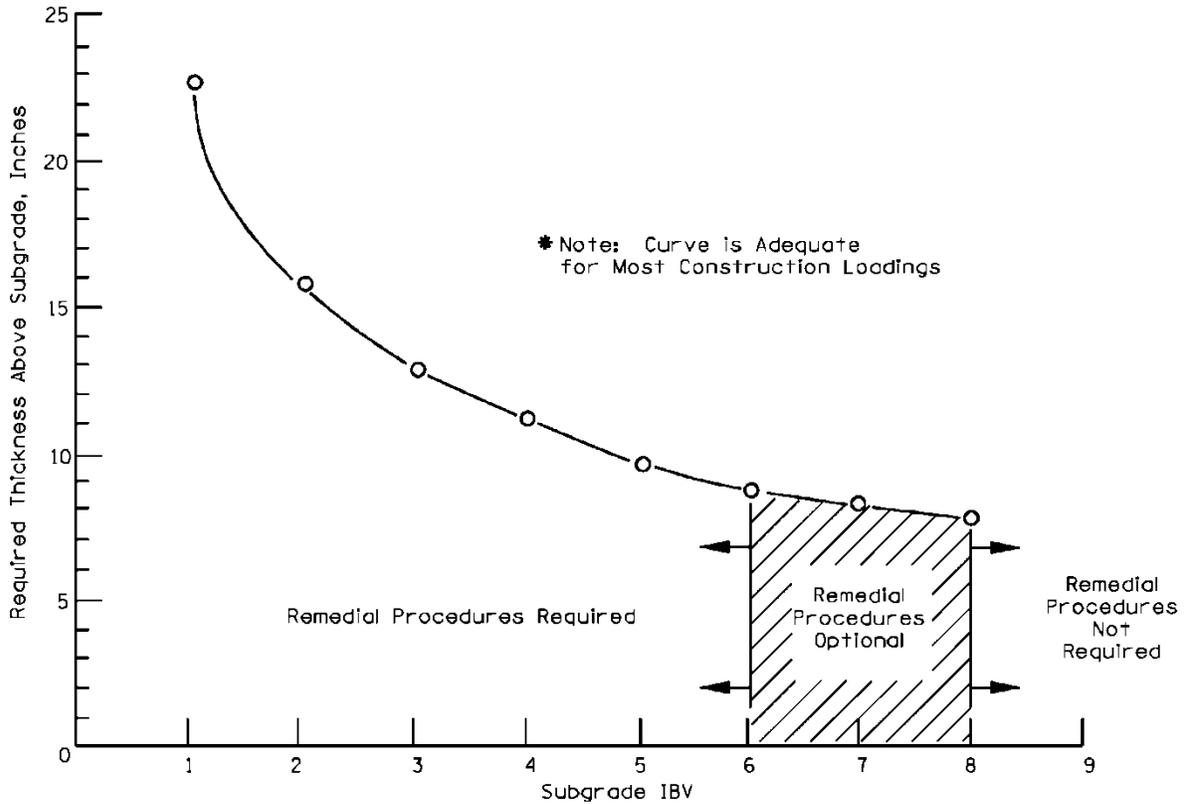
Figure 44-7A

44-7.02(a) Undercut and Backfill

Undercut and backfill involves removing the soft subgrade to a predetermined depth below the grade line and replacing it with granular material. This option is appropriate for localized area base repairs as well as for new construction. The granular material helps distribute the load over the unstable subgrade and serves as a working platform for construction equipment. The required removal and backfill depth can be determined from Figure 44-7B. The use of granular material with good shear strength is recommended. Factors that increase shear strength of a granular material are:

- using crushed materials;
- increasing top size;
- using well-graded materials, as opposed to one-size gradations;
- reducing PI of fines; and
- lowering fine content.

A geosynthetic may be used between the subgrade and the granular material to keep the subgrade layer separate from the granular layer, thereby, reducing the required granular thickness. CBLRS should be contacted for assistance in designing the appropriate granular thickness when geosynthetics are used.



IBV-BASED THICKNESS DESIGN FOR UNDERCUT AND BACKFILL AND MODIFIED SOIL LAYER REMEDIAL PROCEDURES

Figure 44-7B

44-7.02(b) Soil Modification

Unstable subgrades may be modified ([IDOT Standard Specifications](#) “Soil Modification” section) to improve subgrade stability for new construction or large reconstruction projects. The thickness requirements shown in Figure 44-7B for granular backfill may also be used to determine the thickness of the modified soil layer.

If the soil is to be modified with lime, it is necessary to perform laboratory tests according to the department’s “Laboratory Evaluation/Design Procedure for Lime Stabilized Soil Mixtures” to determine if the soil is reactive and to determine the percentage of lime necessary for the soil to develop a minimum IBV of 10.0. The design commonly requires 0.5% percent more lime than the laboratory tests indicate to account for variables in the field.

If the IBV of the modified soil layer is less than 10.0, the engineer has the option of allowing the modified soil layer to field cure to obtain an IBV of 10.0, per the department's "Laboratory Evaluation/Design Procedure for Soil Modification". If an IBV of 10.0 is not attainable with a field cure, or if the engineer decides not to wait for a field cure, addition of a granular layer will be required. Undercutting may be necessary prior to placing the granular layer in cases of grade restrictions. The thickness of the granular layer and the modified soil layer can be combined to meet the required thickness shown in Figure 44-7B. The minimum granular layer thickness should be 4 in. The minimum modified soil layer should be 10 in. Thickness adjustments may be modified to fit field conditions.

The modified soil layer should be covered with the subsequent pavement layer within the same construction season.

44-7.02(c) Moisture-Density Control

A soil wet of its optimum moisture content may not provide adequate subgrade stability when compacted to 95% of the standard laboratory density, as required by current IDOT specifications. Moisture controls as well as density controls may be required to ensure the proper compaction necessary to obtain a stable subgrade. Quantitative values of permissible compaction moisture content can be added to the compaction specifications to accomplish this. Laboratory testing, according to AASHTO T99, is required to determine appropriate compaction densities and moisture contents.

Draining the grade and drying the top portion of the subgrade by disking or tilling may control excess moisture at the time of construction, but it may be difficult to maintain that moisture condition throughout the pavement's life.

44-7.03 Treatment Guidelines

The designer should use the following guidelines to determine which of the three remedial treatments is appropriate:

Specific details for each subgrade stability alternative should be determined. The required depth of undercut and backfill; the modifier percentage and layer thickness required; and the moisture and density levels required to achieve the needed stability levels should be determined.

The alternative procedures should be compared by considering construction variability, economics, permanence of treatment, and pavement performance benefits.

The best option should be selected.

More detailed information regarding subgrade stability requirements for LPA pavement design is detailed in IDOT's [Subgrade Stability Manual](#).

44-7.04 Subgrade Stability Example

Example 44-7.1

Problem:

Determine the subgrade treatment alternatives for a soil having an in situ IBV of 4.

Solution:

Requirements. Based on Figure 44-7B and an IBV of 4, remedial procedures are required.

Treatments. The three alternative treatments available are listed below along with specific requirements:

- a. Undercut and Backfill. From Figure 44-7B, 11.5 in. of granular material is required.
- b. Modified Soil Layer. Figure 44-7B shows that 11.5 in. of a modified soil layer would be required. If the immediate IBV of the modified soil layer obtained in the field is less than 10.0, the following options are available to the engineer:
 - field-cure the modified soil layer until an IBV of 10.0 is achieved; or
 - full- or partial-depth removal and replacement with granular material. In this case, a minimum thickness of 10 in. of a modified soil layer and a minimum thickness of 4 in. of granular material would be suitable.
- c. Moisture-Density Control. Moisture and density specifications can be added to the contract documents to control compactive efforts, thereby assisting in obtaining a stable subgrade. Laboratory testing can determine the appropriate compaction densities and moisture contents. Disking or tilling may be necessary to control excess moisture.

Comparison. The designer should consider the feasibility of these three options, their relative cost, contract time frame, and construction season. The best option should be selected and specified in the project plans. The designer should still use the in situ IBV for pavement design purposes rather than the IBV after remedial treatment.

* * * * *

44-8 SURFACE TREATMENTS

A flexible pavement design procedure for bituminous surface treatments, A-2 and A-3, is not included in Chapter 44. Bituminous surface treatments, A-2 and A-3, may be constructed on roads and streets having an estimated ADT, upon completion, of 400 vehicles or less. The minimum thicknesses and widths of base courses for these treatments are as follows:

Type of Base Course	Minimum Thickness (in.)	<u><i>IDOT Standard Specifications</i></u>	Minimum Width (ft)
Lime Stabilized Soil Mixture	8	Section 350	2 ft wider than surface
Aggregate Base Course	10 ⁽¹⁾	Section 351	
Soil – Cement Base Course	8	Section 352	

Note:

(1) This may be reduced to 8 in. if located on modified soil (Section 302).

**MINIMUM THICKNESSES AND WIDTHS OF
BITUMINOUS SURFACE TREATMENT BASE COURSE**

Figure 44-8A

These minimum thicknesses for base courses are to be supplemented with subbase courses when necessary to compensate for poor subgrade soil conditions. The requirement for subbase may be determined based on the applicable portions of Chapter 44 or some other acceptable method which has proven satisfactory in the past.

A-1, A-2, and A-3 bituminous surface treatments may not be placed on roads and streets having estimated ADT of over 400 vehicles upon completion.

44-9 WORKSHEETS AND FIGURES

The following pages contain the necessary blank pavement design worksheets and various figures from previous sections to assist in the calculation of pavement designs. The submittal of pavement designs shall include the appropriate worksheet, location map, USDA Soil Map (as needed), and completed figures (as needed).

- Section 44-9.01 – Section 44-1 General Figures
- Section 44-9.02 – Section 44-2 Rigid Pavement Design Figures
- Section 44-9.03 – Section 44-3 Conventional Flexible Pavement Design Figures
- Section 44-9.04 – Section 44-4 Full-Depth HMA Pavement Design Figures
- Section 44-9.05 – Section 44-5 Composite Pavement Design Figures

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44-9.01 Figures from Section 44-1 (General)

The following figures are to be used as needed for the design of various pavements and submitted, as needed, with the appropriate design calculations.

Class I Roads and Streets. Facilities with 4 or more lanes and one-way streets with a structural design traffic greater than 3500 ADT.

Class II Roads and Streets. Two or three lane streets with structural design traffic greater than 2000 ADT and all one-way streets with a structural design traffic less than 3500 ADT.

Class III Roads and Streets. Roads and streets with structural design traffic between 400 and 2000 ADT.

Class IV Roads and Streets. Roads and streets with structural design traffic less than 400 ADT.

Class of Road or Street	Percentage of Structural Design Traffic		
	PV (%)	SU (%)	MU (%)
III	88	7	5
IV	88	9	3

**TRAFFIC PERCENTAGE
(Class III and IV)**

Figure 44-1A

Number of Facility Lanes	Percent of Total Vehicular Class Volume (ADT) in Design Lane					
	Rural			Urban		
	PV	SU	MU	PV	SU	MU
2 or 3 *	50%	50%	50%	50%	50%	50%
4 or 5	32%	45%	45%	32%	45%	45%
≥ 6	20%	40%	40%	8%	37%	37%

* 2 or 3 lane facilities include all one-way roads and streets.

DESIGN LANE DISTRIBUTION FACTORS FOR STRUCTURAL DESIGN TRAFFIC

Figure 44-1B

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Mixture Superpave	Typical Use ⁽¹⁾	Leveling Course Minimum Lift Thickness ⁽²⁾⁽³⁾, in. (mm)	Surface/Binder Course Minimum Lift Thickness ⁽²⁾, in. (mm)
IL-4.75	B/L	3/8 (10)	3/4 (19)
IL-9.5	S/B/L	3/4 (19) ⁽⁵⁾	1 1/4 (29)
IL-12.5	S/B/L	1 1/4 (32)	1 1/2 (38)
IL-19.0 ⁽⁴⁾	B/L	1 3/4 (44)	2 1/4 (57)
IL-25.0 ⁽⁴⁾	B	Not Allowed	3 (76)

Notes:

1. S = Surface; B = Binder; L = Leveling Binder
2. Minimum thicknesses are the nominal thickness of the lift.
3. If the leveling course is placed at or above the minimum thickness specified for surface/binder course, density will be required.
4. This mix may not be used as a surface lift.
5. If the IL-9.5mm leveling binder is being placed over crack and joint sealant, the minimum lift thickness may be 1/2 in. (13 mm).

HMA SURFACE, BINDER, AND LEVELING BINDER LIFT THICKNESSES

Figure 44-1C

Number of Lanes	Frictional Requirements (ADT)			
	Mixture C	Mixture D	Mixture E	Mixture F
≤ 2	≤ 5,000	> 5,000	N/A	N/A
4	≤ 5,000	5,001 to 25,000	25,001 to 100,000	> 100,000
≥ 6	N/A	5,001 to 60,000	60,001 to 100,000	> 100,000

Note: ADT levels are for the expected year of construction.

FRICITIONAL REQUIREMENTS FOR SURFACE MIXES

Figure 44-1D

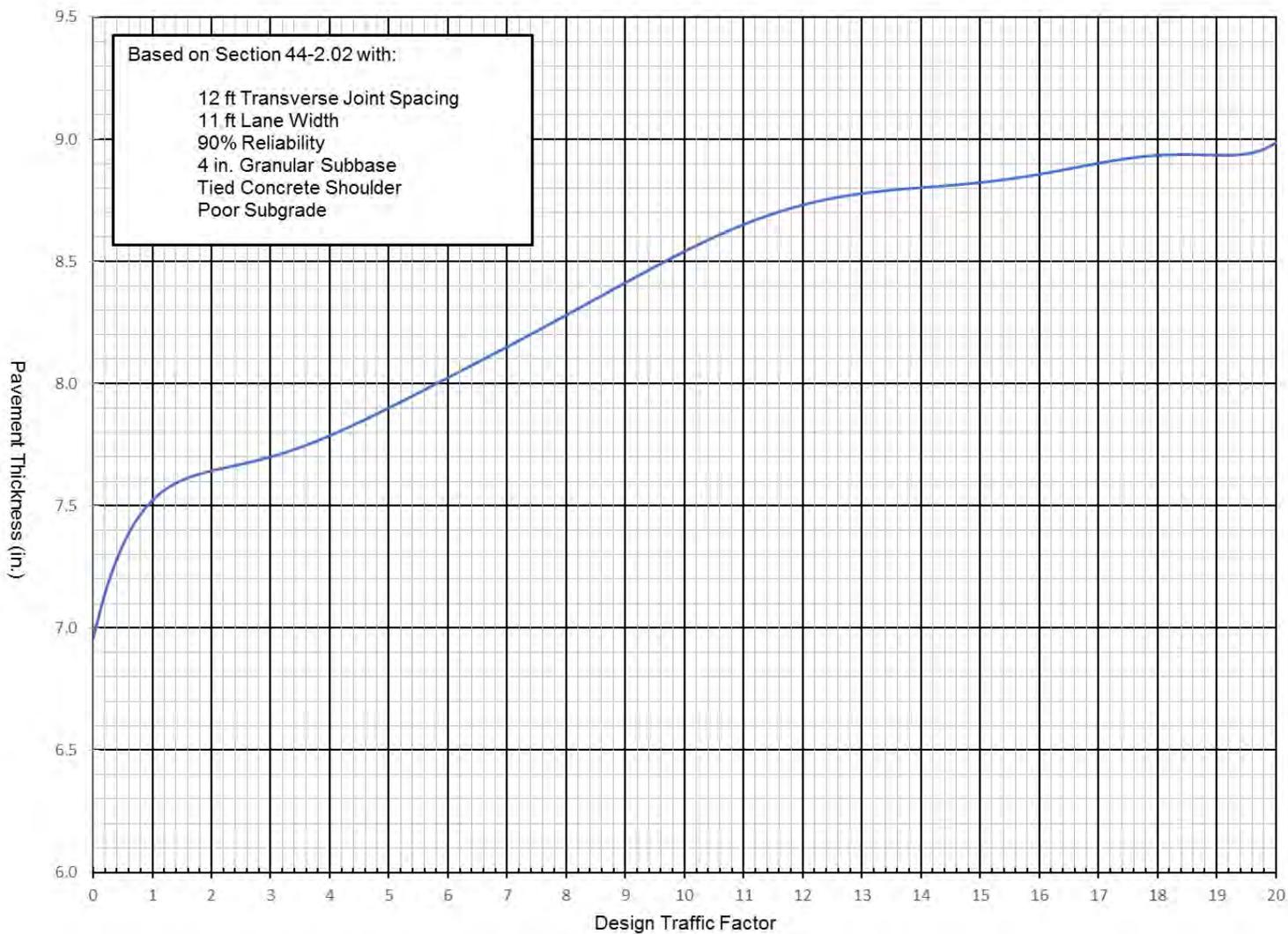
44-9.02 Figures from Section 44-2 (Rigid Pavement Design)

The following figures are to be used for the design of rigid pavements and submitted, as needed, with design calculations (Figure 44-2L).

Class I Roads and Streets	
4 or 5 Lane Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.047PV + 64.715SU + 313.389MU)}{1,000,000} \right]$
6 or More Lane Pavements (Rural)	$TF = DP \left[\frac{(0.029PV + 57.524SU + 278.568MU)}{1,000,000} \right]$
6 or More Lane Pavements (Urban)	$TF = DP \left[\frac{(0.012PV + 53.210SU + 257.675MU)}{1,000,000} \right]$
One-way Street Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.073PV + 71.905SU + 348.210MU)}{1,000,000} \right]$
Class II Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 67.890SU + 283.605MU)}{1,000,000} \right]$
Class III Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 64.790SU + 281.235MU)}{1,000,000} \right]$ TF minimum = 0.5

TRAFFIC FACTOR EQUATIONS (80,000 LB LOAD LIMIT)

Figure 44-2A



PRE-ADJUSTED RIGID PAVEMENT THICKNESS

Figure 44-2B

Adjustment Factor	Rigid Pavement Thickness Adjustment (in.)
75% Reliability	-0.50
15 ft Joint Spacing ($0.1 \leq TF \leq 5$)	+1.00
15 ft Joint Spacing ($5 < TF \leq 20$)	+1.25
Untied Shoulder	+0.35
Fair Subgrade	-0.25
Granular Subgrade	-0.50
Stabilized Subbase	-0.25
Existing Pavement as Subbase	-0.50
10 ft Lane Width	+0.25
12 ft Lane Width	-0.25

Note: Thickness adjustment is made for untied shoulders (PCC or flexible). The designer should be aware of the potential for frost heave if untied shoulders are used

A subbase is optional for all Class III and IV pavements with a TF < 5.0, and for urban sections having curb and gutter and storm sewer systems.

THICKNESS ADJUSTMENT FACTOR

Figure 44-2C

	Maximum Transverse Joint Spacing (ft)
< 10.0	12.0*
≥ 10.0	15.0

** Appropriate for all Class IV pavements.*

MAXIMUM TRANSVERSE JOINT SPACING

Figure 44-2D

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

June 2018

44-9-7

Road Class	Subbase Material	Usage ⁽¹⁾	Minimum Thickness (in.)
Class I and II TF ≥ 5.0 TF < 5.0	Stabilized Subbase ⁽²⁾	Required	4
	Granular ⁽³⁾	Required	4
Class III and IV TF ≥ 5.0 TF < 5.0	Granular ⁽³⁾	Required	4
	Granular ⁽³⁾	Optional	4

Notes:

1. *Subbase will be optional for urban sections having curbs and gutters and storm sewer systems. A 4 in. minimum subbase may be used to serve as a working platform where poor soil conditions exist.*
2. *Stabilized subbase according to the requirements of the [IDOT Standard Specifications](#) or any applicable special provision.*
3. *Use Type A granular subbase according to the requirements of the [IDOT Standard Specifications](#).*

SUBBASE REQUIREMENTS

Figure 44-2E

Road Class	Minimum Reliability Levels	Reliability (%)
Class I and II	High	90
Class III	Medium	75
Class IV (Figure 44-2G)	Medium	75

RELIABILITY LEVELS

Figure 44-2F

HCV's/day	Rigid Pavement Thickness for 12 ft Joint Spacing (in.)
≤ 48	7.0 ⁽¹⁾
> 48	(2)

Notes:

1. *Minimum rigid pavement thickness shall not be less than 6 in. after all adjustment factors are applied.*
2. *Use the Class III TF equations or a TF of 0.5, whichever is greater, in conjunction with Figure 44-2B.*

CLASS IV PRE-ADJUSTED RIGID PAVEMENT THICKNESS
(11 ft Lane Width / 90% Reliability / Tied Curb or PCC Shoulders / Poor Soil Conditions)

Figure 44-2G

Rigid Pavement Thickness (in.)	Dowel Diameter (in.)
≥ 10.00	1.50
> 8.00 to 9.99	1.25
≤ 8.00	1.00

DOWEL BAR DIAMETER REQUIREMENTS

Figure 44-2H

Figures 44-2I, 44-2J, and 44-2K (Typical Sections) are not included.

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

June 2018

44-9-9

Date: _____

County: _____

Calculations by: _____

LPA: _____

Checked by: _____

Section: _____

Route: _____

Location: _____

Limits of Analysis:

From: _____

To: _____

Length: _____ Feet _____ Miles

Percent / Count (Figure 44-1A as needed)

Structural Design Traffic: (Section 44-1.03(c))

Number of Lanes: _____ Width: _____ ft

ADT: _____

Class of Road or Street: _____ (Section 44-1.01)

PV: _____ % / _____

SU: _____ % / _____

MU: _____ % / _____

HCV: _____

Traffic Factor (Show Calculations): (Figure 44-2A)

Traffic Factor: _____

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair Granular (Section 44-2.02(f) and Figure 44-6A)

Pre-Adjusted Rigid Pavement Thickness: (Figure 44-2B or Figure 44-2G) _____ in.

Reliability: (Figure 44-2F) 75% or 90%

Adjustments: (Section 44-2.03(c) and Figure 44-2C)

75% Reliability Section 44-2.02(h) -0.50 _____ in.

15 ft Joint Spacing ($0.1 \leq TF \leq 5$) / ($5 \leq TF \leq 20$) +1.00 / +1.25 _____ in.

Untied Shoulder +0.35 _____ in.

Fair Subgrade / Granular Subgrade -0.25 / -0.50 _____ in.

Stabilized Subbase / Existing Pavement as Subbase -0.25 / -0.50 _____ in.

10 ft Lane Width / 12 ft Lane Width +0.25 / -0.25 _____ in.

Total Adjustment: _____ in.

Adjusted Rigid Pavement Thickness _____ in.

Transverse Joint Spacing (Figure 44-2D) 12 ft or 15 ft

Final Pavement Thickness (Rounded to next 1/4 in.) (Minimum Thickness 6.0 in.) _____ in.

Dowel Bars: Yes No (Section 44-2.03(d)) Size: (Figure 44-2H) _____ in.

Comments: _____

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

RIGID PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES

Figure 44-2L

44-9.03 Figures from Section 44-3 (Conventional Flexible Pavement Design)

The following figures are to be used for the design of conventional flexible pavements and submitted, as needed, with design calculations (Figure 44-3M).

Class I Roads and Streets	
4 or 5 Lane Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.047PV + 59.625SU + 217.139MU)}{1,000,000} \right]$
6 or More Lane Pavements (Rural)	$TF = DP \left[\frac{(0.029PV + 53.000SU + 193.012MU)}{1,000,000} \right]$
6 or More Lane Pavements (Urban)	$TF = DP \left[\frac{(0.012PV + 49.025SU + 178.536MU)}{1,000,000} \right]$
One-way Streets and Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.073PV + 66.250SU + 241.265MU)}{1,000,000} \right]$
Class II Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 56.030SU + 192.720MU)}{1,000,000} \right]$
Class III Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 54.570SU + 192.175MU)}{1,000,000} \right]$

TRAFFIC FACTOR EQUATIONS (80,000 LB LOAD LIMIT)

Figure 44-3A

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

June 2018

44-9-11

PG Binder Grade Selection⁽¹⁾			
Districts 1 – 4	Traffic Loading Rate (Adjustment)		
	Standard ⁽²⁾	Slow ⁽³⁾	Standing ⁽⁴⁾
Surface ⁽⁵⁾	PG 58-28	PG 64-28 or SBS PG 64-28	SBS PG 70-28
Remaining Lifts ⁽⁵⁾	PG 64-22 or PG 58-22	PG 64-22 or PG 58-22	PG 64-22 or PG 58-22
Districts 5 – 9			
Surface ⁽⁵⁾	PG 64-22	PG 70-22 or SBS PG 70-22	SBS PG 76-22
Remaining Lifts ⁽⁵⁾	PG 64-22	PG 64-22	PG 64-22

Notes:

1. The binder grades provided in Figure 44-3B are based on the recommendations given in Illinois-Modified AASHTO MP-2, Table 1, "Binder Selection on the Basis of Traffic Speed and Traffic Level."
2. Standard traffic is used where the average traffic speed is greater than 43 mph (70 km/h).
3. Slow traffic is used where the average traffic speed ranges from 12 to 43 mph (20 to 70 km/h).
4. Standing traffic is used where the average traffic speed is less than 12 mph (20 km/h).
5. Surface includes the top 2 in. (50 mm) of HMA. The remaining lifts of HMA may be the same PG binder grade as surface; however, this may increase or decrease the pavement design thickness. If multiple PG Binder grades are used in a HMA design, the predominant PG Binder grade should be used for determining HMA Modulus on Figure 44-3E.

PG BINDER GRADE SELECTION FOR CONVENTIONAL FLEXIBLE PAVEMENTS

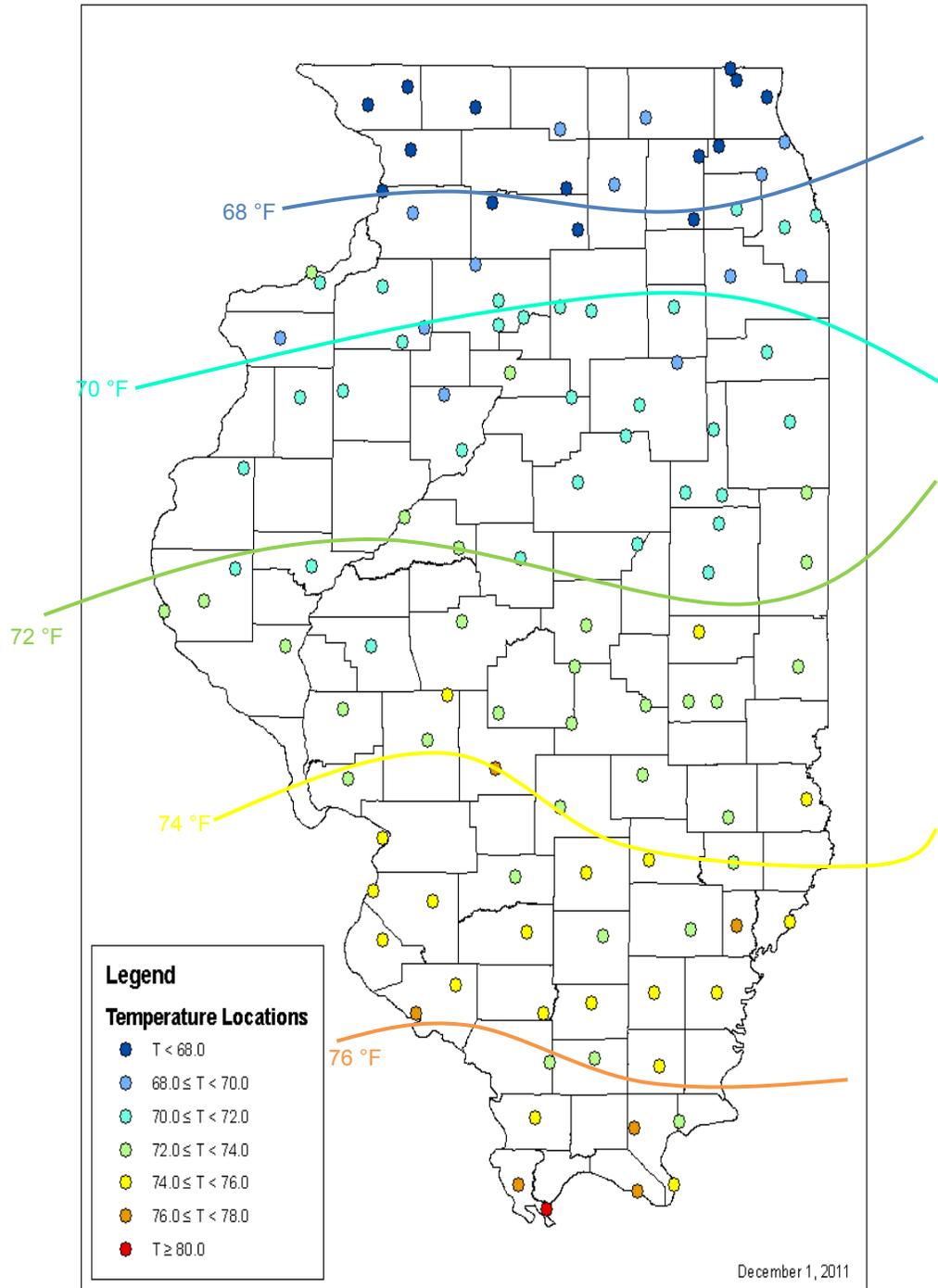
Figure 44-3B

Road Class	Minimum Reliability Level	Reliability (%)
Class I, II, III, and IV	Medium	~75%

Note: The estimated percent reliability is based on a representative 9-kip Falling Weight Deflectometer surface deflection coefficient of 25%.

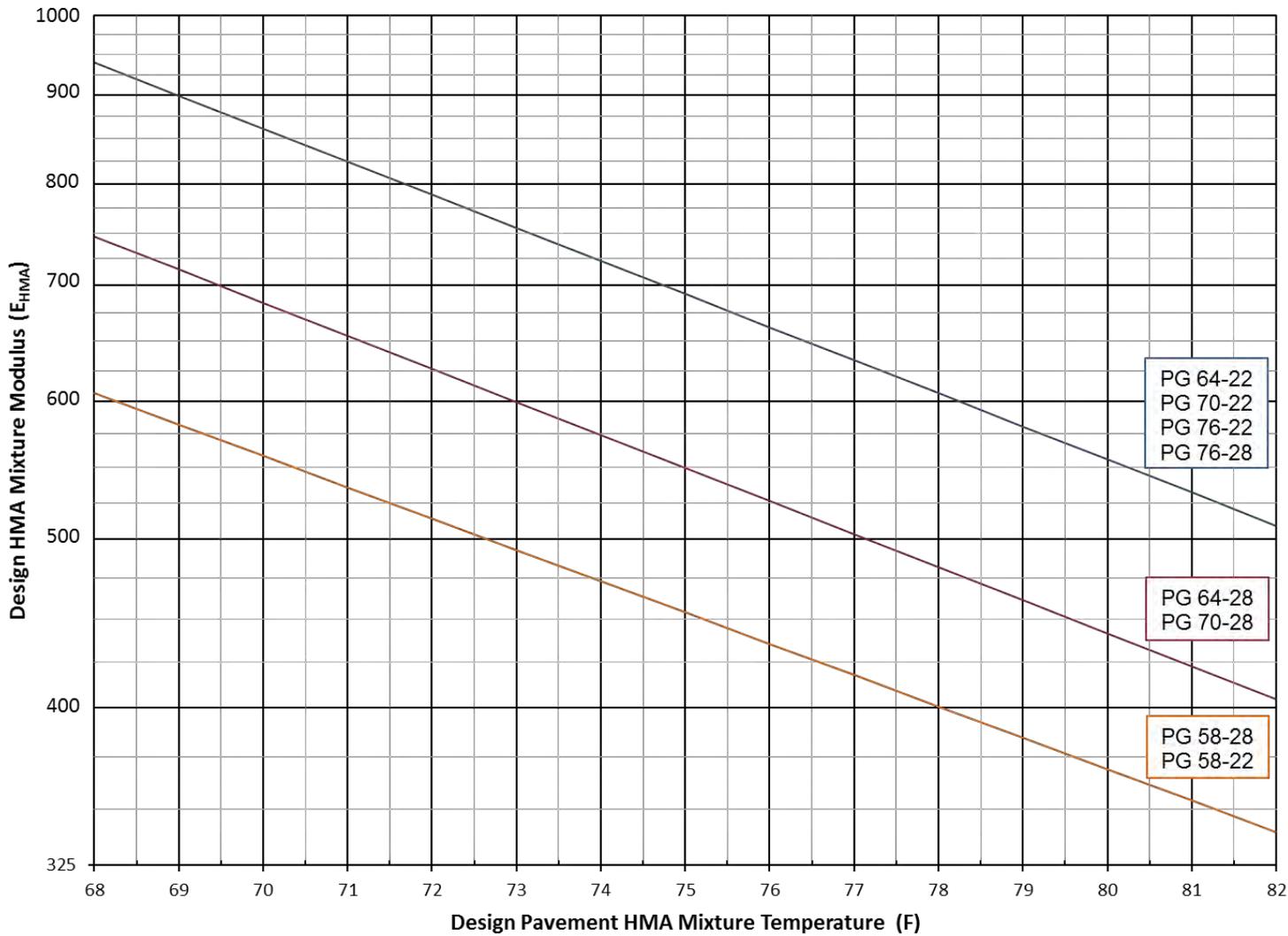
RELIABILITY LEVEL (TF ≤ 0.5)

Figure 44-3C



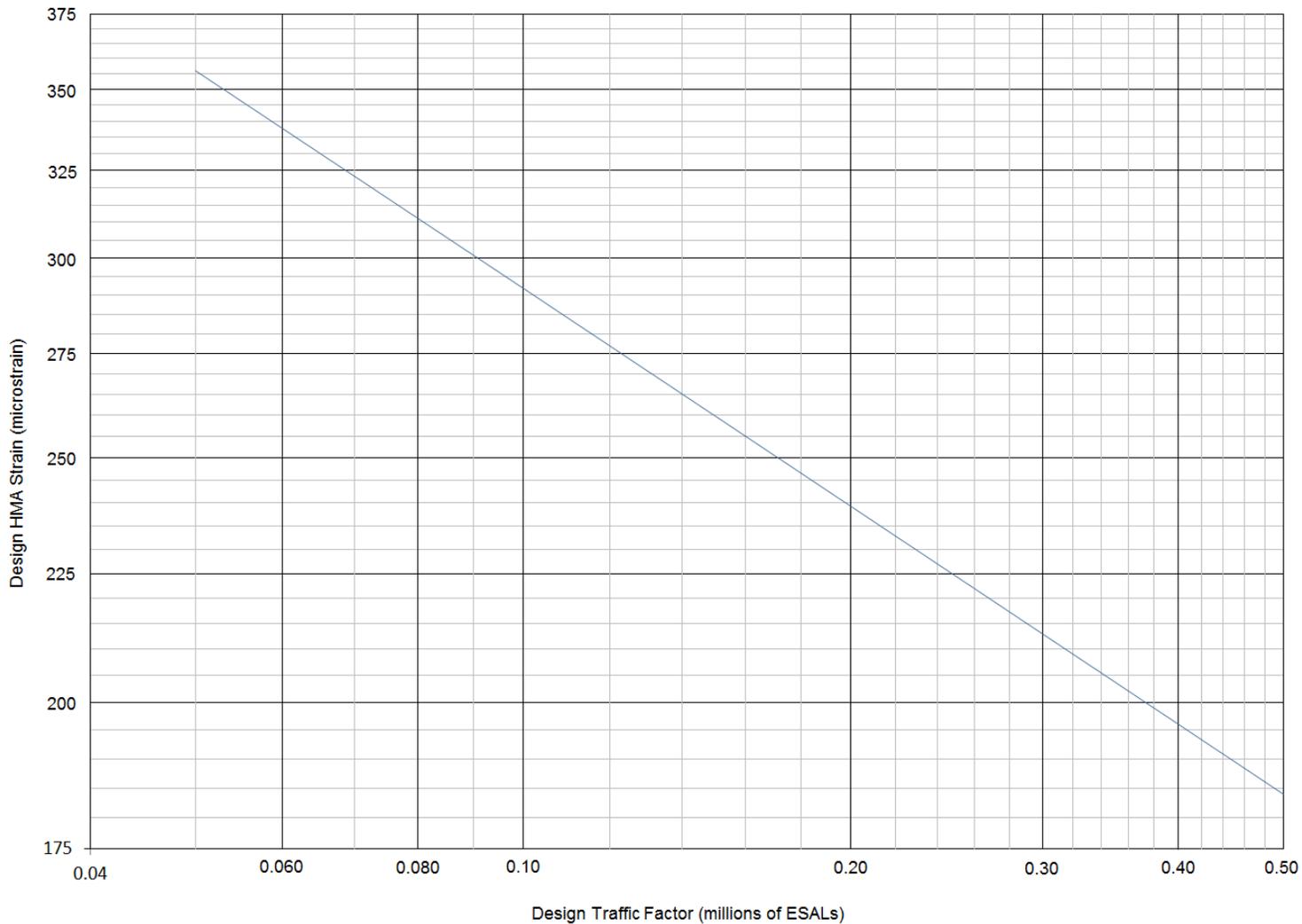
CONVENTIONAL FLEXIBLE HMA MIXTURE TEMPERATURE

Figure 44-3D



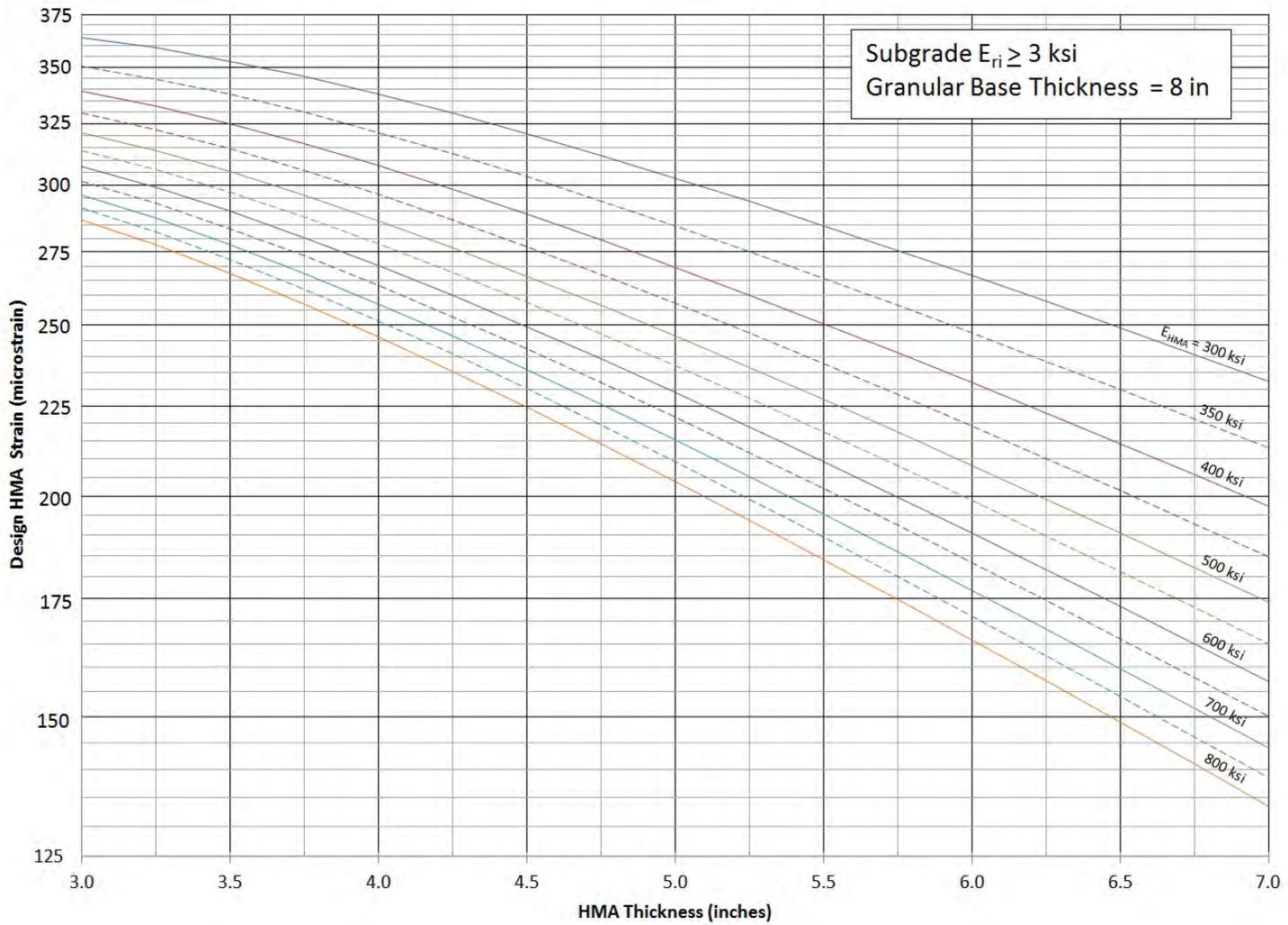
DESIGN HMA MIXTURE MODULUS (E_{HMA}) (ksi)

Figure 44-3E



**DESIGN HMA STRAIN
(Traffic Factor Relation for HMA Mixes)**

Figure 44-3F



CONVENTIONAL FLEXIBLE PAVEMENT DESIGN CHART

Figure 44-3G

BUREAU OF LOCAL ROADS & STREETS

44-9-16

PAVEMENT DESIGN

June 2018

Original HMA Design Thickness (in.)	Design HMA Modulus, E_{HMA} (ksi)				
	400	500	600	700	800
3.0 – 3.49	E ⁽²⁾	E ⁽²⁾	E ⁽²⁾	E ⁽¹⁾	E ⁽¹⁾
3.5 – 3.99	E ⁽²⁾	E ⁽¹⁾	E ⁽¹⁾	O	O
≥ 4.0	O	O	O	O	O

E: Enhancement of the pavement structure is required.

O: Enhancement of the pavement structure is optional. If no enhancement is desired, an 8 in. aggregate base course, Type A is required.

Notes: If the subgrade E_{Ri} is less than 2 ksi, use Section 44-7 to determine the appropriate subgrade treatment necessary.

A pavement structure consisting of an 8 in. aggregate base course, Type A based on the appropriate category from the above table, can be enhanced by one of the following alternatives:

1. E⁽¹⁾. Use one or more of the following:
 - Increase the HMA thickness by 0.5 in.
 - Increase the aggregate base course, Type A thickness by 2 in.
 - Add a 4 in. minimum granular subbase course, Type B.
 - Add an 8 in. minimum modified soil layer.

2. E⁽²⁾. Use one or more of the following:
 - Increase the HMA thickness by 1.0 in.
 - Increase the aggregate base course, Type A thickness by 4 in.
 - Add a 4 in. minimum granular subbase course, Type B.
 - Add an 8 in. minimum modified soil layer.

**SUPERPAVE HMA — CLASS I, II, AND III ROADS AND STREETS PAVEMENT
STRUCTURE ENHANCEMENT ($E_{Ri} \geq 2$ KSI AND < 3 KSI)**

Figure 44-3H

District	1 – 4		5 – 6		7 – 9	
	E_{Ri} (ksi)		E_{Ri} (ksi)		E_{Ri} (ksi)	
Traffic Level	2 – 2.99	≥ 3	2 – 2.99	≥ 3	2 – 2.99	≥ 3
< 12 HCV's	11 in	8 in	11 in	8 in	12 in	8 in
12 – 23 HCV's	11 in	8 in	11 in	8 in	12 in	8 in
24 – 48 HCV's	11 in	8 in	11 in	10 in	14 in	13 in

Note: E_{Ri} values less than 2 ksi require use of Section 44-7.

**CLASS IV PAVEMENTS
AGGREGATE BASE THICKNESS NECESSARY
FOR A 3.0 IN. OR 3.25 IN. HMA SURFACE**

Figure 44-3I

**BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN**

June 2018

44-9-17

District	1 – 4		5 – 6		7 – 9	
Traffic Level	E _{Ri} (ksi)		E _{Ri} (ksi)		E _{Ri} (ksi)	
	2 – 2.99	≥ 3	2 – 2.99	≥ 3	2 – 2.99	≥ 3
< 12 HCV's	8 in	8 in	9 in	8 in	10 in	8 in
12 – 23 HCV's	8 in	8 in	9 in	8 in	10 in	8 in
24 – 48 HCV's	8 in	8 in	9 in	8 in	12 in	11 in

Note: E_{Ri} values less than 2 ksi require use of Section 44-7.

**CLASS IV PAVEMENTS
AGGREGATE BASE THICKNESS NECESSARY
FOR A 3.5 IN. OR 3.75 IN. HMA SURFACE**

Figure 44-3J

Figures 44-3K and 44-3L (Typical Sections) are not included.

**BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN**

44-9-18

June 2018

Date: _____ County: _____

Calculations by: _____ LPA: _____

Checked by: _____ Section: _____

Route: _____

Location: _____

Limits of Analysis:

From: _____

To: _____

Length: _____ Feet _____ Miles

Percent / Count (Figure 44-1A as needed)

Structural Design Traffic: (Section 44-1.03(c)) PV: _____ % / _____

Number of Lanes: _____ SU: _____ % / _____

ADT: _____ MU: _____ % / _____

Class of Road or Street: _____ (Section 44-1.01) HCV: _____

Traffic Factor (Show Calculations): (Figure 44-3A)

Traffic Factor: _____

(Traffic Factor must ≤ 0.50 to qualify for Conventional Flexible Pavement Design Procedures)

Pavement Design:

Subgrade Modulus (E_{RI}): (Section 44-3.02(e) and Section 44-6) _____ ksi

Selected Design PG Binder (Figure 44-3B)

Surface: _____

Remaining Lifts: _____

Design Pavement HMA Temp: (Figure 44-3D) _____ °F

Design HMA Modulus (E_{HMA}): (Figure 44-3E) _____ ksi

Design HMA Microstrain: (Figure 44-3F) _____

Pavement Thickness: (Figure 44-3G) _____ in.

Pavement Structure Enhancements: (if $2 \text{ ksi} \leq E_{RI} < 3 \text{ ksi}$ use Figure 44-3H) _____

For Class IV Pavements: (Figure 44-3I or 44-3J) _____

Minimum Material Requirements (Section 44-3.02(a)) _____

Comments: _____

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

**CONVENTIONAL FLEXIBLE PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES**

Figure 44-3M

44-9.04 Figures from Section 44-4 (Full-Depth HMA Pavement Design)

The following figures are to be used for the design of full-depth HMA pavements and submitted, as needed, with design calculations (Figure 44-4N).

Class I Roads and Streets	
4 or 5 Lane Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.047PV + 59.625SU + 217.139MU)}{1,000,000} \right]$
6 or More Lane Pavements (Rural)	$TF = DP \left[\frac{(0.029PV + 53.000SU + 193.012MU)}{1,000,000} \right]$
6 or More Lane Pavements (Urban)	$TF = DP \left[\frac{(0.012PV + 49.025SU + 178.536MU)}{1,000,000} \right]$
One-way Streets and Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.073PV + 66.250SU + 241.265MU)}{1,000,000} \right]$
Class II Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 56.030SU + 192.720MU)}{1,000,000} \right]$
Class III Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 54.570SU + 192.175MU)}{1,000,000} \right]$

FLEXIBLE TRAFFIC FACTOR EQUATIONS (80,000 LB LOAD LIMIT)

Figure 44-4A

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

44-9-20

June 2018

Road Class	Improved Working Platform Material	Usage	Minimum Thickness (in.)
Class I and II	Modified Soil Layer or Granular Material	Required ⁽¹⁾	12 ⁽³⁾
Class III and IV	Modified Soil Layer or Granular Material	Optional ⁽²⁾	12 ⁽³⁾

Notes:

- 1. For Class I and II roads, a 12 in. minimum improved subgrade layer is required, unless the existing subgrade is granular. Where an existing granular subgrade is encountered, the LPA may obtain a waiver to the subgrade working platform requirement from CBLRS by documenting the subgrade suitability.*
- 2. For Class III and IV roads, the 12 in. minimum improved subgrade layer is optional if documentation can be provided to the district that indicates the subgrade will provide suitable support during construction in accordance with Section 44-7. Because an improved subgrade layer should improve the constructability and possibly the performance of the pavement, its use should be considered.*
- 3. In some cases, soft subgrades may require more than 12 in. of improved subgrade to provide a stable working platform and uniform support. The designer should review Section 44-7 in order to determine the required thickness of improved subgrade.*

SUBGRADE WORKING PLATFORM REQUIREMENTS

Figure 44-4B

**BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN**

June 2018

44-9-21

PG Binder Grade Selection ⁽¹⁾			
Districts 1 – 4	Traffic Loading Rate (Adjustment)		
	Standard Traffic ⁽²⁾	Slow Traffic ⁽³⁾	Standing Traffic ⁽⁴⁾
Surface ⁽⁵⁾	PG 58-28 ⁽⁶⁾⁽⁷⁾	PG 64-28 or SBS PG 64-28	SBS PG 70-28
Remaining Lifts ⁽⁵⁾	PG 64-22 or PG 58-22	PG 64-22 or PG 58-22	PG 64-22 or PG 58-22
Districts 5 – 9			
Surface ⁽⁵⁾	PG 64-22 ⁽⁶⁾⁽⁷⁾	PG 70-22 or SBS PG 70-22	SBS PG 76-22
Remaining Lifts ⁽⁵⁾	PG 64-22	PG 64-22	PG 64-22

Notes:

- The binder grades provided in this table are based on the recommendations given in Illinois-Modified AASHTO MP-2, Table 1, "Binder Selection on the Basis of Traffic Speed and Traffic Level."*
- Standard traffic is used where the average traffic speed is greater than 43 mph (70 km/h).*
- Slow traffic is used where the average traffic speed ranges from 12 to 43 mph (20 to 70 km/h).*
- Standing traffic is used where the average traffic speed is less than 12 mph (20 km/h).*
- Consideration should be given to increasing the high temperature grade by one grade equivalent when $10 \leq T.F. \leq 30$. For example, if use of a PG 64-22 is specified for standard traffic, a PG 70-22 or a SBS PG 70-22 should be specified.*
- Surface includes the top 2 in. (50 mm) of HMA. The remaining lifts of HMA may be the same PG binder grade as surface; however, this may increase or decrease the pavement design thickness. If multiple PG Binder grades are used in a HMA design, the predominant PG Binder grade should be used for determining HMA Modulus on Figure 44-4H.*
- The high temperature grade should be increased by one grade equivalent when $T.F. > 30$. For example, if use of a PG 64-22 is specified for standard traffic, a PG 70-22 or a SBS PG 70-22 should be specified.*

PG BINDER GRADE SELECTION FOR FULL-DEPTH HMA PAVEMENTS

Figure 44-4C

Road Class	Minimum Reliability Level	Reliability (%)
Class I, II, III, and IV	High	90's

DESIGN RELIABILITY

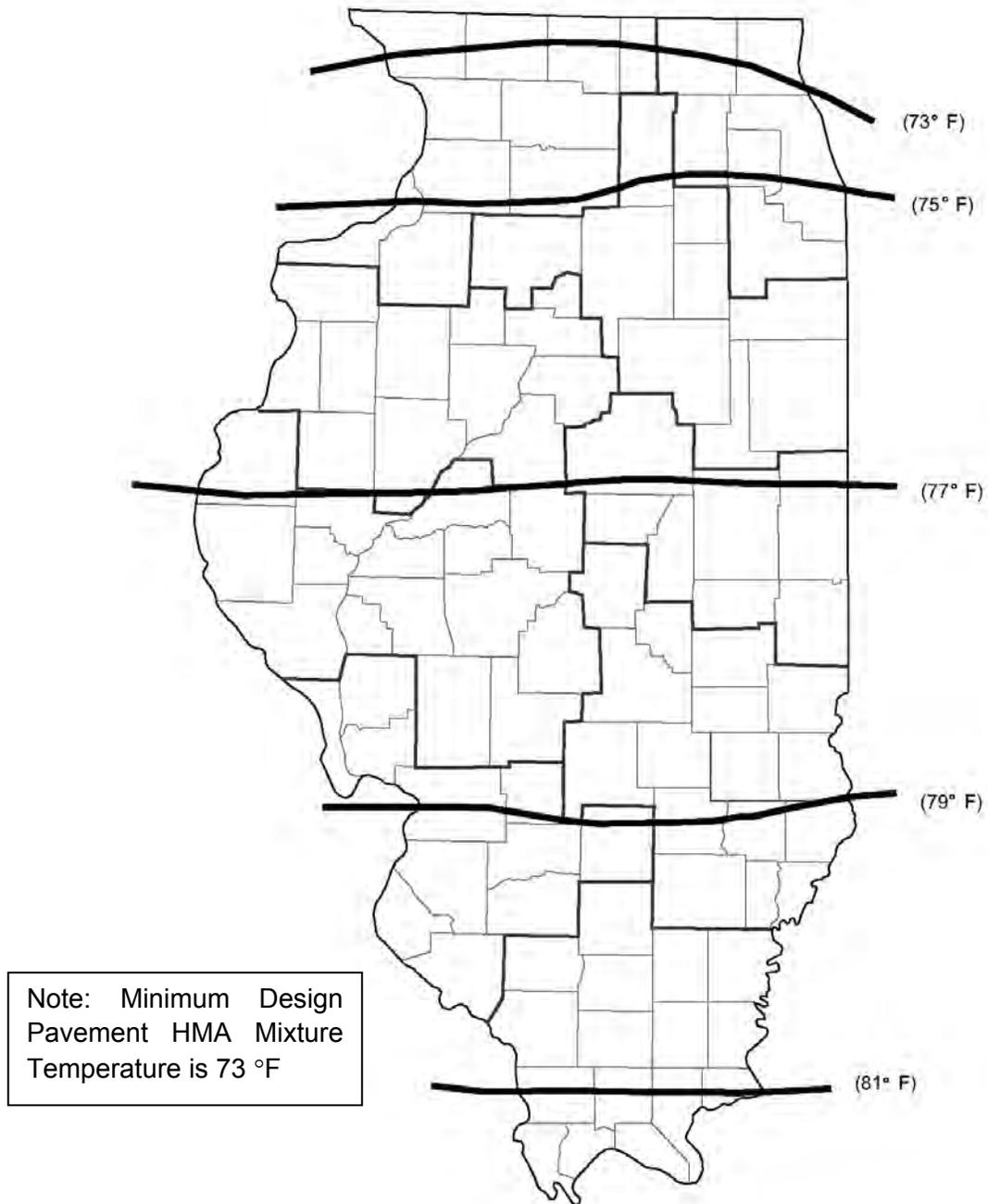
Figure 44-4D

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

44-9-22

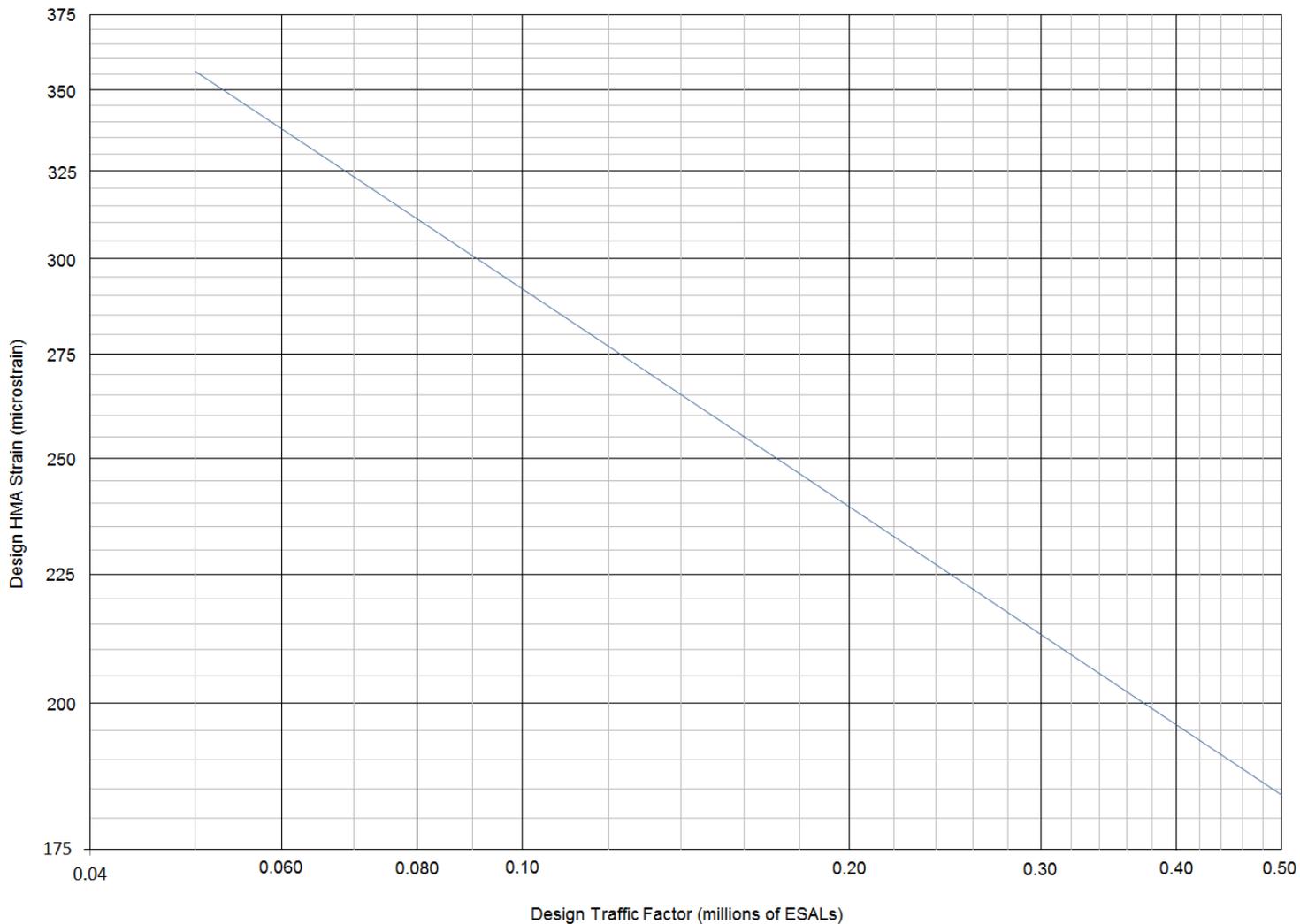
June 2018

Figures 44-4L and 44-4M (Typical Sections) are not included.



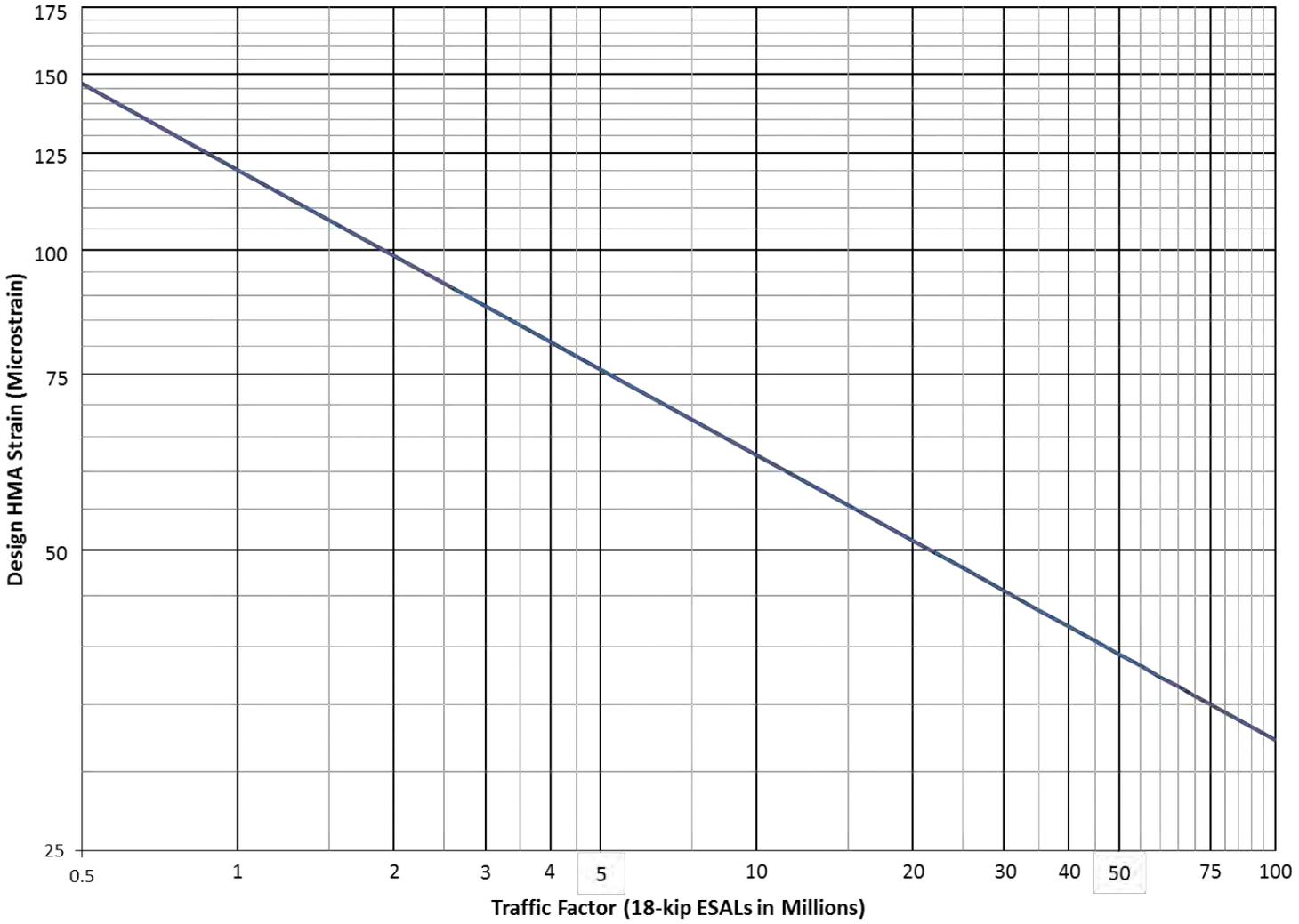
**DESIGN PAVEMENT HMA MIXTURE TEMPERATURE
(Full Depth)**

Figure 44-4E



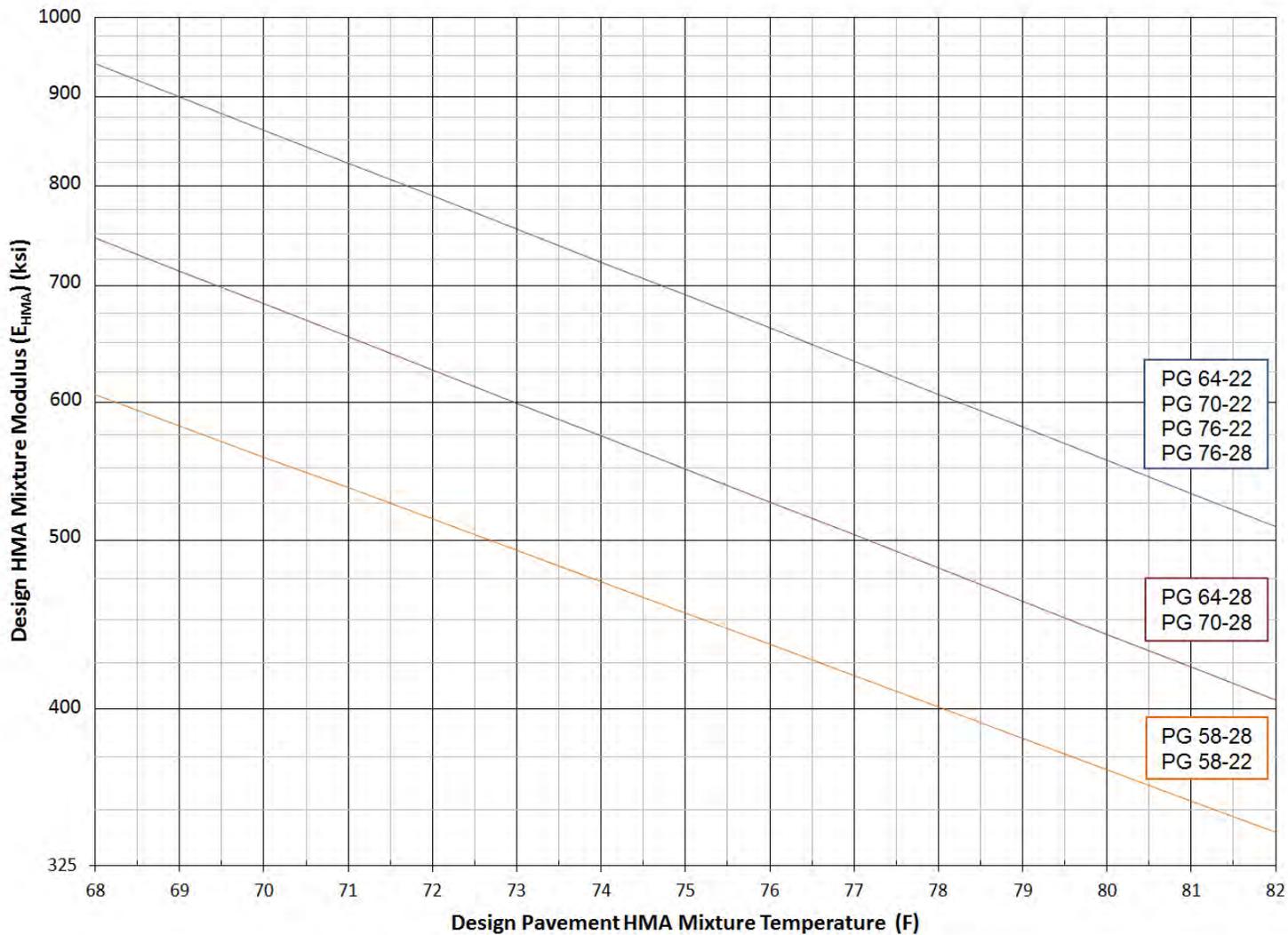
DESIGN HMA STRAIN
(Traffic Factor Relation for Traffic Factor < 0.5)

Figure 44-4F



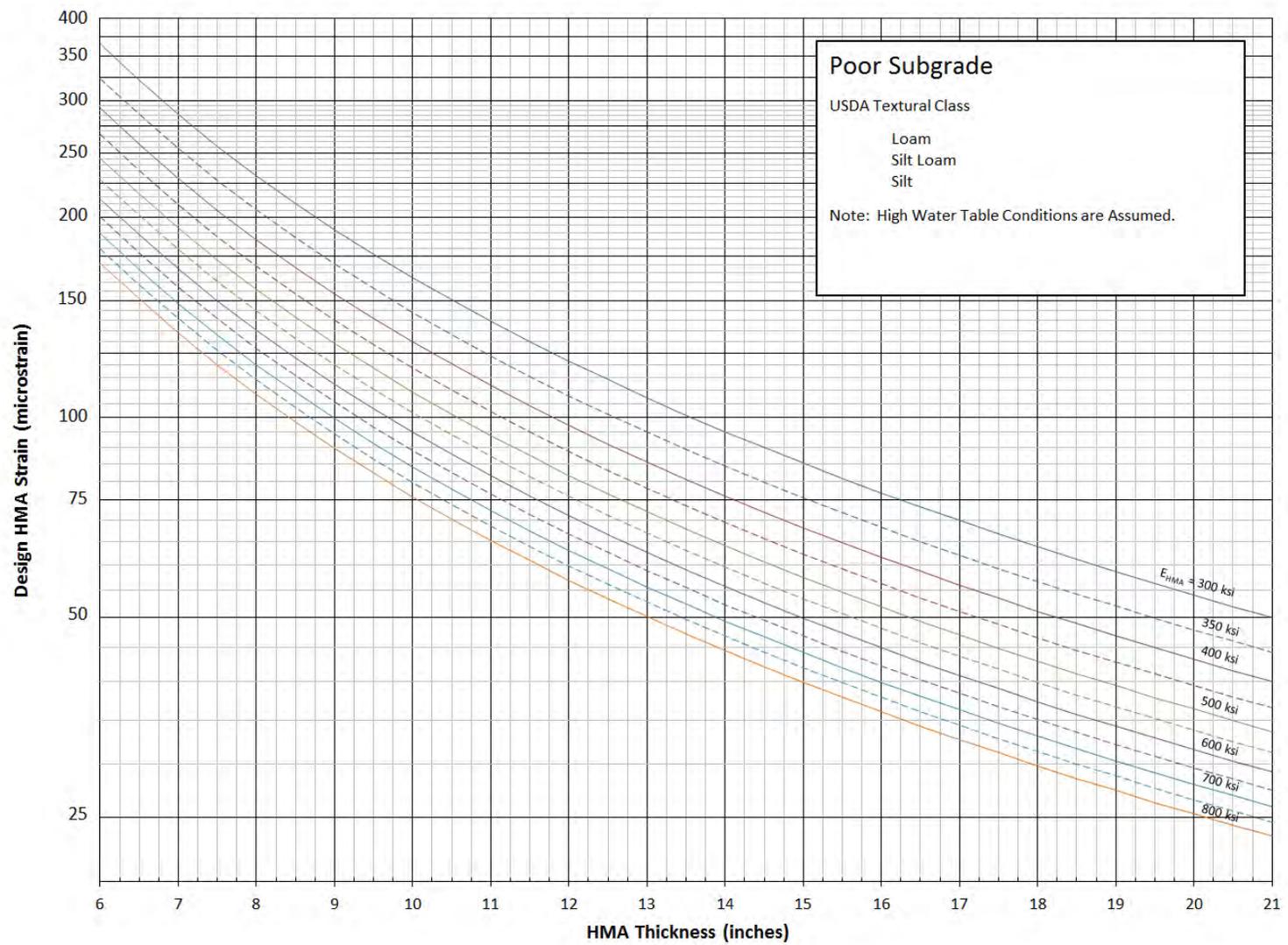
DESIGN HMA STRAIN
(Traffic Factor Relation for Traffic Factor ≥ 0.5)

Figure 44-4G



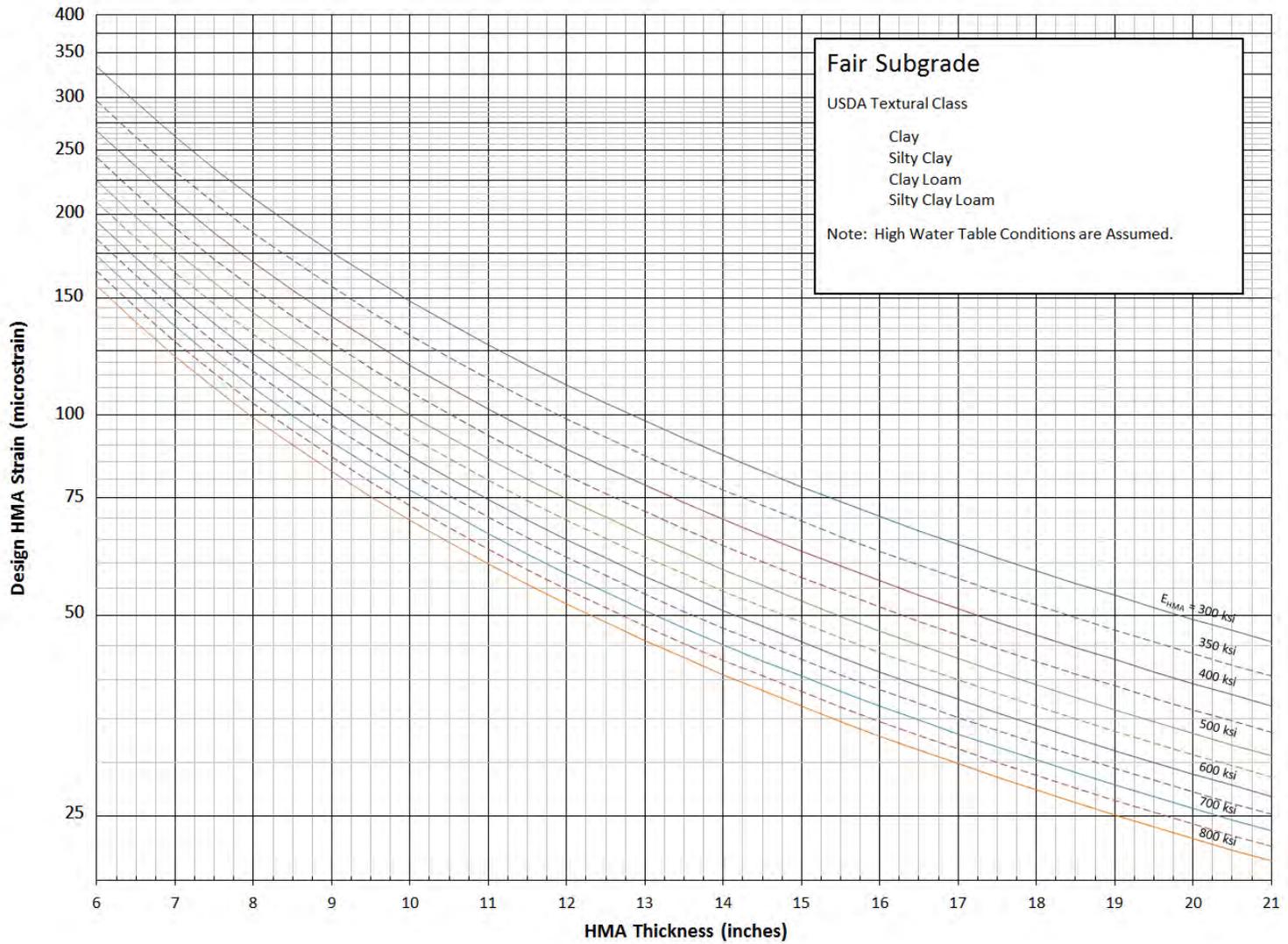
HMA MIXTURE MODULUS (E_{HMA})

Figure 44-4H



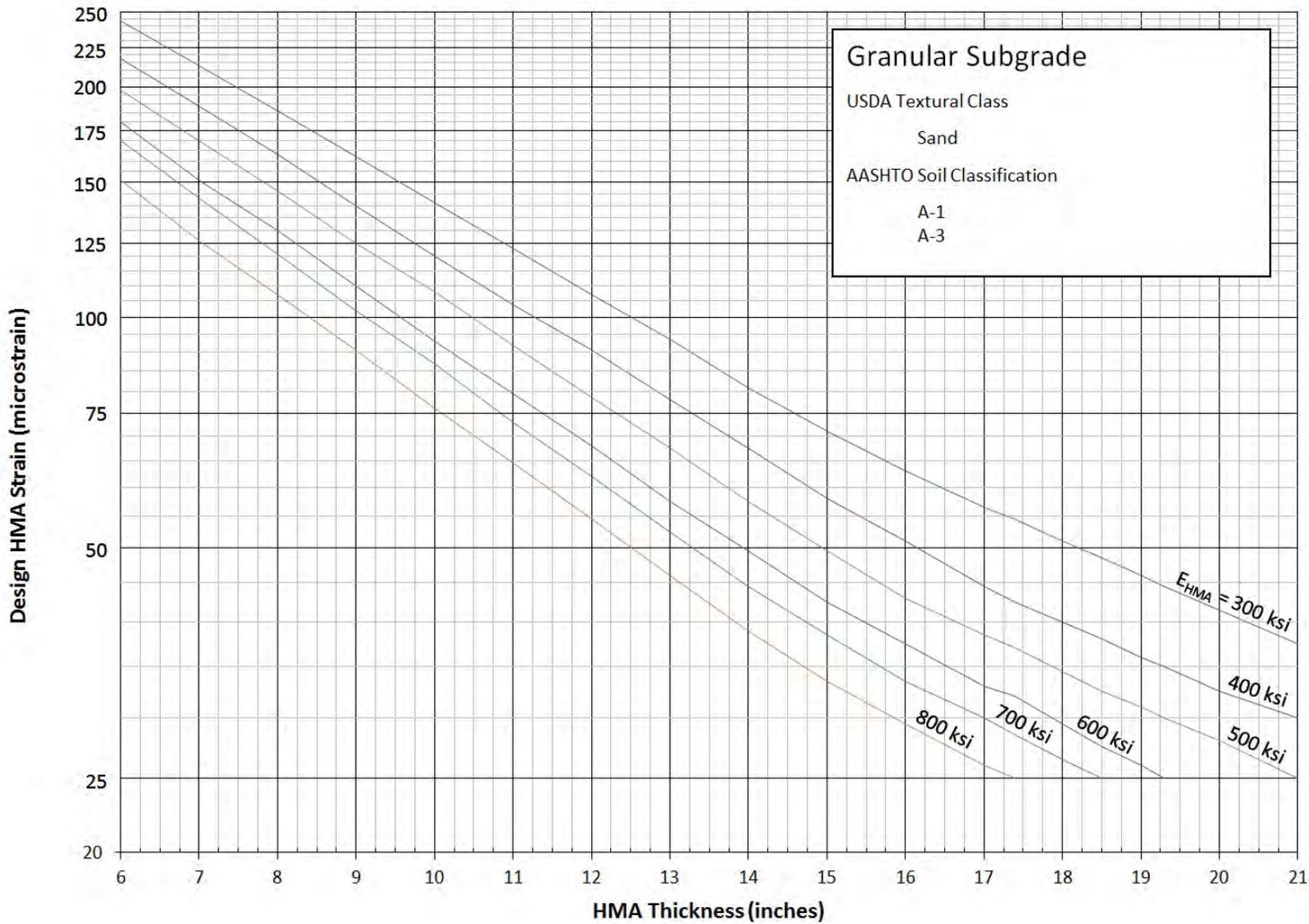
POOR SUBGRADE DESIGN CHART

Figure 44-4I



FAIR SUBGRADE DESIGN CHART

Figure 44-4J



GRANULAR SUBGRADE DESIGN CHART

Figure 44-4K

BUREAU OF LOCAL ROADS & STREETS

44-9-30

PAVEMENT DESIGN

June 2018

Date: _____

County: _____

Calculations by: _____

LPA: _____

Checked by: _____

Section: _____

Route: _____

Location: _____

Limits of Analysis:

From: _____

To: _____

Length: _____ Feet _____ Miles

Percent / Count (Figure 44-1A as needed)

Structural Design Traffic: (Section 44-1.03(c))

Number of Lanes: _____

PV: _____ % / _____

ADT: _____

SU: _____ % / _____

Class of Road or Street: _____ (Section 44-1.01)

MU: _____ % / _____

HCV: _____

Traffic Factor (Show Calculations): (Figure 44-4A)

Traffic Factor: _____

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair Granular (Section 44-4.02(g) and Figure 44-6A)

Working Platform: (Figure 44-4B) _____

Selected Design PG Binder (Figure 44-4C)

Surface: _____

Remaining Lifts: _____

Design Pavement HMA Temp: (Figure 44-4E) _____ °F

Design HMA Microstrain: (Figure 44-4F or 44-4G) _____

Design HMA Modulus (E_{HMA}): (Figure 44-4H) _____ ksi

Pavement Thickness: (Section 44-4.03) (Minimum of 6.0 in.) _____ in.

Comments: _____

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

**FULL-DEPTH HMA PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES**

Figure 44-4N

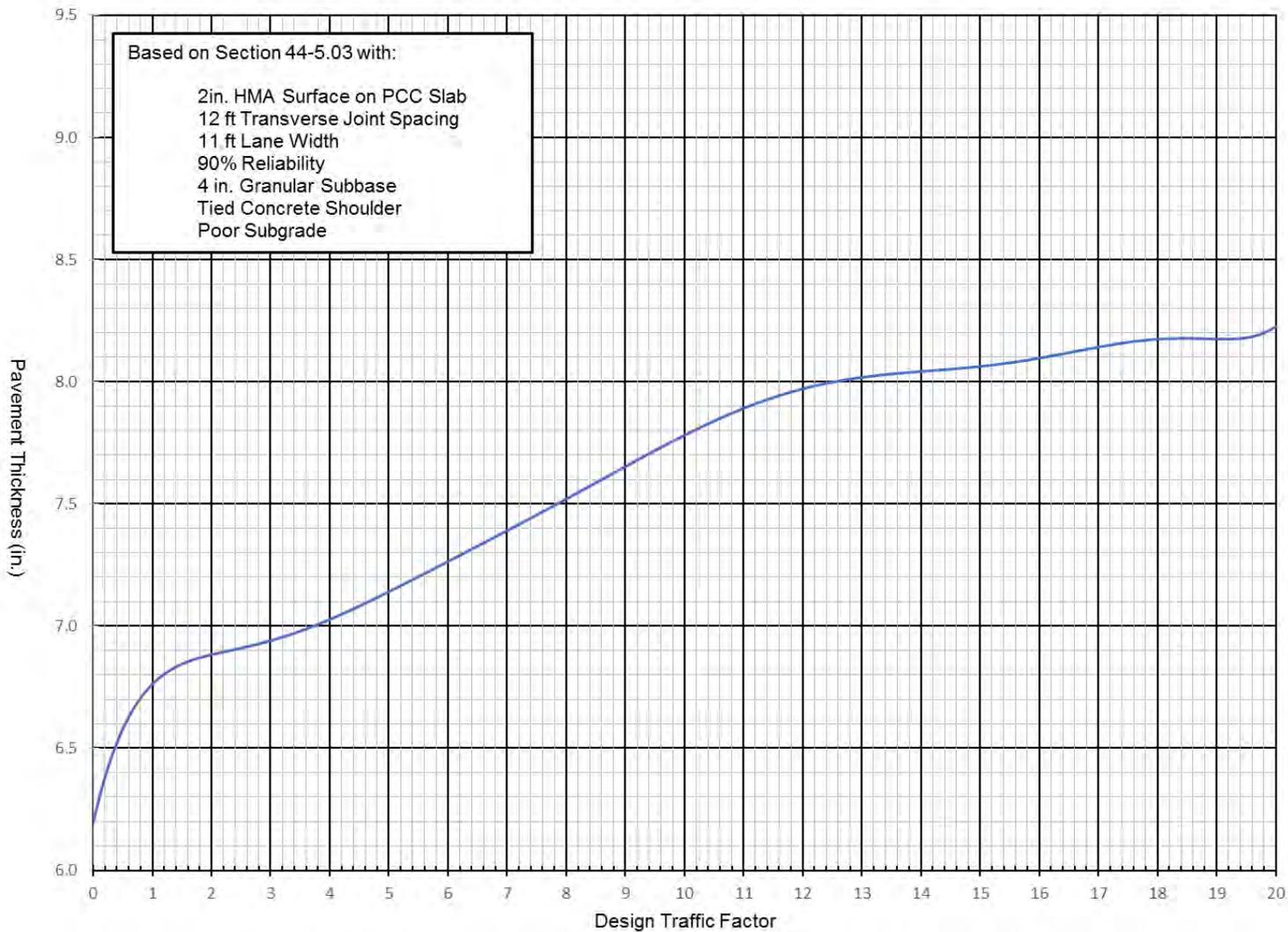
44-9.05 Figures from Section 44-5 (Composite Pavement Design)

The following figures are to be used for the design of composite pavements and submitted, as needed, with design calculations (Figure 44-5N).

Class I Roads and Streets	
4 or 5 Lane Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.047PV + 64.715SU + 313.389MU)}{1,000,000} \right]$
6 or More Lane Pavements (Rural)	$TF = DP \left[\frac{(0.029PV + 57.524SU + 278.568MU)}{1,000,000} \right]$
6 or More Lane Pavements (Urban)	$TF = DP \left[\frac{(0.012PV + 53.210SU + 257.675MU)}{1,000,000} \right]$
One-way Street Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.073PV + 71.905SU + 348.210MU)}{1,000,000} \right]$
Class II Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 67.890SU + 283.605MU)}{1,000,000} \right]$
Class III Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 64.790SU + 281.235MU)}{1,000,000} \right]$ TF minimum = 0.5

PCC SLAB TRAFFIC FACTOR EQUATIONS (80,000 LB LOAD LIMIT)

Figure 44-5A



PRE-ADJUSTED PCC SLAB THICKNESS

Figure 44-5B

**BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN**

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Adjustment Factor	PCC Slab Thickness Adjustment (in.)
75% Reliability	-0.50
15 ft Joint Spacing	+1.00
Untied Shoulder	+0.35
Fair Subgrade	-0.25
Granular Subgrade	-0.50
Stabilized Subbase	-0.25
Existing Pavement as Subbase	-0.50
10 ft Lane Width	+0.25
12 ft Lane Width	-0.25
HMA Surface Layer Thickness	See Figure 44-5I

THICKNESS ADJUSTMENT FACTOR

Figure 44-5C

Road Class	Subbase Material	Usage⁽¹⁾	Minimum Thickness (in.)
Class I and II TF \geq 5.0 TF < 5.0	Stabilized Subbase ⁽²⁾	Required	4
	Granular ⁽³⁾	Required	4
Class III & IV T.F. \geq 5.0 T.F. < 5.0	Granular ⁽³⁾	Required	4
	Granular ⁽³⁾	Optional	4

Notes:

- Subbase is not required for urban sections having curbs and gutters and storm sewer systems. However, at the designer's option, a 4 in. minimum subbase may be used to serve as a working platform where poor soil conditions exist.*
- Stabilized subbase according to the requirements of the [IDOT Standard Specifications](#) or any applicable special provision.*
- Use Type A granular subbase according to the requirements of the [IDOT Standard Specifications](#).*

SUBBASE REQUIREMENTS

Figure 44-5D

BUREAU OF LOCAL ROADS & STREETS

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PAVEMENT DESIGN

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Class I Roads and Streets	
4 or 5 Lane Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.047PV + 59.625SU + 217.139MU)}{1,000,000} \right]$
6 or More Lane Pavements (Rural)	$TF = DP \left[\frac{(0.029PV + 53.000SU + 193.012MU)}{1,000,000} \right]$
6 or More Lane Pavements (Urban)	$TF = DP \left[\frac{(0.012PV + 49.025SU + 178.536MU)}{1,000,000} \right]$
One-way Streets and Pavements (Rural and Urban)	$TF = DP \left[\frac{(0.073PV + 66.250SU + 241.265MU)}{1,000,000} \right]$
Class II Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 56.030SU + 192.720MU)}{1,000,000} \right]$
Class III and IV Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \left[\frac{(0.073PV + 54.570SU + 192.175MU)}{1,000,000} \right]$
	$TF = DP \left[\frac{(0.073PV + 54.570SU + 192.175MU)}{1,000,000} \right]$

FLEXIBLE TRAFFIC FACTOR EQUATIONS (80,000 LB LOAD LIMIT)

Figure 44-5E

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

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Illinois N_{design} Number	Flexible Design ESALs, millions ⁽¹⁾ (Flexible TF)	PG Binder Grade Selection ⁽²⁾⁽³⁾		
		Traffic Loading Rate		
		Standard ⁽⁴⁾	Slow ⁽⁵⁾	Standing ⁽⁶⁾
30	< 0.3	PG 58-22	PG 58-22 ⁽⁷⁾	PG 64-22 ⁽⁷⁾
50	0.3 to < 3	PG 58-22	PG 64-22	PG 70-22 or SBS PG 70-22
70	3 to < 10	PG 58-22	PG 64-22	PG 70-22 or SBS PG 70-22
90	10 to < 30	PG 58-22 ⁽⁷⁾	PG 64-22 ⁽⁷⁾	PG 70-22 or SBS PG 70-22

Notes:

1. Design ESALs are the anticipated project traffic level expected on the design lane over a 20 year period. Regardless of the actual design life of the roadway, determine the design ESALs for 20 years and choose the appropriate N_{design} level. For N_{design} and PG binder grade selection purposes only, the design ESALs are calculated using the flexible traffic factor equations found in the full-depth pavement design procedure. Rigid traffic factors given in Figure 44-5A and Figure 44-5B are required for the composite pavement thickness design.
2. The binder grades provided in Figure 44-5F are based on the recommendations given in Illinois-Modified AASHTO MP-2, Table 1, "Binder Selection on the Basis of Traffic Speed and Traffic Level".
3. Use these grades for composite pavements and all overlays.
4. Standard traffic is used where the average traffic speed is greater than 43 mph (70 km/h).
5. Slow traffic is used where the average traffic speed ranges from 12 to 43 mph (20 to 70 km/h).
6. Standing traffic is used where the average traffic speed is less than 12 mph (20 km/h).
7. Consideration should be given to increasing the high temperature grade by one grade equivalent.

PG BINDER GRADE SELECTION FOR COMPOSITE PAVEMENTS
(DISTRICTS 1-4)

Figure 44-5F

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

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Illinois N_{design} Number	Flexible Design ESALs, millions ⁽¹⁾ (Flexible T.F.)	PG Binder Grade Selection ⁽²⁾⁽³⁾		
		Traffic Loading Rate		
		Standard ⁽⁴⁾	Slow ⁽⁵⁾	Standing ⁽⁶⁾
30	< 0.3	PG 58-22	PG 64-22 ⁽⁷⁾	PG 64-22 ⁽⁷⁾
50	0.3 to < 3	PG 64-22	PG 64-22 ⁽⁷⁾	PG 70-22 or SBS PG 70-22
70	3 to < 10	PG 64-22	PG 70-22 or SBS PG 70-22	SBS PG 76-22
90	10 to < 30	PG 64-22 ⁽⁷⁾	PG 70-22 or SBS PG 70-22	SBS PG 76-22

Notes:

1. Design ESALs are the anticipated project traffic level expected on the design lane over a 20 year period. Regardless of the actual design life of the roadway, determine the design ESALs for 20 years and choose the appropriate N_{design} level. For N_{design} and PG binder grade selection purposes only, the design ESALs are calculated using the flexible traffic factor equations found in the full-depth pavement design procedure. Rigid traffic factors given in Figure 44-5A and Figure 44-5B are required for the composite pavement thickness design.
2. The binder grades provided in Figure 44-5G are based on the recommendations given in Illinois-Modified AASHTO MP-2, Table 1, "Binder Selection on the Basis of Traffic Speed and Traffic Level."
3. Use these grades for composite pavements and all overlays.
4. Standard traffic is used where the average traffic speed is greater than 43 mph (70 km/h).
5. Slow traffic is used where the average traffic speed ranges from 12 to 43 mph (20 to 70 km/h).
6. Standing traffic is used where the average traffic speed is less than 12 mph (20 km/h).
7. Consideration should be given to increasing the high temperature grade by one grade equivalent.

PG BINDER GRADE SELECTION FOR COMPOSITE PAVEMENTS
(DISTRICTS 5-9)

Figure 44-5G

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

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44-9-37

Road Class	Minimum Reliability Levels	Percent Reliability
Class I and II	High	90
Class III & IV	Medium	75

RELIABILITY LEVELS

Figure 44-5H

HMA Layer Thickness (in.)	PCC Slab Thickness Adjustment (in.)
2	No adjustment
2.5	- 0.25
3	-0.50

ADJUSTMENTS FOR HMA THICKNESS

Figure 44-5I

Slab Thickness (in.)	Dowel Diameter (in.)
≥ 10.00	1.50
> 8.00 to 9.99	1.25
≤ 8.00	1.00

DOWEL DIAMETER

Figure 44-5J

Figures 44-5K, 44-5L, and 44-5M (Typical Sections) are not included.

BUREAU OF LOCAL ROADS & STREETS
PAVEMENT DESIGN

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Date: _____ County: _____
 Calculations by: _____ LPA: _____
 Checked by: _____ Section: _____
 Route: _____
 Location: _____

Limits of Analysis:

From: _____
 To: _____
 Length: _____ Feet _____ Miles

Percent / Count *(Figure 44-1A as needed)*

Structural Design Traffic: *(Section 44-1.03(c))*

Number of Lanes: _____
 ADT: _____
 Class of Road or Street: _____ *(Section 44-1.01)*

PV: _____ % / _____
 SU: _____ % / _____
 MU: _____ % / _____
 HCV: _____

Traffic Factor (Show Calculations):

PCC Slab Traffic Factor: *(Figure 44-5A)* _____ ||| HMA Traffic Factor: *(Figure 44-5E)* _____

Pavement Design:

Subgrade Support Rating (SSR): Poor Fair Granular *(Section 44-5.02(e) and Figure 44-6)*
 Pre-Adjusted PCC Slab Thickness: _____ *(Figure 44-5B)* _____ in.
(Class IV use 6.50 in.)
 Reliability: _____ *(Figure 44-5H)* 75% or 90%

Adjustments: *(Section 44-5.03(c) and Figure 44-5C)*

75% Reliability <i>(Section 44-5.02(h))</i>	-0.50	_____ in.
15 ft Joint Spacing	+1.00	_____ in.
Untied Shoulder	+0.35	_____ in.
Fair Subgrade / Granular Subgrade	-0.25 / -0.50	_____ in.
Stabilized Subbase / Existing Pavement as	-0.25 / -0.50	_____ in.
10 ft Lane Width / 12 ft Lane Width	+0.25 / -0.25	_____ in.
HMA Surface Layer Thickness _____ in.	<i>(See Figure 44-5I)</i>	_____ in.
Total Adjustment:		_____ in.

Adjusted PCC Slab Thickness: *(Section 44-5.03(a))* _____ in.

Subbase Requirements: *(Figure 44-5D)* _____

Select Binder: *(Figure 44-5F or 44-5G)* _____

HMA Layer Thickness: *(Figure 44-5I)* _____ in.

Final Pavement Thickness *(Rounded to next 1/4 in.)* _____ in.

Dowel Bars: Yes No *(Section 44-5.03(d))* Size: *(Figure 44-5J)* _____ in.

Comments: _____

Attachments: Location Map / USDA Soil Map (as needed) / Completed Figures (as needed)

COMPOSITE PAVEMENT
DESIGN CALCULATIONS FOR LOCAL PUBLIC AGENCIES
Figure 44-5N

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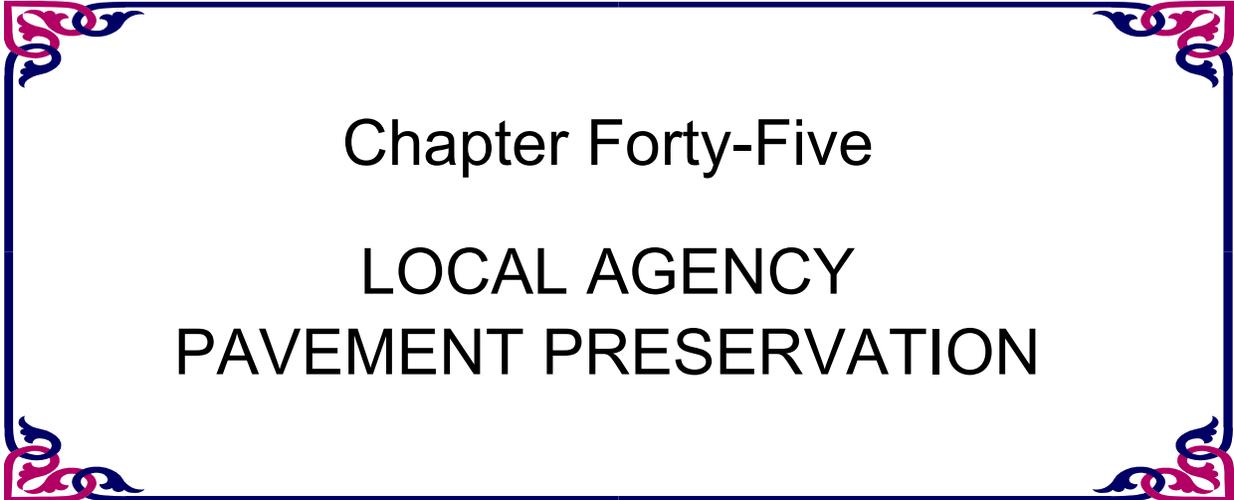
44-10 ACRONYMS

This is a summary of the acronyms used within this chapter.

AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic
BDE	Bureau of Design and Environment
CBLRS	Central Bureau of Local Roads and Streets
DCP	Dynamic Cone Penetrometer
DP	Design Period
HCV	Heavy Commercial Vehicle
HMA	Hot Mix Asphalt
IBV	Immediate Bearing Value
IDOT	Illinois Department of Transportation
LPA	Local Public Agency
MFT	Motor Fuel Tax
MU	Multiple Unit
PCC	Portland Cement Concrete
PI	Plasticity Index
PV	Passenger Vehicle
PG	Performance Grade
RCC	Roller Compacted Concrete
SBS	Styrene-Butadiene Copolymer
SSR	Subgrade Support Rating
SU	Single Unit
TF	Traffic Factor
USDA	United States Department of Agriculture

44-11 REFERENCES

1. [Illinois Highway Standards](#), IDOT
2. *Manual of Test Procedures for Materials*, IDOT
3. *Guide for Design of Pavement Structures*, AASHTO, 1993
4. [Chapter 54](#) "Pavement Design", *BDE Manual*, IDOT
5. [IDOT Standard Specifications](#), IDOT
6. "Binder Selection on the Basis of Traffic Speed and Traffic Level", *Illinois-Modified AASHTO MP-2, Table 1*, IDOT
7. [Subgrade Stability Manual](#), IDOT



Chapter Forty-Five
LOCAL AGENCY
PAVEMENT PRESERVATION

BUREAU OF LOCAL ROADS AND STREETS MANUAL

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BUREAU OF LOCAL ROADS & STREETS
LOCAL AGENCY PAVEMENT PRESERVATION

45(ii)

Jan 2012

45-4.02(d)	Transportation Asset Management System (TAMS) Condition Rating	45-4(4)
45-4.03	Roughness/Ride Quality	45-4(4)
45-4.04	Structural Capacity	45-4(5)
45-4.05	Surface Friction	45-4(5)
45-5	TREATMENT SELECTION GUIDELINES	45-5(1)
45-5.01	General	45-5(1)
45-5.02	Gather Pavement Information	45-5(1)
45-5.03	Assess Pavement Condition	45-5(1)
45-5.04	Evaluate Pavement Data	45-5(2)
45-5.05	Identify Feasible Preservation Treatments	45-5(2)
45-5.06	Select Most Appropriate Preservation Treatment	45-5(3)
45-6	TREATMENTS	45-6(1)
45-6.01	General	45-6(1)
45-6.02	Special Considerations	45-6(1)
45-6.02(a)	Raised Pavement Markers	45-6(2)
45-6.02(b)	Pavement Preparation	45-6(2)
45-6.02(c)	Pavement Markings	45-6(2)
45-6.02(d)	Traffic Control	45-6(2)
45-6.02(e)	Treatment Sequencing	45-6(2)
45-6.03	Flexible Pavement Treatment Summaries	45-6(3)
45-6.03(a)	Crack Filling	45-6(3)
45-6.03(b)	Crack Sealing	45-6(5)
45-6.03(c)	Fog Seals	45-6(7)
45-6.03(d)	Sand Seals	45-6(9)
45-6.03(e)	Scrub Seals	45-6(11)
45-6.03(f)	Rejuvenators	45-6(13)
45-6.03(g)	Slurry Seals	45-6(15)
45-6.03(h)	Micro-surfacing	45-6(17)
45-6.03(i)	Bituminous Surface Treatments (BST)	45-6(19)
45-6.03(j)	Cape Seals	45-6(21)
45-6.03(k)	Cold In-Place Recycling (CIR)	45-6(23)
45-6.03(l)	Hot In-Place Recycling (HIR)	45-6(25)
45-6.03(m)	Thin HMA Overlay	45-6(27)
45-6.03(n)	Ultra-Thin Bonded Wearing Courses	45-6(29)
45-6.03(o)	Ultra-Thin Whitetopping (UTW)	45-6(31)
45-6.03(p)	Cold Milling	45-6(33)
45-6.04	Rigid Pavement Treatment Summaries	45-6(35)
45-6.04(a)	Crack Sealing	45-6(35)

45-6.04(b)	Joint Resealing	45-6(37)
45-6.04(c)	Diamond Grinding	45-6(39)
45-6.04(d)	Diamond Grooving	45-6(41)
45-6.04(e)	Full-Depth Repairs	45-6(43)
45-6.04(f)	Partial-Depth Repairs	45-6(45)
45-6.04(g)	Load Transfer Restoration (LTR)	45-6(47)
45-6.04(h)	Pavement Subsealing/Undersealing	45-6(51)
45-6.05	Drainage Preservation.....	45-6(53)
45-6.05(a)	Drainage Preservation	45-6(53)
45-7	REFERENCES.....	45-7(1)

Chapter Forty-Five

LOCAL AGENCY PAVEMENT PRESERVATION

45-1 INTRODUCTION

This chapter provides information regarding the use of pavement preservation strategies for maintaining pavement condition. The Department's policies and procedures regarding the use of pavement preservation techniques are also presented. The use of pavement preservation is an elective policy. However, proper adherence to the preservation policy and procedures specified in this chapter can provide an agency with the opportunity to use federal funding for preservation activities.

45-1.01 Pavement Preservation Definition

Many transportation agencies are using pavement preservation programs to more cost-effectively manage their pavement assets. Pavement preservation procedures have been in use for many years, but often agencies use the same pavement preservation terminology in different manners. Therefore, the Federal Highway Administration (FHWA) Office of Asset Management provided the following guidance regarding pavement preservation definitions in a Memorandum dated September 12, 2005.

Pavement preservation represents a proactive approach in maintaining our existing highways. It enables State transportation agencies (STAs) to reduce costly, time consuming rehabilitation and reconstruction projects and the associated traffic disruptions. With timely preservation we can provide the traveling public with improved safety and mobility, reduced congestion, and smoother, longer lasting pavements. This is the true goal of pavement preservation, a goal in which the FHWA, through its partnership with the States, local agencies, industry organizations, and other interested stakeholders, is committed to achieve.

The memorandum also defined several pavement preservation related terms including: pavement preservation, preventive maintenance, minor rehabilitation (non-structural), and routine maintenance. These terms are described in more detail in the following sections.

45-1.01(a) Pavement Preservation

Pavement preservation is a program employing a network level, long-term strategy that enhances pavement performance by using an integrated, cost-effective set of practices that extend pavement service life, improve safety and meet motorist expectations (FHWA 2005). Pavement preservation includes work conducted on a pavement prior to major rehabilitation, restoration, or reconstruction. Pavements with significant structural deterioration are not candidates for pavement preservation treatments.

45-1.01(b) Preventive Maintenance

The main component of pavement preservation is preventive maintenance. As defined by the FHWA in 2005, preventive maintenance is a planned strategy of cost-effective treatments to an

existing roadway system and its appurtenances that preserves the system, retards future deterioration, and maintains or improves the functional condition of the system (without significantly increasing the structural capacity). The general philosophy of the use of preventive maintenance treatments is to *“apply the right treatment, to the right pavement, at the right time.”* These practices result in an outcome of *“keeping good roads in good condition.”*

When activities such as crack sealing and filling and the application of seal coats are placed on the pavement at the right time they are examples of preventive maintenance treatments.

45-1.01(c) Minor Rehabilitation

Minor rehabilitation consists of non-structural enhancements made to the existing pavement section to eliminate age-related, top-down surface cracking that develop in flexible pavements due to environmental exposure or to restore functionality of concrete pavements. Because of the non-structural nature of minor rehabilitation techniques, these types of rehabilitation techniques are placed in the category of pavement preservation (FHWA 2005).

The placement of thin overlays or the conduct of recycling techniques such as hot in-place or cold recycling to correct significant surface cracking can be considered minor rehabilitation activities.

45-1.02 Purpose

The intended purpose of a pavement preservation program is to maintain or restore the surface characteristics of a pavement and to extend service life of the pavement assets being managed. However, the improvements are such that there is no increase in capacity or strength but they can have a positive impact on the structural capacity. As a means of improving the functional condition of the network and reducing the overall rate of deterioration of the pavement asset, preventive maintenance treatments are used in the pavement preservation program. Since they are relatively inexpensive in comparison to resurfacing or reconstruction projects, the preventive maintenance treatments are an effective means to preserve the investment in the pavement asset.

An effective pavement preservation program has two main objectives:

- Preserve the pavement investment. *This objective involves minimizing the structural failures and extending the structural life of the pavement to preserve the investment the agency has made in the pavement asset.*
- Maintain high level of service (LOS). *This objective involves maintaining acceptable smoothness and surface friction in order to provide a high LOS for the roadway customers.*

The implementation of a pavement preservation program is good practice, as it focuses on maximizing the condition and life of a network of pavements while minimizing the network's life-cycle cost. The noted benefits of the use of a pavement preservation program vary from agency to agency, but have been documented as including:

- Improved pavement performance—preservation activities extend the performance of the pavement and help to improve the overall condition of the network.

- Higher customer satisfaction—use of preservation activities can lead to smoother roads and fewer construction delays.
- Cost savings—less expensive treatments and the extension of service lives of pavements help to lower or stabilize operating costs.
- Increased safety—preventive maintenance treatments are designed to provide safer surfaces in terms of improved pavement texture and correction of safety related defects such as ruts and improving surface drainage.

A successful pavement preservation program relies on proper treatment selection and timing of the treatment to be successful. In order to select the right treatment for the right pavement at the right time, the following should be known (Peshkin et al. 2004):

- What is the structure and condition of the existing pavement?
- What is the expected performance of the pavement?
- How will different treatments affect their performance?
- What other factors affect how the treatments will perform?

These questions can often be answered by information that is available from a pavement management system (PMS). A pavement management system is a set of tools or methods that assist decision-makers in finding optimum strategies for providing, evaluating, and maintaining pavements in serviceable condition over a period of time (AASHTO 1993). Pavement management, in the broad sense, includes all the activities involved in the planning, programming, design, construction, maintenance, and rehabilitation of the pavement portion of a public works program (Haas et al. 1994).

In order to have an effective pavement preservation program, it is imperative to have some type of pavement management system in place, whether it is proprietary software, public domain software, or a simple spreadsheet. Details of pavement management requirements are provided in the next section.

45-2 PAVEMENT PRESERVATION PROCESS

45-2.01 General

The information and procedures outlined in this chapter allow agencies to conduct pavement preservation with all sources of funding (including MFT, state, or federal funds). Section 4-1 should be consulted to determine highways eligible for federal funds.

In order to understand the outlined pavement preservation processes, a general description of pavement management and some related details is provided. A pavement management system, as defined earlier, is a set of tools or methods that assist decision-makers in finding optimum strategies for providing, evaluating, and maintaining pavements in serviceable condition over a period of time (AASHTO 1993). A pavement management system can take the form of proprietary software, nonproprietary software, or a simple spreadsheet tool. Whether it is a pavement management system or a spreadsheet tool, it must contain the following information for each pavement section included in the pavement preservation program:

- Route ID
- Location designations (beginning/ending locations)
- Surface type
- Pavement surface age
- Condition rating
- Condition rating type used
- Condition survey date
- Prominent distress type
- Average Daily Traffic (ADT)

The information will be used to track the performance of the pavement sections over time and to support pavement preservation funding requests submitted to the District BLRS office.

Pavement condition surveys should be conducted at least every 3 years on all roadways included in the pavement preservation program. Ideally, all roadways maintained by the agency, not just those included in the pavement preservation program, will be included in the survey so the pavement conditions can be tracked over time and used in making treatment selections as additional sections are added to the pavement preservation program.

The highways eligible for pavement preservation and the pavement management system used by the agency shall be submitted with the agency's approval request. The following steps shall be followed for the department to approve the agency's pavement preservation program.

45-2.02 Pavement Preservation Plan Development

The agency will develop a 10-year pavement preservation plan. Agencies using a pavement management system will be able to use their software to customize a preservation plan, while those using a spreadsheet tool will need to use the available condition rating data to create the pavement preservation plan. The first 2 years of the 10-year plan should provide detail on

specific pavement preservation projects proposed for funding. The remaining 8 years of the plan should include a summary of the proposed total miles of preservation projects that are planned in each year. Because preservation projects are based upon selecting “the right treatment at the right time,” it is difficult to schedule long-range preservation projects. Therefore, it is more appropriate to note the number of miles proposed for each type of treatment during the remaining 8 years of the pavement preservation plan.

45-2.03 Pavement Preservation Plan Approval

The pavement preservation plan shall be submit to the District BLRS for approval.

1. An agency interested in participating in the pavement preservation program must submit Form BLR 45300 and Form BLR 45310 to the District BLRS.
2. The District BLRS will review the request and recommend approval to the Central BLRS. If the District BLRS does not approve the agency as a participant, the agency will be notified in writing of the reasons why they are not approved.
3. The District will forward 3 original copies of Form BLR 45300, Form BLR 45310, and all required supporting documentation to the Central BLRS for review and approval. If approved by the Central BLRS, Central BLRS will sign Form BLR 45300. Two copies of Form BLR 45300 will be returned to the District BLRS and 1 copy will be retained by Central BLRS for the file. If the request is denied, the agency will be notified in writing.

45-2.04 Pavement Preservation Plan Updates

Each year, the agency should update the list of projects included in the first 2 years of the pavement preservation project plan. On even number years, the number of miles of pavement preservation projects planned for the last 8 years of the 10-year plan should be updated. The revised plan shall be submitted to the District BLRS for approval.

1. Form BLR 45310 should be submitted to the District BLRS by October 1 of each year.
2. The District BLRS will review the revised plan. If the District BLRS does not approve, the agency will be notified in writing detailing needed revisions.
3. Upon approval by the District BLRS, funding may be allocated for use on the preservation treatments specified in the pavement preservation plan.
4. For federal day labor and federal local let projects, the approved Form BLR 45310 shall be included with the request to the Central BLRS. For state let projects, the approved Form BLR 45310 shall be included with the plans, specifications and estimates submittal to the Central BLRS

45-2.05 Pavement Preservation Treatment Project Submittal

The section number for all projects approved under the pavement preservation plan should use the PP section number.

All pavement preservation projects are considered as Categorical Exclusion Group I. Form BLR 46300, a location map, and a typical section shall be submitted for all pavement

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45-2(3)

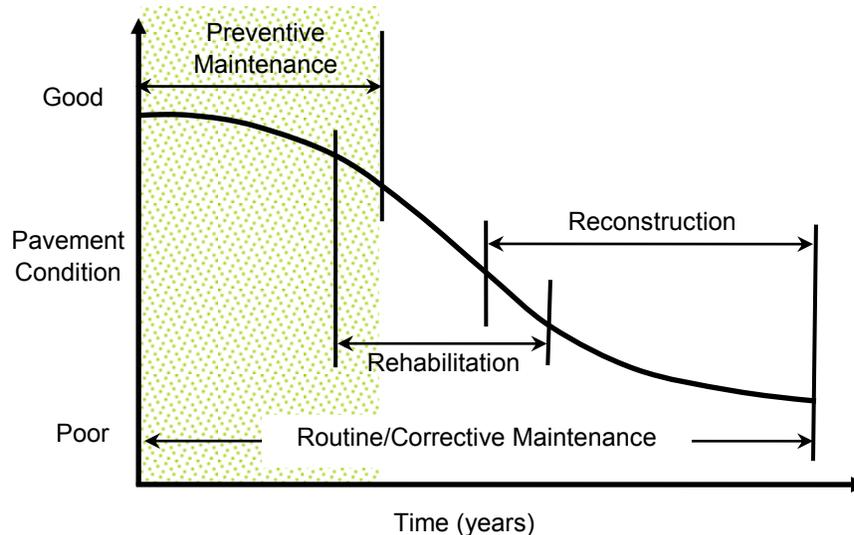
preservation projects regardless of funding. For pavement preservation projects that involve a structure, the Form BLR 46300 will be forwarded to the Local Bridge Unit for the approval of the Engineer of Bridges and Structures.

If the bridge cannot safely carry the additional dead load resulting from resurfacing, gap the bridge. For structures greater than 20.0 feet (6.1 m) in length that are not being gapped, Form BLR 10220 "Asbestos Determination Certification" will be required. All structure condition ratings of these structures must be a 5 or greater. The Bureau of Bridges & Structures (BBS) will evaluate the structural adequacy of the structure, and record the status of the asbestos Form BLR 10220, before approval of the pavement preservation project.

45-3 PAVEMENT PERFORMANCE

45-3.01 General

One of the keys to an effective pavement preservation program is to understand how pavements perform. Figure 45-3A illustrates the typical life cycle of a pavement and the categories of treatments that are appropriate at different times of the life of the pavement. The application of these treatments is also based upon the condition of the pavement, as preventive maintenance treatments are used early on in the life of a pavement while a pavement is still in relatively good condition. There is also a time when preventive maintenance is no longer appropriate (because the pavement has deteriorated to a point that more extensive cracking and other distresses are present), but it is too soon to trigger the pavement for major rehabilitation. Pavements at this condition level would receive minor rehabilitation treatments such as thin overlays or pavement recycling. Together, the use of preventive maintenance treatments and minor rehabilitation techniques along with routine maintenance provide pavement preservation options for a pavement that is still in relatively good condition.



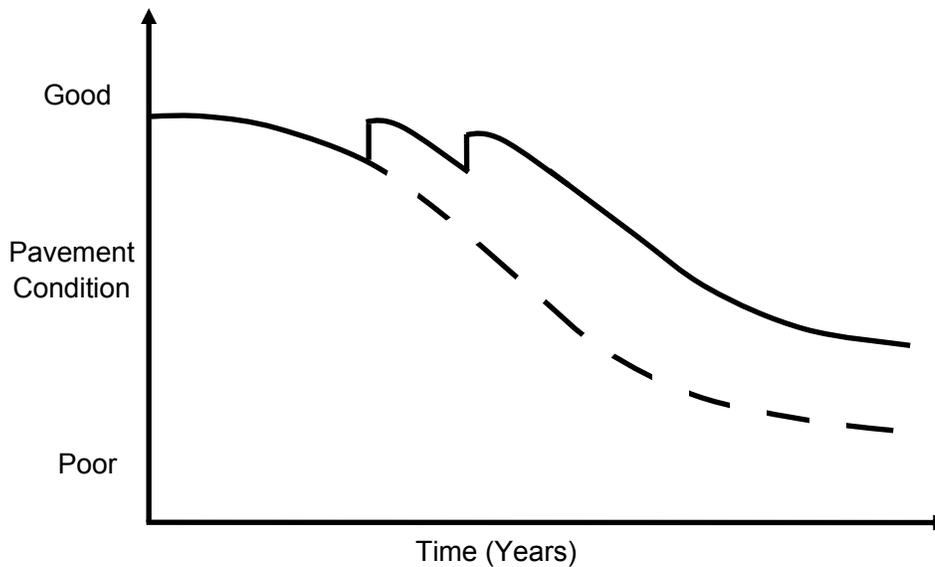
**RELATIONSHIP BETWEEN PAVEMENT CONDITION AND
TYPICAL TYPES OF TREATMENT**

Figure 45-3A

If preventive maintenance or minor rehabilitation is not used during the life of the pavement, the pavement will deteriorate to the point that major rehabilitation (structural restoration, such as full-depth repairs or thick overlays, or even reconstruction) is necessary. When a pavement develops significant levels of distress, pavement preservation activities are no longer viable treatment options. If preventive maintenance or minor rehabilitation is used on a pavement that is highly deteriorated, the life of the chosen treatment can be greatly reduced.

Figure 45-3A depicts a generic pavement performance curve; there can be significant differences in the shape of the performance curve for different pavements due to differences such as environment, design, and construction.

The philosophy of pavement preservation is to address pavements while they are still in good condition and without any serious structural damage. A preventive maintenance treatment applied at the right time can restore the pavement almost to its original condition. Systematic, successive preservation treatments applied correctly help prolong the service life of the asset and delay the more expensive major rehabilitation treatments and reconstruction. Figure 45-3B depicts how the application of successive preventive maintenance treatments (shown as the solid line) can help maintain the pavement in good condition for a longer period of time as compared to a pavement without treatments (depicted by the dashed line performance curve). Additionally, performing a series of successive pavement preservation treatments during the life of a pavement is less disruptive to traffic than the long closures normally associated with reconstruction projects.



**PAVEMENT PERFORMANCE EXTENDED
 BY PREVENTIVE MAINTENANCE**

Figure 45-3B

To apply pavement preservation techniques at the optimal time, it is imperative to understand the causes of pavement deterioration for the various types of pavements.

45-3.02 Causes of Pavement Deterioration

Understanding the distress mechanisms that cause pavement deterioration is essential in properly identifying preservation strategies and treatments for pavements. The causes of deterioration can lead to a variety of distresses. Typical pavement distresses are discussed in section 45-3.03.

45-3.02(a) Flexible Pavement Deterioration

For flexible pavements, which are hot-mix asphalt (HMA) or other bituminous surfaces, the general causes of primary deterioration include traffic, environment/aging, and material problems. A secondary cause of deterioration is due to moisture infiltration. These causes of deterioration influence the performance of the pavement in various ways.

- Traffic can lead to load-related distress such as plastic deformation that manifests as rutting, or structural fatigue cracking that occurs in the wheelpaths of the pavement. Fatigue cracking can lead to the occurrence of potholes. Additional traffic-related distress includes polishing of the pavement surface due to surface wear, which leads to friction loss.
- Environment and aging can cause oxidation of the asphalt and lead to block cracking and weathering/raveling. Environmental forces can also cause thermal cracking, which typically is seen as regularly spaced transverse cracks.
- Material problems include bleeding (contributing to loss of friction), shoving and surface deformation, and stripping.
- Moisture infiltration, while a secondary cause of deterioration, can lead to further breakdown of existing cracks and cause increased roughness. The infiltration of moisture will also soften the subgrade and can lead to the occurrence of longitudinal cracking at the edge of the pavement or potholes.

45-3.02(b) Rigid Pavement Deterioration

For rigid pavements, which are portland cement concrete (PCC) surfaced, the general causes of primary deterioration include traffic loadings, environment and material problems, and poor construction quality. Secondary causes of deterioration are due to incompressibles in joints and moisture infiltration. These causes of deterioration influence the performance of the pavement in various ways.

- Traffic can lead to load-related distress in the slab such as mid-slab cracking. Pumping, faulting, and corner breaks are also load-related distresses. Traffic-related distress includes polishing of the pavement surface due to surface wear, which leads to friction loss.
- Environment and material problems include D-cracking (durability cracking) and alkali-silica reactivity. The environment can also cause oxidation of the joint seal which will allow moisture infiltration into the pavement structure.
- Poor construction quality can cause issues such as longitudinal cracking or surface distress in the form of map cracking and scaling.
- Incompressible materials lodged in a joint a secondary cause of deterioration can cause the occurrence of joint spalls.
- Moisture infiltration to sub-surface layers, while a secondary cause of deterioration, can lead to further breakdown of existing cracks and spalls and cause increased roughness. The infiltration of moisture will also soften the subgrade and can lead to the occurrence of pumping, transverse joint faulting, and corner breaks.

45-3.03 Distress Identification

Distress is defined as pavement deterioration that reduces serviceability or leads to a reduction in serviceability. The following discussion will help users recognize the types and severity levels of some of the most common distresses in flexible and rigid pavements. A short description of each distress type is provided along with a photograph of typical light, moderate, and severe cases.

The lists of flexible and rigid distress types described in the following two sub-sections are not comprehensive. This discussion is meant to provide the user with a general understanding of some of the most common distresses, especially in regards to applying pavement preservation treatments. Additional distress types that are not as common are introduced in less detail in section 45-3.03(c).

45-3.03(a) Flexible Pavement Distresses

Flexible pavement surface distresses include a variety of pavement defects as follows:

1. Alligator/Fatigue Cracking

Alligator or fatigue cracking is a bottom-up type of cracking that indicates fatigue failure (caused by repetitive stress) and is considered a structural distress. Because the cracks generally extend through all asphalt layers, water is allowed to penetrate into the subgrade, leading to increased deterioration.

Alligator cracking is a series of cracks that, when severe, forms a pattern resembling chicken wire. This type of cracking is usually found in the wheel path or along the edge of the pavement (also sometimes called edge cracking). Cracking initially develops as a series of longitudinal cracks that become interconnected as further fatigue damage occurs.

Severity levels are defined by how interconnected the cracking pattern is and the stability of the piece as shown in Figure 45-4C.



Light Alligator Cracking - A longitudinal crack or a series of parallel longitudinal cracks with little or no interconnection.



Moderate Alligator Cracking - Cracks are interconnected and may be slightly spalled, but are stable.



Severe Alligator Cracking - Cracks are wider and pieces are spalled and show movement under traffic loads.

ALLIGATOR CRACKING SEVERITY LEVELS

Figure 45-4C

2. Bleeding

Bleeding occurs when a film of excess asphalt material pools on the pavement surface. Bituminous material saturates the aggregate voids during hot weather or traffic compaction, then expands onto the pavement surface. This can contribute to a considerable safety threat by reduction in the skid resistance of the pavement surface.

Bleeding usually creates a shiny, glass-like reflecting surface that can become sticky when hot and dry and slippery when wet. It is often found in the wheel paths. The severity of bleeding is defined by the amount and extent of asphalt binder visible at the surface of the pavement as shown in Figure 45-3D.



Light Bleeding – Small or isolated areas where asphalt material has pooled on the pavement surface.



Moderate Bleeding – Bleeding is apparent over large or continuous areas of the pavement surface.



Severe Bleeding – Bleeding covers much of the pavement surface and is relatively thick.

BLEEDING SEVERITY LEVELS

Figure 45-3D

3. Block Cracking

Block cracking is a functional distress caused by environmental conditions which lead to hardening and shrinkage of the asphalt. This is not a load-related distress. However, the cracks may allow water to enter the pavement causing further deterioration.

Block cracking occurs as a pattern of cracks that divide the pavement into approximately square (or block shaped) pieces. The blocks generally range from 1 ft by 1 ft to 10 ft by 10 ft (0.3 m by 0.3 m to 3 m by 3 m) and cover a large area. Patterns smaller than this often are a sign of alligator cracking; blocks larger than this usually are measured as longitudinal and transverse cracks.

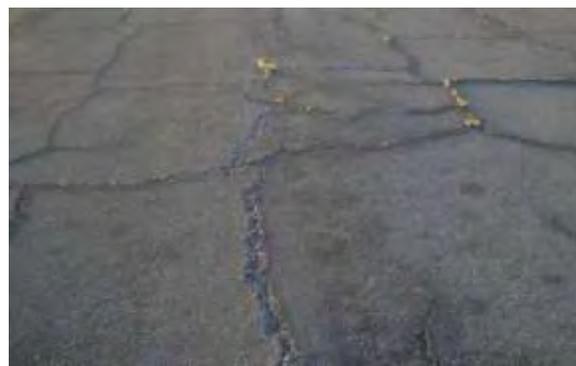
Block cracking is measured by the area containing the block-cracking pattern. The severity of block cracking is defined by the cracks, in the same manner that severity levels for longitudinal and transverse cracking shown in Figure 45-3E.



Light Block Cracking – Tight cracks or sealed cracks with the filler in good condition.



Moderate Block Cracking – Cracks have opened up, exhibit a small amount of spalling, or have adjacent random light cracking.



Severe Block Cracking – Cracks are wide, have significant spalling, or are accompanied by adjacent moderate severity random cracking.

BLOCK CRACKING SEVERITY LEVELS

Figure 45-3E

4. Longitudinal and Transverse (L&T) Cracking

By definition, longitudinal cracks run parallel to the centerline and transverse cracks run perpendicular.

Similar to block cracking, longitudinal and transverse (L&T) cracking is caused by environmental factors (thermal expansion and contraction). These cracks may be located anywhere on the pavement surface, including along paving lane joints. L&T cracks can also form in areas with swelling or settlement because of additional strain on the pavement in these specific areas.

Joint reflective cracking in composite pavements can also be categorized as L&T cracking. In this case, the cracks form when joints in the underlying PCC reflect through to the HMA surface.

L&T cracking is not a load-related distress; however, the cracks can allow water to enter the pavement and eventually weaken the structure, leading to load-related deterioration.

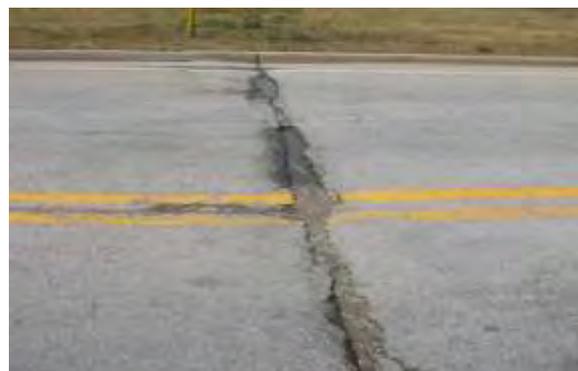
Severity levels are determined based upon the width and depth of cracking, stability/movement of the pavement material adjacent to the cracks, and the extent of spalling and secondary cracking (adjacent random cracking). Some rating procedures record longitudinal and transverse cracking separately, or have a different distress for cracking due to joint reflection of composite pavements (see Figure 45-3F).



Light L&T Cracking - Tight cracks or sealed cracks with the filler in good condition.



Moderate L&T Cracking - Cracks have opened up, exhibit a small amount of spalling, or have adjacent random light cracking.



Severe L&T Cracking - Cracks are wide, have significant spalling, or are accompanied by adjacent moderate severity random cracking.

SEVERITY LEVELS

Figure 45-3F

5. Rutting

A rut is a longitudinal surface depression in the wheel path. Rutting can pose a potential safety threat when water collects in the depressed area as hydroplaning can occur. There are two types of rutting: rutting in the HMA layer, and rutting in the subgrade.

Rutting occurs in the HMA layer due to poor mix design properties (which can sometimes cause transverse material displacement) or secondary compaction of the mix under a concentration of heavy wheel loads.

Subgrade rutting occurs when the subgrade (and hence the overlying asphalt concrete) exhibits wheel path depressions due to loading. Subgrade rutting is a load-related distress, generally indicating that the pavement structure is not adequate for the applied loads.

Rutting can be measured using a transverse profiler, or simply by measuring the depth of the lowest point in the rut relative to the pavement surface. Severity levels are based on rut depth and may vary by the condition rating procedure used. The depths listed for light, moderate, and severe rutting to the right are typical, but are based on the measured depth at a given location. When rut data is collected using automated means, an average depth is often reported (see Figure 45-3G).



Light Rutting - Rut depth visible, approximately less than ½ inch (12.7 mm) in a given location.



Moderate Rutting - Rut depth approximately between ½ inch and 1 inch (12.7 mm and 25.4 mm) in a given location.



Severe Rutting - Rut depth greater than approximately 1 inch (25.4 mm) in a given location.

RUTTING SEVERITY LEVELS

Figure 45-3G

6. Weathering/Raveling

Weathering/raveling occurs when aggregate particles and asphalt binder are worn away from the HMA surface. This can occur when the surface has oxidized and hardened, or from poor mix quality. Aggregate is eroded from the surface, leaving a rough and sometimes pitted texture. Other factors that can contribute to weathering/raveling include oil spillage, which softens the asphalt and allows aggregate to become dislodged, and mechanical abrasion, such as snow-plow blades or studded tires.

Severity levels are based upon the extent of lost aggregate and visibility of aging in the pavement (see Figure 45-3H).



Light Weathering/Raveling - Some aggregate loss from the pavement surface with little or no pitting.



Moderate Weathering/Raveling - Some aggregate loss resulting in an overall rough pavement surface with some localized pitting.



Severe Weathering/Raveling - Considerable aggregate loss resulting in an overall rough pavement surface with pitted/eroded areas.

WEATHERING/RAVELING SEVERITY LEVELS

Figure 45-3H

45-3.03(b) Rigid Pavement Distresses

The most significant and commonly observed distresses in rigid pavements are as follows:

1. Corner Breaks

Corner breaks are created in PCC pavements by cracks located within a single quadrant of the slab, resulting in an approximately 45-degree angle to the direction of traffic. A corner break extends vertically through the entire depth of the slab and is caused by high corner stresses. The high corner stresses can develop from overloading and thermal curling or as a loss of support under the slab, including poor initial compaction. Corner breaks are considered a load-related distress.

The number of corner breaks is to be recorded at each severity level within each section (see Figure 45-3I).



Light Corner Breaks - Crack is hairline and unspalled; the resulting corner piece is not cracked or shows no movement under load.



Moderate Corner Breaks - Crack has some spalling and the corner piece is intact and has little or no movement under load.



Severe Corner Breaks - Crack is heavily spalled; corner is broken into two or more pieces, is faulted, or moves under load.

CORNER BREAK SEVERITY LEVELS

Figure 45-3I

2. Durability (D) Cracking

D-Cracking is a series of closely spaced, crescent-shaped hairline cracks near a joint, corner or crack. There is often dark staining around the cracks that can help distinguish this distress from others (especially other material-related distresses).

D-cracks are caused by freeze-thaw expansion of the coarse aggregate within the PCC slab. This distress requires a susceptible coarse aggregate (which can be controlled when selecting the appropriate mix design), moisture, and a climate with freeze-thaw conditions. The deterioration commonly starts from the bottom of the slab where the saturation levels are higher.

D-cracking is considered a material- and climate-related problem and is not caused by load. However, this can be a very destructive distress that eventually affects the load-carrying ability of the pavement structure.

The severity level is determined by the extent of the break-up of the pavement due to D-cracking. Also, the extent of cracking that covers the slab surface can help define the severity of D-cracking (see Figure 45-3J).



Light D-Cracking - Tight cracks with no loose or missing pieces and no patching in the affected area.



Moderate D-Cracking - Well defined cracks, with a few small loose pieces.



Severe D-Cracking - A well defined cracking pattern with a significant amount of loose or missing material.

D-CRACKING SEVERITY LEVELS

Figure 45-3J

3. Faulting

A difference in elevation across a joint (between two slabs) or crack (within a slab) is referred to as faulting.

Faulting is often an indicator of poor load transfer (especially in un-doweled jointed-plain concrete pavements). In this case, fines are pumped from beneath the far slab to beneath the near slab (in reference to the direction of travel) causing the difference in elevation. Faulting can also be caused by uneven settlement of adjacent slabs or by frost heave.

Severity levels are based upon the measured difference in surface elevation across the joint or crack and vary by the condition rating procedure used. The measurements listed for light, moderate, and severe faulting shown in the photos to the right are provided as examples. Some rating procedures do not record faulting across cracks (only across joints), incorporating faulting into the crack's severity level. Automated data collection can also be used to assess faulting (see Figure 45-3K).



Light Faulting - Faulting is visible and measures approximately less than ¼ inch (6.4 mm) at a given location.



Moderate Faulting - Faulting measures approximately ¼ inch to ½ inch (6.4 mm and 12.7 mm) at a given location.



Severe Faulting - Faulting is greater than approximately ½ inch (12.7 mm) at a given location.

FAULTING SEVERITY LEVELS
Figure 45-3K

4. Joint Seal Damage

Joint sealant in good condition keeps both incompressible material and water out of the joints. When incompressible materials collect in joints, the pavement cannot expand and contract as needed resulting in distresses such as spalling or blowups. Keeping water out of the pavement structure is important for preventing other distresses, such as faulting and pumping. To be effective, joint sealant should be intact, pliable, and bonded to both sides of the joint.

Severity levels should be determined by the ability of the joint sealant to adequately protect the joint from deterioration and keep water from entering the pavement structure. The performance of the sealant is usually judged over a large area and categorized by the overall performance (see Figure 45-3L).



Light Joint Seal Damage - Only localized areas of the sealant are damaged.



Moderate Joint Seal Damage - Portions of the sealant are missing, oxidized (no longer pliable), split, or have lost adherence.



Severe Joint Seal Damage - Sealant is mostly missing, oxidized (no longer pliable), split, or is lost all adherence; sealant is no longer performing its intended function.

JOINT SEAL DAMAGE SEVERITY LEVELS

Figure 45-3L

5. Longitudinal Cracking

Longitudinal cracking is used to describe cracks that predominately run parallel to the pavement centerline. These cracks usually extend through the entire depth of the slab.

Longitudinal cracks are the result of internal stresses caused by temperature and moisture gradients (curling and warping), late or inadequate sawcutting, excessively wide slabs, or poor base/subgrade support conditions.

Severity is defined by the deterioration along the crack (crack width and amount of spalling). Some rating procedures consider shattered slabs (slabs divided into multiple pieces) as a separate distress while others simply record the number of cracks (see Figure 45-3M).



LONGITUDINAL CRACKING SEVERITY LEVELS

Figure 45-3M

6. Map Cracking and Scaling

Map cracking and scaling develop because of material-, construction- and weather-related problems. Map cracking appears in the form of closely spaced cracks that are typically tight and shallow; scaling refers to the loss of surface material.

Over-finishing the PCC surface during construction or adding water during finishing are common causes of map cracking. Over-finishing works excess water to the surface, creating a weak layer of mortar that easily breaks off. Surface cracks can also form if the PCC surface dries out too quickly while curing; however, these are usually referred to as plastic shrinkage cracks and are generally more isolated.

Alkali silica reactivity (ASR) or other material-related problems can also cause map cracking. In some cases, the application of deicing chemicals can also cause scaling.

Severity levels are based primarily on the amount of scaling, but also consider the cracks, if present (see Figure 45-3N).



Light Surface Distress - Very clear cracking pattern on the surface, where cracks appear tight and shallow; no scaling.



Moderate Surface Distress - Cracks have opened up and/or there is some material loss (scaling) on the pavement surface.



Severe Surface Distress - Extensive material loss (scaling).

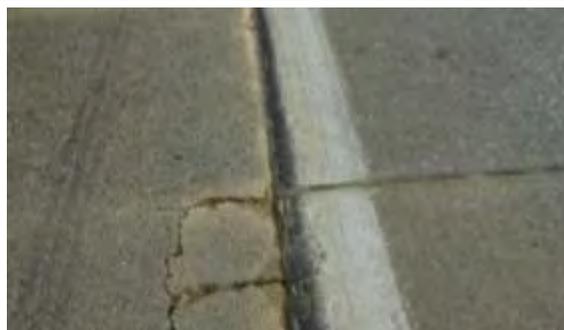
SURFACE DISTRESS SEVERITY LEVELS

Figure 45-3N

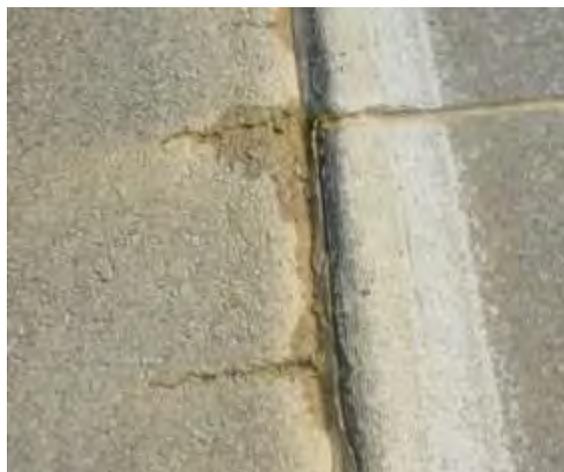
7. Pumping

Pumping occurs when fine material beneath the slab is worked up through joints and cracks under applied loads. Over time, voids can form under the corners/edges of the slabs, leading to loss of support problems. Positive load transfer, effective joint sealant, and limiting the fines in the underlying base course can minimize pavement pumping.

Pumping is likely to be occurring when stains near joints and cracks are visible. Severities of pumping are difficult to define because most of the deterioration occurs below the pavement surface (see Figure 45-30).



Light Pumping - Small areas of staining visible.



Moderate Pumping - Visible staining on the pavement surface.



Severe Pumping - Excessive amounts of staining. Additional indications may include faulting or the erosion of shoulder pavement from applied pumping forces.

PUMPING SEVERITY LEVELS

Figure 45-30

8. Spalling

Spalling is defined as cracking, breaking or chipping of joint edges. Spalling can occur along joints, in corners, or along cracks. Spalls extend diagonally from the pavement surface toward the joint or crack, in contrast to corner breaks or linear cracks which extend vertically through the slab. Spalling often occurs when incompressible material enters the joints or cracks and prevents normal expansion and contraction of the slab, eventually leading to deterioration around the joint or crack.

Severity levels should be determined based upon the amount and depth of deterioration and loss of material observed at the joint or crack (see Figure 45-3P).



Light Spalling - Slight wear along the joint or crack, with minimal loose or missing pieces.



Moderate Spalling - Shallow but discernable wear at the joint or crack, with loose pieces that can be removed easily or are missing.



Severe Spalling - Considerable wear and loss of material at the joint or crack; ride quality is affected.

SPALLING SEVERITY LEVELS

Figure 45-3P

9. Transverse Cracking

Transverse cracks run perpendicular to the centerline of a roadway. These cracks are similar to longitudinal (linear cracks) in that they typically extend vertically through the slab and are a structural distress. They are distinguished here from longitudinal cracks because some of the repair options differ.

Slabs often crack from overloading or because of poor base/subgrade support. As with longitudinal cracks, transverse cracks can form due to improper joint spacing, late or inadequate joint sawcutting, or from internal stresses caused by temperature and moisture gradients (curling and warping) in combination with loading.

Severity is defined by the deterioration along the crack (crack width and amount of spalling), presence of faulting, and the number of pieces the slab is divided into. Some rating procedures record longitudinal and transverse cracks separately, or have another distress type for shattered slabs (slabs divided into multiple pieces) (see Figure 45-3Q).



Light Transverse Cracking - Tight cracks with little or no spalling and no faulting.



Moderate Transverse Cracking - Wider cracks with some spalling or faulting.



Severe Transverse Cracking - Cracks that exhibit movement accompanied by discernable spalling or faulting.

TRANSVERSE CRACKING SEVERITY LEVELS

Figure 45-3Q

45-3.03(c) Additional Pavement Distresses

The following distress types may appear in some condition rating procedures, but are either less applicable to pavement preservation programs (which focus on treatments applied over large areas rather than localized repairs) or are somewhat less common than those previously discussed:

1. Depression. Depressions are often localized and can be built in during construction or develop in areas with poor base or subgrade compaction (see Figure 45-3R).



DEPRESSION

Figure 45-R

2. Blowups. Blowups occur in PCC pavements, typically during exceptionally hot weather. When PCC pavements do not have room to expand sufficiently, internal forces can become great enough to cause a localized upward movement of the slab edges resulting in buckling or shattering of the joint. If blow-ups are a common problem, some preventive activities such as regular joint resealing and, in severe cases, the installation of pressure relief joints, may be needed to control this distress.
3. Bumps and Sags. Bumps and Sags are a flexible pavement distortion that affect ride quality. Often this distress can better be classified by a more descriptive distress, such as swelling, shoving, rutting (in the HMA surface), or corrugation. This distress does appear in some distress rating procedures, though.
4. Corrugation. This distress is usually only found at intersections or areas with stopping traffic. The result is a washboard effect where there are ridges of HMA that run perpendicular to the centerline. This distress is a result of an unstable mix combined with stopping traffic, which causes the surface to slide and form ripples.

5. Lane-Shoulder Drop Off. Some condition rating procedures include a lane-shoulder drop off as a distress describing an elevation change between the edge of pavement and the adjacent shoulder, which can be a potential safety problem if a vehicle tire goes beyond the edge of pavement. In addition, pavement deterioration along a loaded edge can sometimes occur as a result of the edge not being supported (see Figure 45-3S).



LANE-SHOULDER DROP OFF

Figure 45-3S

6. Patch Deterioration. While patches are often placed to repair a pavement problem, they eventually deteriorate. To account for this, some condition rating procedures include patches as a separate distress. Alternately, the types of distress occurring within a patched area can be recorded.
7. Polished Aggregate. This distress can occur on either PCC or HMA-surfaced pavements. In both cases, frequent traffic applications (not necessarily heavy loads) can wear away the pavement surface and polish any exposed aggregate until the pavement surface is smooth. Polished aggregate results in a surface that is smooth, causing a potential safety problem. Polished aggregates can be detected using skid testing, or by visual observations (see Figure 45-3T).



POLISHED AGGREGATE

Figure 45-3T

8. Popouts. Popouts develop as a result of expansive aggregates expanding during a freeze-thaw cycle, and breaking free from the surface of a PCC pavement. This distress does not pose a safety concern, nor does it affect the structural capacity of a pavement (see Figure 45-3U).

**POPOUTS****Figure 45-3U**

9. Potholes. Potholes often occur as a result of severe weathering/raveling or severe alligator cracking. Typically pavements with excessive potholes are beyond the need for preventive maintenance activities; patching is typically used as a localized repair (see Figure 45-3V).

**POTHOLES****Figure 45-3V**

10. Punch-outs. A punch-out is a type of distress that occurs in continuously reinforced concrete pavements (CRCP). A portion of a cracked slab breaks free from the surrounding pavement and partially sinks into the base/subgrade (see Figure 45-3W).

**PUNCH-OUTS****Figure 45-3W**

11. Shoving. Shoving can refer to a couple of different distress types. First, shoving can occur at the interface between HMA and PCC pavements. In this case, the expansive forces of the PCC during hot weather can apply pressure to the HMA. As a result, the HMA along the interface will bulge or it will crack and break into pieces. Shoving also can refer to areas in an unstable HMA pavement where areas of the pavement move under a load – similar to rutting, but localized (see Figure 45-3X).

**SHOVING****Figure 45-4X**

12. Slippage Cracking. Slippage cracking occurs when the surface HMA layer is no longer bonded to the layer directly below it (another HMA layer, PCC, brick, or other non-granular material) allowing the surface layer to move when braking or turning wheel loads are applied. Often cracking appears in a crescent shaped pattern which may open into a wide crack in only the upper-most HMA lift (see Figure 45-3Y).



SLIPPAGE CRACKING

Figure 45-3Y

13. Swelling. Upward heave of a flexible pavement, typically due to frost heave or expansive soils below the surface, is referred to as swelling. Blow-ups of underlying PCC pavement are also sometimes categorized as swelling.

45-3.03(d) Use of Pavement Preservation to Maintain Pavement Performance

Pavement preservation can address many of the various distress types discussed in the previous section. Specifically, pavement preservation techniques have two main uses: 1) prevent or slow many distresses from occurring or 2) correct some minor surface distress when applied.

Some of the pavement problems that are prevented or slowed with the use of pavement preservation for flexible and rigid pavements are detailed in Figure 45-3Z. The distresses that are corrected with the use of pavement preservation are detailed in Figure 45-3AA.

HMA or Other Bituminous Surfaces Problems	PCC Problems
Loss of fines (pumping) Crack deterioration Block cracking Edge cracking Potholes Weathering/raveling Roughness	Loss of fines Crack deterioration Corner breaks Blow-ups Joint spalling Joint faulting Roughness

PAVEMENT PROBLEMS PREVENTED OR SLOWED WITH PAVEMENT PRESERVATION

Figure 45-3Z

HMA or Other Bituminous Surfaces Problems	PCC Problems
Stable asphalt rutting Raveling Bleeding/flushing Surface friction loss Roughness	Joint seal damage Map cracking and scaling Surface friction loss Roughness

**PAVEMENT PROBLEMS CORRECTED
WITH PAVEMENT PRESERVATION**

Figure 45-3AA

The benefits realized by the application of pavement preservation are accomplished because these techniques accomplish the following: 1) reduce water infiltration, 2) maintain drainage, 3) reduce water infiltration into cracks and joints, 4) slow aging effects of the pavement, and 5) minimize dynamic loads.

The reduction in water infiltration and the proper maintenance of drainage help protect the underlying layers of the pavement from being softened or washed away and also help reduce the effects of freeze/thaw-induced distress. The reduction of incompressible debris into the joints and cracks greatly reduces the potential for crack deterioration, joint spalling, and pavement blow-ups. The use of global preventive maintenance surface treatments can help to slow asphalt aging/hardening. The pavement preservation techniques also help preserve the pavement by reducing and/or correcting pavement roughness, which helps minimize dynamic loadings and in turn extends the life of the pavement.

There is a point in the life of the pavement when pavement preservation techniques will no longer provide an adequate treatment to the pavement. In those cases, the pavement has deteriorated to the point that preservation techniques, if used, will have shortened lives. Some indicators that the pavement section is not a viable candidate for preservation treatments are shown in Figure 45-3AB.

HMA or Other Bituminous Surfaces Problems	PCC Problems
Potholes Severely deteriorated cracks Delaminations Unstable rutting	Blow-ups Corner breaks Severely deteriorated cracks

**INDICATIONS THAT IT IS TOO LATE
FOR PAVEMENT PRESERVATION**

Figure 45-3AB

45-4 CONDITION RATING ASSESSMENTS

45-4.01 General

Effective pavement preservation cannot be performed without an appropriate assessment of pavement condition for the pavement sections in the network. Pavement condition data are necessary to document current condition, determine future conditions, and evaluate possible future preservation strategies.

The condition of the pavement can be determined through the use a variety of methods: 1) surface condition, 2) roughness/ride quality, 3) structural capacity, and 4) surface friction. For all condition assessment procedures, the methods that provide the highest level of accuracy often cost the most in terms of time, effort, and money. Therefore, final decisions on which data to collect and methods for data collection should be carefully considered based upon available resources. For this reason many local agencies focus on conducting a surface distress condition analysis for the pavement network, as the required data can be collected using a variety of methods. The collection of roughness/ride quality, structural capacity, and surface friction information often involves the use of specialized equipment. Therefore, this testing is often only used on a project-by-project basis or when adequate funding is available.

45-4.02 Surface Condition

Pavement surface condition surveys can vary greatly. Some procedures are simple subjective assessments of the pavement surface condition while others are more detailed determinations of types, severities, and quantities of distress that is present on the pavement surface. The simple methods, which are often a subjective rating of the surface condition from the windshield of a slow moving vehicle, are quicker to perform but provide limited information for the selection of preservation projects for specific pavement sections. Detailed distress information can be collected either manually through walking surveys which can be labor intensive or through the use of semi-automated or automated data collection vans. The use of data collection vans can reduce time in the field, but depending upon the survey methodology and level of automation used, the surveys can be as time consuming as walking surveys. Nevertheless, the detailed distress surveys provide all the details necessary to select a specific preservation project for a pavement section.

Details of four different surface condition rating procedures are provided here as potential options to be used by the agency when conducting condition surveys. There are many other survey options available to agencies. Each agency should consider the complexity of the procedure along with available time and resources when deciding on the condition survey procedure that will work best for the agency long-term. The following example procedures are presented: Pavement Surface Evaluation and Rating (PASER), Condition Rating Survey (CRS), the Pavement Condition Index (PCI), and the rating procedure associated with the Transportation Asset Management System (TAMS) developed by the Utah Local Technical Assistance Program (LTAP). Additional information regarding these condition rating procedures can be obtained from the Illinois LTAP center at <http://www.dot.state.il.us/blr/t2center.html>.

45-4.02(a) Pavement Surface Evaluation and Rating (PASER)

The PASER system was developed by the Wisconsin Transportation Information Center to evaluate pavement surface conditions using visual evaluations. Rating guides exist for both asphalt and concrete roads.

The evaluation for asphalt pavements is focused on identifying the different types of pavement distress on the roadway and grouping that distress into four major categories: surface defects, surface deformation, cracks, and patches/potholes. For rigid pavements, the four major categories of distress are the following: surface defects, joints, pavement cracks, and pavement deformation.

For both of these procedures, the condition of the pavement is assessed and based upon documented distress present a rating on a 10-point rating scale (10–excellent condition to 1–failed condition) is assigned to the pavement as shown in figure 45-4A. If an agency is using this rating procedure to determine the condition of the pavement network, it is advised that they also note the most prominent distress type present on the pavement section so it can be utilized when making final preservation treatment selection. Figure 45-4A also provides a range of PASER conditions in which pavement preservation is feasible and not feasible.

PASER Condition Ranges			
Excellent		10 – 9	10 – 5: Feasible for pavement preservation
Very Good		8	
Good		7 – 6	
Fair		5 – 4	
Poor		3	4 – 1: Not feasible for pavement preservation
Very Poor		2	
Failed		1	

**PAVEMENT PASER CONDITION
 RANGE CLASSIFICATIONS**

Figure 45-4A

45-4.02(b) Condition Rating Survey (CRS)

The CRS procedure has been used by the Department as its standard methodology of documenting pavement condition since 1974. The CRS is based upon the visual pavement condition, in which a rating between 9.0 (excellent) and 1.0 (poor) is assigned to the pavement based upon the existing surface condition. Figure 45-4B displays the CRS Condition Ratings and also provides a range of conditions in which pavement preservation is feasible and not feasible.

CRS Condition Ranges			
Excellent		9.0 – 7.6	9.0 – 6.1: Feasible for pavement preservation
Satisfactory		7.5 – 6.1	
Fair		6.0 – 4.6	6.0 – 1.0: Not feasible for pavement preservation
Poor		4.5 – 1.0	

**PAVEMENT CRS CONDITION
RANGE CLASSIFICATIONS**

Figure 45-4B

Procedures exist for calculating the CRS from automated surveys, but values can be assigned to a pavement section using the *Condition Rating Survey Manual for IDOT* as a basis. Further information regarding the CRS procedure can be obtained from the Office of Planning and Programming.

45-4.02(c) Pavement Condition Index (PCI)

The PCI is a numerical indicator that rates the surface condition of the pavement. The PCI procedure was developed by the U.S. Army Corps of Engineers (USACOE) to provide a systematic methodology for rating and reporting pavement condition. The procedure is described in the USACOE Construction Engineering Research Laboratory (CERL) Technical Report M-90/05, *Pavement Maintenance Management for Roads and Streets using the PAVER System* and the APWA PAVER *Pavement Condition Index Field Manual* and adopted by ASTM as a testing standard in D 6433, *Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys*.

The output of the PCI procedure is a single number providing a numerical indication of the overall pavement condition. A PCI score encompasses components of the pavement that reflect its structural integrity, environmental damage, and other associated performance factors (e.g. safety). As shown in figure 45-4C, the final calculated PCI score is a number from 0 to 100, with 100 representing a pavement in excellent condition. Figure 45-4C also provides a range of PCI conditions in which pavement preservation is feasible and not feasible.

PCI Condition Ranges			
Excellent		100-86	100 – 65: Feasible for pavement preservation
Very Good		85-71	
Good		70-56	
Fair		55-41	64 - 0: Not feasible for pavement preservation
Poor		40-26	
Very Poor		25-11	
Failed		10-0	

**PAVEMENT PCI CONDITION
RANGE CLASSIFICATIONS**

Figure 45-4C

During the PCI survey procedure, the types of distress present on the pavement surface are quantified in terms of type, severity, and extent. This information provides valuable information on the current condition of the pavement, and is used in calculating the associated PCI value for the roadway.

45-4.02(d) Transportation Asset Management System (TAMS) Condition Rating

The Utah LTAP developed the TAMS to assist cities and counties with the management of their transportation systems. TAMS is an asset management computer program that utilizes information from a condition rating procedure to determine work strategies for the pavement network.

The distresses observed on the roadway are rated according to the Strategic Highway Research Program (SHRP) Distress Manual (Miller and Bellinger 2003). The rating forms utilize a matrix setup and classify the distresses according to low, medium, and high extents and severities. With the distress extent and severity classified, the condition information is entered into TAMS and used to determine the appropriate treatments for the pavement sections in the network.

45-4.03 Roughness/Ride Quality

Roughness information is often used to classify the ride quality of a pavement section from the users' perspective. This information can be used to characterize the condition of the roadway. Depending upon the level of detail desired for the roughness survey, data can be collected in a variety of manners. For example, if data is needed on a qualitative basis, a windshield survey where each driving lane is driven at posted speed limits and broad categories of roughness (e.g., not rough, slightly rough, moderately rough, very rough) are noted can be used. However, when detailed quantitative data is needed roughness-measuring equipment can be obtained using commercially available equipment. Further information regarding pavement roughness data is provided in section 53-1.04(b) of the IDOT *Bureau of Design Manual*.

45-4.04 Structural Capacity

Nondestructive testing can be used to measure the structural capacity of a pavement section. Often a device such as a falling weight deflectometer (FWD) is used to “backcalculate” the fundamental engineering properties of the pavement structure and underlying subgrade soil. The information can then be used to determine overly thickness for those pavements needing structural enhancement. Additional details regarding the use of the FWD are provided in Section 53-3.03 of the IDOT *Bureau of Design Manual*.

45-4.05 Surface Friction

Surface friction is another characteristic that can be used to assess the condition of the pavement. Surface friction, which is sometimes referred to as skid resistance, is directly related to the safety of the roadway. Details regarding pavement friction testing are provided in Section 53-3.04 of the IDOT *Bureau of Design Manual*.

45-5 TREATMENT SELECTION GUIDELINES

45-5.01 General

The use of pavement preservation strategies to maintain the condition of the pavement network requires that an agency address the following two questions:

- Is the pavement a good candidate for pavement preservation?
- If so, what treatment(s) can be applied?

Appropriate maintenance strategies are determined based upon a combination of the current condition of the pavement and the types of distresses present. In some cases, combinations of preservation strategies are needed to correct the combination of distress that is present on the pavement. The process of selecting the most appropriate combination of pavements and treatments for preservation activities includes the following general steps:

- Gather pavement information.
- Assess pavement condition.
- Evaluate pavement data.
- Identify feasible preservation treatments.
- Select most appropriate preservation treatment.

45-5.02 Gather Pavement Information

Selecting appropriate preservation techniques includes the collection of historical pavement information. The type of information needed to select the right projects and treatments include 1) pavement type, 2) pavement age and design life, 3) traffic, and 4) pavement cross section and materials. This is the type of information that can be housed in a pavement management system and accessed to make informed selection of the "right treatment at the right time on the right road".

The pavement type dictates the choice of treatment, as different techniques are appropriate for various surface types. In addition to pavement type, the age and design life of the pavement can provide insight into how the pavement has performed over time and how it can be expected to perform in the future. If the pavement is near the end of its design life, it may be an indication that preservation is not appropriate. The traffic level information, specifically the number of heavy trucks, is a critical detail for determining treatments that cannot provide appropriate performance for the expected traffic level. Knowing the existing pavement structure and materials properties can also be very useful to determine what treatments will work well with the current structure and how the pavement section might perform in the future.

45-5.03 Assess Pavement Condition

In addition to gathering historical pavement information, the current condition of the pavement must be assessed in order to determine feasible preservation treatments. Ideally the condition would be determined in the form of a standard condition rating procedure to include details of the types, severities, and the amounts of all distresses present on the pavement. A variety of

example condition rating procedures are described in section 45-4 for use in assessing the condition of the pavement. The agency also has the opportunity to use any other standard rating procedure or can use the general guidelines for detailing distress types that is provided in Section 45-4.02 to assess the types of distress present on their pavement network.

45-5.04 Evaluate Pavement Data

In order to determine whether a pavement section is a good candidate for pavement preservation treatments, the agency should consider the following:

- Is there excessive distress (large quantities and/or severe levels of distress) on the pavement section?
- Is there evidence of structural problems (e.g., any of the distresses listed in Figure 45-3AB)?
- Has the time for applying a pavement preservation treatment to the pavement while it is in “good” condition passed?
- Are there other known pavement problems (e.g., material problems or signs of construction problems) on the pavement section?
- Is there a history of pavement problems in this location?

If the answer to the majority of these questions is “no,” then the pavement section is likely to be a good candidate for pavement preservation techniques. For pavement sections for which the answer to most of these questions is “yes,” the agency should not consider preservation techniques and instead plan major rehabilitation or future reconstruction for the roadway.

For those sections that are good candidates for preservation treatments, figure 45-5A provides additional general guidelines for determining if the section should receive preservation treatments.

Condition Rating Procedure	Typical condition ranges for pavement preservation treatments
PASER	10 to 5
IDOT’s CRS	9.0 to 6.0
PCI	100 to 65

GENERAL GUIDELINES TO DETERMINE IF THE PAVEMENT SECTION IS ELIGIBLE FOR PAVEMENT PRESERVATION TREATMENTS

Figure 45-5A

45-5.05 Identify Feasible Preservation Treatments

The appropriate treatment strategy for those pavement sections identified as candidates for pavement preservation can be determined by looking at the type and severity of pavement distresses present on the pavement. Guidelines for determining recommended and feasible treatments are provided in figures 45-5B and 45-5C for flexible and rigid pavements. Figures 45-5B and 45-5C provide guidance for treatment selection based upon attributes such as distress levels, ride, friction, traffic levels, and relative cost. These characteristics are primarily

based on a relationship between a single treatment and a single distress. When multiple distresses exist, the appropriate treatment to address each distress type should be examined and the recommended treatments must be used in combination with engineering judgment to make final treatment decisions.

45-5.06 Select Most Appropriate Preservation Treatment

Of the feasible preservation treatments, the most appropriate treatment is one that can provide the best cost/benefit while meeting the constraints of the project. There are several methods to identify the treatment with the most benefit for the associated cost. This analysis is done internally within many pavement management systems. Ideally, the selection of the right treatment at the right time is governed by optimization (maximizing benefits for given constraints). However, treatment selection can be accomplished through a manual assessment of the benefits versus the projected project cost.

In addition to the benefits and costs of the feasible treatments, the selection of the most appropriate preservation treatment also includes considering the variety of project constraints that affect treatment selection. The types of project constraints that should be considered when selecting the most appropriate preservation treatment include:

- Availability of qualified contractors.
- Availability of quality materials.
- Agency practice or local preference.
- Time (of year) of construction.
- Initial costs.
- User preferences.
- Pavement noise.
- Facility downtime.
- Surface friction.

The effect of these constraints will vary from project to project and should be taken into consideration as the final projects are selected for inclusion in a pavement preservation program.

BUREAU OF LOCAL ROADS & STREETS
LOCAL AGENCY PAVEMENT PRESERVATION

45-5(4)

Jan 2012

Pavement Conditions	Severity Levels	Crack Filling	Crack Sealing	Fog Seal	Sand Seal	Scrub Seal	Rejuventr	Slurry Seal	Micro-surfacing	Chip Seal	Cape Seal	CIR	HIR	Thin HMA Overlay	Ultra-Thin Friction Course	UTW	Cold Mill	Drainage Presrvtn
Alligator/ Fatigue Cracking ¹	Light	F	F	NR	NR	NR	NR	F	F	F	F	F	F	F	F	F	NR	R
	Moderate	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	F
	Severe	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	F
Block Cracking	Light	R	R	F	R	R	NR	R	R	R	R	R	R	R	F	R	F	NR
	Moderate	R	R	NR	NR	F	NR	F	NR	F	F	R	R	F	NR	NR	NR	NR
Bleeding	Severe	F	F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Light	NR	NR	NR	F	F	NR	F	R	R	R	R	R	R*	R	R	R	NR
Longitudinal and Transverse Cracking ²	Moderate	NR	NR	NR	NR	NR	NR	NR	R	R	F	R	R	R	F	F	F	NR
	Severe	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Light	R	R	F	R	R	NR	R	R	R	R	R	R	R**	F	R	F	NR
"Stable" Rutting ³	Moderate	R	R	NR	NR	NR	NR	F	F	F	F	F	F	R**	NR	F	NR	NR
	Severe	F	F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Light	NR	NR	NR	NR	NR	NR	F	R	F	F	R	R	R*	F	R*	F	R
Weathering/ Raveling	Moderate	NR	NR	NR	NR	NR	NR	NR	R	NR	NR	R	R	R	NR	R	NR	NR
	Severe	NR	NR	NR	NR	NR	NR	NR	R	NR	NR	R	R	R	NR	R	NR	NR
Ride	Poor	NR	F	NR	F	F	NR	NR	F	F	F	R	R	R	NR	R	R	F
Friction	Poor	NR	NR	NR	R	R	NR	R	R	R	R	R	R	R	R	R	R	NR
ADT	< 2,500	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	2,500 – 10,000	R	R	R	F	F	F	F	R	R	R	R	R	R	R	R	R	R
	> 10,000	R	R	NR	NR	NR	NR	NR	R	R	R	R	R	R	R	R	R	R
Relative Cost (\$ to \$\$\$)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	Varies

TREATMENT SELECTION GUIDELINES FOR FLEXIBLE PAVEMENTS

Figure 45-5B

R - Recommended treatment for the specified pavement condition. Engineer should ensure that all critical distress types are addressed by the selected treatment.
 F - Feasible treatment, but depends upon other project constraints including other distresses.
 NR - Treatment is not recommended to correct the specified pavement condition.
 R* - Recommended treatment when used with milling prior to treatment.
 R** - Used in combination with crack sealing.
 1 - Preservation treatments do not correct alligator cracking. Of the included treatments, chip seals are most effective at covering the alligator cracking.
 2 - If longitudinal and transverse cracking are present without other distresses, crack filling or sealing is recommended.
 3 - If stable rutting is present without other distresses, microsurfacing or mill and overlay are the recommended treatment.

BUREAU OF LOCAL ROADS & STREETS
LOCAL AGENCY PAVEMENT PRESERVATION

Jan 2012

45-5(5)

Pavement Conditions	Parameters	Crack Sealing	Joint Resealing	Diamond Grinding	Diamond Grooving	Full-Depth Repairs	Partial-Depth Repairs	LTR ¹	Cross Stitching	Subsealing/Undersealing	Drainage Presrvtn
Corner Breaks	Light	R	NR	NR	NR	NR	NR	NR	NR	NR	R
	Moderate	R	NR	NR	NR	F	NR	NR	NR	NR	F
	Severe	NR	NR	NR	NR	R	NR	NR	NR	NR	NR
D-cracking	Light	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Moderate	NR	NR	NR	NR	F	R	NR	NR	NR	NR
	Severe	NR	NR	NR	NR	R	NR	NR	NR	NR	NR
Faulting	Light	NR	R	F	NR	NR	NR	NR	NR	NR	R
	Moderate	NR	F	R	NR	NR	NR	R	NR	R	F
	Severe	NR	NR	R*	NR	NR	NR	R	NR	R	NR
Joint Seal Damage	Light	NR	F	NR	NR	NR	NR	NR	NR	NR	NR
	Moderate	NR	R	NR	NR	NR	NR	NR	NR	NR	NR
	Severe	NR	R	NR	NR	NR	NR	NR	NR	NR	NR
Longitudinal Cracking	Light	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Moderate	R	NR	NR	NR	F	NR	NR	R	NR	NR
	Severe	F	NR	NR	NR	R	NR	NR	F	NR	NR
Pumping	All	NR	F	NR	NR	NR	NR	F	NR	R	R
	Light	NR	F	NR	NR	NR	F	NR	NR	NR	NR
Spalling	Moderate	NR	F	NR	NR	NR	R	NR	NR	NR	NR
	Severe	NR	NR	NR	NR	F	R	NR	NR	NR	NR
	Light	NR	NR	F	NR	NR	NR	NR	NR	NR	NR
Surface Distress	Moderate	NR	NR	F	NR	NR	F	NR	NR	NR	NR
	Severe	NR	NR	F	NR	NR	F	NR	NR	NR	NR
	Light	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Transverse Cracking	Moderate	R	NR	NR	NR	F	NR	F	NR	NR	NR
	Severe	F	NR	NR	NR	R	NR	R	NR	NR	NR
	Poor	NR	NR	R	NR	NR	NR	F*	NR	F	F
Ride	Poor	NR	NR	R	NR	NR	NR	NR	NR	NR	NR
Skid	Poor	NR	NR	R	R	NR	NR	NR	NR	NR	NR
Relative Cost	(\$ to \$\$\$\$)	\$	\$	\$	\$	\$\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$	Varies

R - Recommended treatment for the specified pavement condition. Care must be examined in making sure that all critical distress types are addressed by the selected treatment.
R* - Recommended when used in conjunction with LTR and/or Subsealing/Undersealing.
F - Feasible treatment but depends upon other project constraints including other existing distresses.
F* - Feasible treatment if poor ride is a result of undow eled joints or faulted transverse (mid-slab) cracking.
NR - Treatment is not recommended to correct the specified pavement condition.
1 - LTR (Load Transfer Restoration) is normally used in combination with diamond grinding.

TREATMENT SELECTION GUIDELINES FOR RIGID PAVEMENTS

Figure 45-5C

45-6 TREATMENTS

45-6.01 General

Many different pavement preservation techniques and treatments are available. These range from localized applications to treatments that are applied to the entire pavement surface. For all preservation treatments, the purpose is to minimize the effects of pavement distress or prevent them from occurring.

Commonly used preventive maintenance treatments and minor rehabilitation techniques are described in one-page summaries in this section. Further details regarding the treatments are available in the standard and supplemental specifications and the special provisions. Each treatment summary is followed by a simple pictorial representation of the major steps of the construction sequence for the treatment. The flexible and rigid pavement treatments that are presented are summarized in Figure 45-6A. Prior to the presentation of each treatment type is a *Special Considerations* section that provides details that are applicable to a variety of treatments.

Treatments for Flexible Pavements	Treatments for Rigid Pavements
Crack Filling Crack Sealing Fog Seals Sand Seals Scrub Seals Rejuvenators Slurry Seals Microsurfacing Chip Seals Cape Seals Cold In-place Recycling (CIR) Hot In-Place Recycling (HIR) Thin Asphalt Concrete Overlay Ultra-Thin Bonded Wearing Course Ultra-Thin Whitetopping (UTW) Cold Milling	Crack Sealing Joint Resealing Diamond Grinding Diamond Grooving Full-Depth Repairs Partial-Depth Repairs Load Transfer Restoration (LTR) Cross Stitching Pavement Subsealing/Undersealing
Drainage Preservation	

PAVEMENT PRESERVATION TREATMENTS FOR FLEXIBLE AND RIGID PAVEMENTS

Figure 45-6A

45-6.02 Special Considerations

There are several special considerations that must be addressed prior to the construction of various pavement preservation techniques.

45-6.02(a) Raised Pavement Markers

All pavement sections should be reviewed for the presence of raised pavement markers (RPMs) prior to treatment placement for global treatments. The thickness of the treatment should be evaluated to determine if the RPMs can remain in place. If so, the lens of the marker can be removed and tape placed over the marker during treatment placement. Following treatment placement, the tape can be removed and a new lens can be installed.

If the thickness of the treatment is such that the markers must be removed, then the hole from the removal of the markers should be repaired prior to the new treatment and the new marker should be repositioned in the new surface.

45-6.02(b) Pavement Preparation

All flexible pavement sections should be evaluated for the presence of bumps greater than 0.5 inch (12 mm) using a 16-foot straightedge. For flexible treatments that do not include milling or recycling of the pavement surface, the bumps should be ground prior to treatment placement. Special attention should be given to properly cleaning all milled materials off of the pavement surface prior to treatment placement. Cleaned surfaces are imperative prior to global flexible surface treatments in order to obtain proper bonding to the underlying pavement. Crack sealing, when needed prior to preventive maintenance treatment, should be placed at least 3 months prior to the placement of the treatment to minimize difficulties in constructing the treatment.

45-6.02(c) Pavement Markings

A minimum of seven days of good drying weather is needed prior to the placement of paint striping on various flexible pavement treatments. Temporary striping of water-based paint or foil-backed tape will be until permanent markings can be applied.

45-6.02(d) Traffic Control

Proper traffic control is needed to ensure acceptable cure times for the majority of treatments. Without proper traffic control after placement, premature failure of the preservation treatment may occur. For rigid pavements, the use of conventional patch materials is usually best for the long-term performance of the pavement but requires adequate curing which may not be available in high traffic volume areas or at certain times of the year.

45-6.02(e) Treatment Sequencing

When planning preservation work on rigid pavements, consideration should be given to the proper sequencing of treatments. For rigid pavements, an appropriate treatment sequence consists of the following: full- or partial-depth repairs, load transfer restoration, diamond grinding, and joint resealing.

45-6.03 Flexible Pavement Treatment Summaries**45-6.03(a) Crack Filling**

Crack filling is effective at reducing or delaying moisture damage, further crack deterioration, roughness, and rutting. However, crack filling can also have a negative impact on roughness and friction. (See Figure 45-6B)

Treatment Description: Crack filling is the process of placing material into non-working cracks to substantially reduce infiltration of water and to reinforce the adjacent pavement. Crack filling is characterized by minimal crack preparation and the use of lower quality bituminous filler materials.

Pavement Conditions Addressed: Adds no structural benefit, but does reduce moisture infiltration through cracks. Only practical if extent of cracking is minimal and if there is little to no structural cracking.

Application Limitations: These treatments are not recommended when structural failures exist (i.e., extensive fatigue cracking or high severity rutting) or if there is extensive pavement deterioration, or little remaining life. Crack filling is appropriate for cracks 0.125 to 1.0 inch wide (3.175 to 25.4 mm).

Non-working cracks narrower than 0.125 inches (3.175 mm) that do not exhibit spalling should not be filled. These cracks generally do not penetrate through the surface nor do they pose a source of pavement deterioration. The practice of filling this type of crack by the method of pouring filler on the pavement surface is seldom of value. A crack analysis should be performed to determine whether crack filler would be effective.

Construction Considerations: Placement should occur during cool, dry weather conditions. Application during cool weather will allow for expanded crack widths. Proper crack cleaning and a dry crack are essential to achieve good bond and maximum performance.

Traffic Considerations: Performance is not significantly affected by varying ADT or truck levels. However, improper installation can permit the filler to fail.

Special Considerations: Crack filling may have negative effects. Undesirable visual impacts may occur, which include tracking of filling material by tire action, obscuring lane markings, and adversely affecting friction/skid resistance. Crack filling may result in a rougher pavement surface when the filler material is forced out of the cracks during warm months.

Performance Period: 2 to 4 years.

Relative Cost (\$ to \$\$\$\$): \$



Step 1. Crack cleaning. The crack-filling process requires minimal crack preparation. This typically consists of using compressed air to clean the cracks.



Step 2. Application of crack filler. This photo shows the application of a crack filler using an "overbanded" configuration.



Step 3. Application of blotter. For hot-applied materials, a blotter coat of sand is often used to reduce "tracking" of the material by vehicle tires.

GENERAL CRACK FILLING STEPS

Figure 45-6B

45-6.03(b) Crack Sealing

Crack sealing is effective at reducing or delaying moisture damage, further crack deterioration, roughness, and rutting. However, crack sealing can also have a negative impact on roughness and friction. (See Figure 45-6C)

Treatment Description: Crack sealing is the process of placing higher-quality material into ~~working~~ cracks (i.e., those that open and close with changes in temperature) in order to reduce water infiltration into a pavement. In contrast to crack ~~filling~~, crack sealing requires more substantial crack preparation procedures and uses higher quality sealant materials. Thermosetting and thermoplastic materials are both used for crack sealing.

Pavement Conditions Addressed: Adds no structural benefit, but does reduce future intrusion of incompressible materials, water and soluble chemicals (e.g., salts and brines) into the cracks. It is only practical if extent of cracking is minimal and if there is little to no structural cracking.

Application Limitations: These treatments are not recommended when structural failures exist (i.e., extensive fatigue cracking or high severity rutting) or if there is extensive pavement deterioration, or little remaining life. Crack sealing is appropriate for cracks 0.125 to 1.0 inch (3.175 to 25.4 mm) wide.

Non-working cracks narrower than 0.125 inches (3.175 mm) that do not exhibit spalling should not be sealed. These cracks generally do not penetrate through the surface nor do they pose a source of pavement deterioration. The practice of filling this type of crack by the method of pouring sealant on the pavement surface is seldom of value.

Construction Considerations: Placement should occur during cool, dry weather conditions with moderate yearly temperatures. Proper crack preparation and cleaning is essential to good bond and maximum performance. Some agencies also use a hot compressed air lance prior to sealing.

Traffic Considerations: Performance is not significantly affected by varying ADT or truck levels. However, improper installation can permit the sealant to fail.

Special Considerations: Crack sealing may have negative effects. Undesirable visual impacts may occur, which include tracking of sealing material by tire action, obscuring lane markings, and adversely affecting skid resistance. Crack sealing may result in a rougher pavement surface when the sealant material is forced out of the cracks during warm months. Sealing is best accomplished several months in advance of any other preventive maintenance surface applications.

Performance Period: 2 to 8 years.

Relative Cost (\$ to \$\$\$): \$



Step 1. Crack refacing. A uniform sealant reservoir increases the probability of a neater, better performing sealant installation.



Step 2. Cleaning and drying. Cracks must be clean and dry to facilitate sealant bonding.



Step 3. Material application. This photo shows the application of sealant using a "simple band-aid" configuration.



Step 4. Application of blotter. For hot applied materials, a blotter coat of sand is often used to reduce "tracking" of the material by vehicle tires.

GENERAL CRACK SEALING STEPS

Figure 45-6C

45-6.03(c) Fog Seals

Fog seals are effective at sealing the pavement, inhibiting raveling, enriching the hardened/oxidized asphalt, and providing some pavement edge-shoulder delineation. However, fog seals can have a negative impact on friction and stripping in susceptible HMA pavements. (See Figure 45-6D)

Treatment Description: Fog seals are very light applications of a diluted asphalt emulsion placed directly on the pavement surface with no aggregate. Typical application rates range from 0.05 to 0.10 gal per yd² (0.23 to 0.45 liters per m²).

Pavement Conditions Addressed: Fog seals are placed primarily to seal the pavement, inhibit raveling, slightly enrich a hardened/oxidized asphalt, and provide some pavement edge-shoulder delineation. No structural benefit is added by this treatment.

Application Limitations: This treatment is not recommended when structural failures exist (e.g., significant fatigue cracking) or if there is already flushing/bleeding, friction loss, or thermal cracking.

Construction Considerations: Typically, a slow-setting emulsion (e.g., CSS-1H, SS-1H) is used, which requires time to "break." Because of this, the pavement is sometimes closed for 2 hours for curing before being re-opened to traffic.

Traffic Considerations: Increased ADT or truck levels can increase surface wear.

Special Considerations: Special consideration should be given to the raised pavement markers and bump grinding prior to treatment placement.

Performance Period: 1 to 3 years.

Relative Cost (\$ to \$\$\$\$): \$



Step 1. Surface preparation. The surface must be free of dust, dirt, and debris prior to applying the emulsion.



Step 2. Application of emulsion. The emulsion is applied using a distributor truck.



Step 3. Sand blotter and sweeping (if necessary). Sand blotters can help address a problem with delayed curing, as well as early opening to traffic. Sweeping may be required to remove excess sand.

GENERAL FOG SEAL CONSTRUCTION STEPS

Figure 45-6D

45-6.03(d) Sand Seals

Sand seals are effective at improving poor friction and reducing or preventing moisture damage, cracking, raveling, roughness, and rutting. However, they can also have a negative impact on stripping in susceptible HMA pavements. (See Figure 45-6E)

Treatment Description: A sand seal is a thin asphalt surface treatment constructed by spraying a non-diluted emulsion, spreading a thin layer of fine aggregate (i.e., sand), and rolling. Sand seals are typically 0.1 to 0.2 in (2 to 5 mm) thick. The primary purpose is to increase surface friction; however, in some cases, sand seals are used to “lock” the aggregates in a chip seal.

Pavement Conditions Addressed: Sand seals are primarily placed to improve poor friction; however, they are effective at slowing or preventing other distresses such as moisture damage, cracking, raveling, roughness, and rutting. No structural benefit is added by this treatment.

Application Limitations: This treatment is not recommended when structural failures exist (e.g., fatigue cracking or high severity rutting), or if there is extensive pavement deterioration or little remaining life.

Construction Considerations: Sand seals should be constructed when conditions are dry (i.e., the risk of rain is not likely which would hinder the proper construction of the sand seal) and when the minimum air temperature is moderate (i.e., normally 50 °F [10°C] or above). To assure good bond to the existing pavement, the surface should be clean and dry prior to emulsion placement.

Traffic Considerations: Sand seals should generally be limited to lower volume traffic conditions with a low percentage of trucks.

Special Considerations: Special consideration should be given to the raised pavement markers and bump grinding prior to treatment placement.

Performance Period: 3 to 4 years.

Relative Cost (\$ to \$\$\$\$): \$\$



Step 1. Surface preparation. The surface must be free of dust, dirt, and debris prior to applying the emulsion.



Step 2. Application of emulsion. The non-diluted emulsion is applied using a distributor truck.



Step 3. Sand application. Sand is applied with a spreader immediately after spray emulsion.



Step 4. Rolling and brooming. After the application of sand, the surface is rolled with pneumatic-tired rollers and broomed if necessary.

GENERAL SAND SEAL CONSTRUCTION STEPS

Figure 45-6E

45-6.03(e) Scrub Seals

Scrub seals are effective at filling narrow cracks (up to 0.5 in [12 mm]) wide, rejuvenating hardened/oxidized asphalt, and improving poor friction. No structural benefit is added by this treatment. (See Figure 45-6F)

Treatment Description: A scrub seal is a thin asphalt surface treatment constructed by spraying a polymer modified rejuvenating emulsion onto an existing pavement, dragging a broom across the surface to scrub the emulsified asphalt into the surface cracks, immediately spreading a thin layer of fine aggregate (i.e. sand or screenings) over the emulsified asphalt, dragging another broom over the surface to scrub the fine aggregate into the surface cracks, and rolling the surface with a pneumatic tire roller. Thicknesses generally range from 0.2 to 0.4 inches (5 to 10 mm).

Pavement Conditions Addressed: Scrub seals are primarily placed to fill narrow cracks, rejuvenate oxidized asphalt, and improve poor friction. No structural benefit is added by this treatment.

Application Limitations: This treatment is not recommended when structural failures exist (e.g., fatigue cracking) or if there is extensive pavement deterioration, or little remaining life. Scrub seals should not be applied to pavements with ruts greater than 0.25 inch (6 mm) deep.

Construction Considerations: Scrub seals should be constructed when conditions are dry (i.e., the risk of rain is not likely which would hinder the proper construction of the scrub seal) and when the minimum air temperature is moderate (i.e., normally 50 °F [10°C] or above). To assure good bond to the existing pavement, the surface should be clean and dry prior to emulsion placement.

Traffic Considerations: Scrub seals should generally be limited to lower volume traffic conditions with a low percentage of trucks.

Special Considerations: Special consideration should be given to the raised pavement markers and bump grinding prior to treatment placement. Scrub seals are susceptible to snow plow damage.

Performance Period: 2 to 5 years.

Relative Cost (\$ to \$\$\$\$): \$\$



Step 1. Surface preparation. The surface must be free of dust, dirt, and debris prior to applying the emulsion.



Step 2. Emulsion application and drag-brooming. Drag-brooming is used to work emulsion into cracks and surface voids.



Step 3. Sand application. A thin layer of sand is applied to the broomed emulsion.



Steps 4 & 5. Drag-brooming of sand and rolling. After the application of sand, the surface is drag-broomed again and rolled with pneumatic-tired rollers.

GENERAL SCRUB SEAL CONSTRUCTION STEPS

Figure 45-6F

45-6.03(f) Rejuvenators

Rejuvenators are effective at reducing the effects of raveling or roughness, and may also be used to slow down thermal cracking. (See Figure 45-6G)

Treatment Description: Rejuvenators are specialized emulsions that are sprayed on an existing asphalt surface with the intent of softening the existing binder, enriching the weathered pavement, and thereby, inhibiting raveling. The emulsions used as rejuvenators are typically mixtures of asphalt, polymer latex, and other additives. Rejuvenating emulsions can be used in a fog seal, sand seal, scrub seal, or any other surface seal applied directly to the pavement surface.

Pavement Conditions Addressed: While rejuvenators do not directly correct any distresses, they are effective at softening the existing binder; thereby, slowing the development of raveling, thermal cracking, and roughness.

Application Limitations: This treatment is not recommended when structural failures exist (e.g., fatigue cracking), where the surface has poor friction, or if there is extensive pavement deterioration or little remaining life.

Construction Considerations: Choosing an appropriate rejuvenating agent, and determining the correct application rate for the existing pavement's material characteristics and condition, are the most important construction-related considerations. Testing needs to be conducted to determine the correct application rate.

Traffic Considerations: Rejuvenators are effective on asphalt surfaces in all traffic conditions. However, traffic should not be allowed back on the surface until adequate friction is restored. This is often provided by the placement of manufactured sand prior to opening to traffic.

Special Considerations: When selecting a rejuvenator for a project, questions regarding available materials can be directed to the IDOT Bureau of Materials and Physical Research.

Performance Period: 3 to 5 years.

Relative Cost (\$ to \$\$\$\$): \$\$



Step 1. Rejuvenator application. The rejuvenating emulsion is applied to the surface using a distributor truck.



Step 2. Light sanding. After the rejuvenator has been allowed to be absorbed for the recommended amount of time, a light application of sand is often applied to improve skid resistance.

GENERAL REJUVENATOR CONSTRUCTION STEPS

Figure 45-6G

45-6.03(g) Slurry Seals

Slurry seals are effective at sealing low-severity cracks, waterproofing the surface, and restoring friction. However, they can also accelerate the development of stripping in susceptible AC pavements. (See Figure 45-6H)

Treatment Description: Mixture of crushed well-graded aggregate (fine sand and mineral filler) and asphalt emulsion that is spread over the entire pavement surface with either a squeegee or spreader box attached to the back of a truck. They are effective in sealing low-severity surface cracks, waterproofing the pavement surface, and improving skid resistance at speeds below 30 mph (64 km/h). Thickness is generally <0.5 in (13 mm).

Pavement Conditions Addressed: Low-severity cracking; raveling/weathering (loose material must be removed); asphalt oxidation and hardening; friction loss; and moisture infiltration. While slurry seals add no structural capacity, they can temporarily seal cracks (if severity is low) or fill very minor rutting (if the ruts are not severe and are stable). It is strongly recommended to complete needed patching and crack sealing before slurry seal placement.

Application Limitations: Slurry seals are not recommended when structural failures exist (e.g., significant fatigue cracking and deep rutting) or if there is high-severity thermal cracking. They also can accelerate the development of stripping in susceptible AC pavements.

Construction Considerations: Surface must be clean and areas of traffic tape, thermoplastics, or new paint striping should be removed prior to placement. Aggregates must be clean, angular, durable, well-graded, and uniform. Avoid placement in hot weather (potential flushing problems) or when freezing temperatures are expected. Slurry seals should be placed between May 1 and October 15 and when the temperature is at least 50 °F (10°C) and rising and the forecast for the next 24 hours is above 40 °F (5°C). Avoid premature opening to traffic and premature placement of pavement markers and striping. Quick setting emulsions may cure in as little as 1 hour, but others may require from 2 to 4 hours depending upon the environmental conditions. Temporary pavement markings should be used until permanent markings are applied a minimum of 7 days following slurry seal placement.

Traffic Considerations: Performance in terms of surface wear is affected by increasing ADT and truck traffic levels. Slurry mix properties (i.e., aggregate quality, gradation, modifiers, and emulsion content) can be modified to accommodate the higher traffic volumes. Areas of heavy truck turning or down grade locations are best avoided as there is a high potential for early damage.

Special Considerations: The designer should use the IDOT *Special Provision for Preventive Maintenance – Slurry Seal* as a basis for use of this treatment. Special consideration should be given to the raised pavement markers and bump grinding prior to treatment placement.

Performance Period: 3 to 6 years.

Relative Cost (\$ to \$\$\$\$): \$\$



Step 1. Repair existing distress. Any structural failures should be patched, and non-working cracks >0.25 in. (6 mm) wide should be sealed.



Step 2. Prepare surface. Surface must be clean, and striping must be removed. All other in-pavement fixtures (e.g., manholes) need to be protected prior to paving.



Step 3. Slurry placement. This photo shows the placement of material using a slurry seal spreader box.



Step 4. Hand work. Some handwork is required to smooth edges. Excessive handwork can segregate the mix as well as leave an unsatisfactory finish.

GENERAL SLURRY SEAL CONSTRUCTION STEPS

Figure 45-6H

45-6.03(h) Micro-surfacing

Micro-surfacing is effective at correcting or inhibiting raveling and oxidation of the pavement surface, improving surface friction, sealing the pavement surface, and filling minor surface irregularities and wheel ruts up to 1.25 inches (32 mm) deep. (See Figure 45-6I)

Treatment Description: Applied in a process similar to slurry seals, micro-surfacing consists of a mixture of latex-modified emulsified asphalt, mineral aggregate, mineral filler, water, and additives. Micro-surfacing material is mixed in specialized, compartmented, self-powered trucks and placed on the pavement using an augered screed box.

Pavement Conditions Addressed: Low-severity cracking; raveling/weathering (loose material must be removed); low- to medium-severity bleeding; minor roughness; friction loss; and moisture infiltration. Adds limited structural capacity. Temporarily seals fatigue cracks (if severity is low) and can serve as a rut-filler (if the existing ruts are stable). A scratch coat of the microsurfacing can be used for light profile repairs.

Application Limitations: Micro-surfacing is not recommended when the pavement contains structural failures (e.g., significant fatigue cracking), high-severity thermal cracking, or extensive pavement deterioration. This treatment can also accelerate the development of stripping in susceptible AC pavements.

Construction Considerations: Avoid placement in hot weather if there is potential for flushing problems. Placement in cool weather can lead to early raveling. Do not place when freezing temperatures are expected. Micro-surfacing should be placed between May 1 and October 15 and when the temperature is at least 50 °F (10°C) and rising and the forecast for the next 24 hours is above 40 °F (5°C). Avoid premature placement of pavement markers and striping. A minimum of 7 days of good drying weather should be allowed before placement of new markers or striping with temporary markers used prior to permanent placement. Micro-surfacing typically breaks within a few minutes of placement and can carry traffic after approximately an hour.

Traffic Considerations: Very successful on both low and high volume roadways. However, areas of heavy truck turning or down grade locations are best avoided as there is a high potential for early damage. The dusting of a blotter material can be used to allow for earlier opening of intersections and turning lanes.

Special Considerations: The designer should use the IDOT *Special Provision for Preventive Maintenance – Micro-surfacing* as a basis for use of this treatment. If micro-surfacing is being used to fill ruts, this must be specified on the plans along with appropriate gradation and application rate. Special consideration should be given to the raised pavement markers and bump grinding prior to treatment placement.

Performance Period: 4 to 7 years.

Relative Cost (\$ to \$\$\$\$): \$\$



Step 1. Repair existing distress. Any structural failures should be patched, and non-working cracks >0.25 in. (6 mm) wide should be sealed.



Step 2. Prepare surface. Surface must be clean, and striping must be removed. All other in-pavement fixtures (e.g., manholes) need to be protected prior to paving.



Step 3. Microsurfacing placement. This photo shows the placement of material using a microsurfacing spreader box.



Step 4. Hand work. Some handwork may be required to smooth edges. Excessive handwork can segregate the mix as well as leave an unsatisfactory finish.

GENERAL MICRO-SURFACING CONSTRUCTION STEPS

Figure 45-6I

45-6.03(i) Bituminous Surface Treatments (BST)

BST, also known as chip seals, are effective at improving poor friction, inhibiting raveling, correcting minor roughness and bleeding, and sealing the pavement surface. (See Figure 45-6J)

Treatment Description: Asphalt (commonly an emulsion) is applied directly to the pavement surface (0.26 to 0.46 gal/yd² [1.2 to 2.1 l/m²]) followed by the application of aggregate chips (16 to 30 lb/yd² [9 to 16 kg/m²]), which are then immediately rolled to imbed chips (50 to 70 percent). Application rates depend upon aggregate gradation and maximum size. This treatment can be applied in multiple layers (e.g., double chip seals) and in combination with other surface treatments.

Pavement Conditions Addressed: Longitudinal, transverse, and block cracking; raveling/weathering (loose material must be removed); friction loss; minor roughness; low-severity bleeding; and moisture infiltration. Adds almost no structural capacity. The flexible impermeable AC surface helps reduce cracking and is somewhat effective at sealing medium-severity fatigue cracks in comparison with other treatments.

Application Limitations: Not recommended for pavements with the following conditions: structural deficiency; cracks > 0.25 in (6 mm) wide; medium- to high-severity alligator cracking; many potholes; rutting > 1 in (25 mm) deep; very rough surface. BST can also accelerate the development of stripping in susceptible AC pavements.

Construction Considerations: Surface must be clean. Treatment should be placed during warm weather with chip spreader immediately behind asphalt distributor and rollers close behind the spreader. BST are placed from May 1 to August 31 and when the temperature in the shade is above 55 °F (13°C). Approximately 2 hours of cure time are required before roadway may be re-opened to normal speed traffic. Brooming is usually required to remove loose chips. Pilot vehicles should be used to make sure traffic does not damage the fresh surface and to reduce windshield breakage and other vehicle damage. Lightweight aggregate can be used to help minimize claims. Flaggers may be needed at crossing intersections to control traffic. Avoid premature placement of pavement markers and striping.

Traffic Considerations: With special design and proper placement, BST can perform well on high-volume roads. However, use is sometimes limited to lower-speed, lower-volume roads because of the propensity for loose chips to crack windshields.

Special Considerations: The designer should use IDOT's *Special Provision for Preventive Maintenance-- Chip Seals* as a basis for use of the treatment and must specify the gradation for the chip seal on the developed plans. The provision also includes details for extending the construction season. Special consideration should be given to the raised pavement markers and bump grinding prior to treatment placement. Additional information is available from the BLRS Technology Transfer Center (T²) Report, *Seal Coats (Oil & Chipping)* (IDOT 2006).

Performance Period: Single seals: 4 to 6 years; double seals; 5 to 7 years.

Relative Cost (\$ to \$\$\$): \$\$



Step 1. Surface preparation. Surface must be clean and dry to ensure good bond with the asphalt.



Step 2. Binder application. The asphalt binder is applied to the surface with a distributor truck.



Step 3. Aggregate application. A self-propelled, pneumatic-tired, motorized unit has a hopper on the front where the chips are dumped.



Steps 4 & 5. Rolling and brooming. After the application of the aggregate, the surface is rolled with pneumatic-tired rollers and broomed to remove excess aggregate.

GENERAL BST CONSTRUCTION STEPS

Figure 45-6J

45-6.03(j) Cape Seals

A cape seal combines a BST with slurry or micro-surfacing to provide a smooth wearing quiet surface at a lower cost than a full asphalt concrete overlay. (See Figure 45-6K)

Treatment Description: The treatment consists of a BST, followed within a few days by a micro-surfacing treatment to cover the chips and seal them in.

Pavement Conditions Addressed: Longitudinal, transverse, and block cracking; raveling/weathering (loose material must be removed); friction loss; minor roughness; low- to medium-severity bleeding; and moisture infiltration. Adds limited structural capacity. Somewhat effective at sealing medium-severity fatigue cracks in comparison with other treatments.

Application Limitations: Not recommended for pavements with the following conditions: structural deficiency; cracks > 0.25 in (6 mm) wide; medium- to high-severity alligator cracking; many potholes; rutting > 1 in (25 mm) deep; very rough surface. This treatment can also accelerate the development of stripping in susceptible AC pavements.

Construction Considerations: Construction should be done in summer months, and the micro-surfacing should follow the BST by no more than 12 days. Temperature and placement time of year details for chip seals and micro-surfacing apply to the use of this treatment. The existing surface should be cleaned and any areas requiring pavement repairs should be corrected using partial depth repairs prior to application of the BST.

Traffic Considerations: No traffic concerns, since the application of the micro-surfacing removes the hazard of loose chips on high-volume or high-speed roadways.

Special Considerations: The designer should use IDOT's *Special Provision for Preventive Maintenance – Cape Seals* as a basis for use of the treatment and must specify the gradation for the BST on the developed plans. The provision also includes details for extending the construction season of the BST. Special consideration should be given to raised pavement markers and bump grinding prior to treatment placement.

Performance Period: 4 to 7 years.

Relative Cost (\$ to \$\$\$\$): \$\$



Step 1. Surface preparation. Surface must be clean and dry to ensure good bond with the asphalt.



Steps 2 & 3. Binder and aggregate application. The asphalt binder is applied to the surface with a distributor truck. A self-propelled, pneumatic-tired, motorized unit has a hopper on the front where the chips are dumped.



Steps 4 & 5. Rolling and brooming. After the application of the aggregate, the surface is rolled with pneumatic-tired rollers and broomed to remove excess aggregate.



Step 6. Slurry placement. This photo shows the placement of material using a microsurfacing spreader box. This material should be placed within 12 days of the placement of the chip seal.

GENERAL CAPE SEAL CONSTRUCTION STEPS

Figure 45-6K

45-6.03(k) Cold In-Place Recycling (CIR)

CIR is very effective at correcting distresses contained in the top 2 to 4 in (50 to 100 mm) of the pavement surface. Examples include poor friction and roughness, bleeding, raveling, rutting, and poor cross slope. (See Figure 45-6L)

Treatment Description: Cold in-place recycling (CIR) is an in situ process used to recycle the top 2 to 4 in (50 to 100 mm) of an existing asphalt concrete pavement to construct a new asphalt concrete layer. As the name suggests, the recycling process is conducted without the addition of heat. During the CIR process, the reclaimed asphalt pavement (RAP) is sized, mixed with additives (e.g., asphalt binder, emulsion, rejuvenator, and/or virgin aggregate), and relaid. The recycled pavement is then typically resurfaced with a surface treatment or an AC overlay.

Pavement Conditions Addressed: Cracking limited to the surface layers; profile, crown, and cross slope problems; poor ride quality and surface friction; rutting, corrugations, and bumps; raveling; and bleeding.

Application Limitations: CIR is not an appropriate treatment for pavements with major or extensive structural deficiencies (severe alligator cracking and severe structural rutting), or distresses deeper than the CIR depth. CIR may also be difficult to conduct on steep grades, tightly curved roads, or on roads with many utility appurtenances.

Construction Considerations: The CIR process uses a number of pieces of equipment including tanker trucks, milling machines, crushing and screening units, mixers, pavers, and rollers. CIR should not be performed at temperatures below 50 °F (10 °C) or when it is raining. It takes 1 to 2 weeks of good weather for the CIR material to cure.

Traffic Considerations: CIR is most often used on secondary and low volume roads.

Special Considerations: Areas of weak material should be removed and replaced with suitable patching material prior to recycling to reduce the risk of the cold planing machine or other CIR equipment breaking through the pavement.

Performance Period: 5 to 13 years.

Relative Cost (\$ to \$\$\$\$): \$\$\$



Step 1. Pulverization. In a multi-unit train, the pavement material is first milled and placed in a windrow.



Step 2. Mix recycling. Next, the milled material is crushed, sized, mixed with recycling additives.



Step 3. Laydown. Conventional paving equipment is used to place the recycled material.



Steps 4. Rolling. Steel-wheeled rollers are used for final compaction.

GENERAL COLD IN-PLACE RECYCLING CONSTRUCTION STEPS

Figure 45-6L

45-6.03(I) Hot In-Place Recycling (HIR)

HIR is effective at correcting surface distresses that are limited to the top 1 to 2 in (25 to 50 mm). Examples include rutting, corrugations, raveling, flushing, loss of surface friction, minor thermal cracking, and minor load-associated cracking. (See Figure 45-6M)

Treatment Description: A process of correcting asphalt pavement surface distress by softening the existing surface with heat, mechanically loosening the pavement surface, mixing the loosened surface material with recycling agent, aggregate, rejuvenators, or hot-mix asphalt, and relaying the recycled material without removing it from the site. Different HIR processes include: *surface recycling (heater scarification)*, *repaving*, and *remixing*.

Pavement Conditions Addressed: HIR is effective at correcting surface distresses that are limited to the top 1 to 2 in (25 to 50 mm). Examples include rutting, corrugations, raveling, flushing, loss of surface friction, minor thermal cracking, and minor load-associated cracking.

Application Limitations: Good HIR candidates have no structural failures; limited variation in the existing AC mix; no paving fabrics or interlayers in the anticipated treatment depth plus 25 percent; no deep ruts greater than one-half of the anticipated HIR treatment depth; no large stone mixes. The presence of rubber in the surface lift, rubberized seal coats, and some crack fillers require special attention in the mix design process.

Construction Considerations: As the HIR equipment is relatively wide and long, short road sections, particularly in urban settings, are not suitable for HIR treatment. HIR should not be performed at temperatures below 50 °F (10 °C) or when it is raining.

Traffic Considerations: HIR is appropriate for Very Low to High traffic conditions. *The heater-scarification* process should be used only for low volume traffic. The *remixing* and *repaving* processes can be used on high traffic volume roads.

Special Considerations: Crack sealant should be removed prior to the HIR operation to reduce flash fires or excessive blue smoke from the treatment placement.

Performance Period: 6 to 15 years.

Relative Cost (\$ to \$\$\$\$): \$\$\$



Step 1. Heating the surface. The surface is heated to soften the existing material.



Step 2. Surface scarification. The surface is loosened with scarifying teeth.



Step 3. Addition of Rejuvenator. A rejuvenating agent is sprayed onto the loosened material and mixed.



Step 4. Laydown. Mixed material is placed with conventional equipment.



Step 5. Rolling. Steel-wheeled rollers are used to compact the final surface.

GENERAL HOT IN-PLACE RECYCLING CONSTRUCTION STEPS

Figure 45-6M

45-6.03(m) Thin HMA Overlay

The combination of cold milling and the application of a thin HMA overlay is a viable option for improving rideability and surface friction, reducing hydroplaning and tire splash (using an open graded friction course), and improving the profile, crown, and cross slope. (See Figure 45-6N)

Treatment Description: Plant-mixed combinations of asphalt cement and aggregate applied to the pavement in thicknesses between about 0.75 and 1.50 in (19 and 38 mm). Dense-graded, open-graded, and stone matrix mixes are all used. The SMART program (Surface Maintenance At the Right Time) consists of placing a 1.5 inch (38 mm) single-pass overlay on a previously resurfaced pavement that is not in need of significant repair and is in good condition. If the SMART overlay is applied at the correct time, it can delay serious distresses, extend the life of the pavement, and decrease the overall cost. A Half-SMART overlay is another treatment option, which consists of 0.75 in (19 mm) HMA level binder with a BST on top.

Pavement Conditions Addressed: Low-severity cracking; raveling/weathering (loose material must be removed); friction loss; roughness; low-severity bleeding; low-severity block cracking (may perform better with additional milling). Thin overlays may also be used to correct rutting (requires use of separate rut-fill application).

Application Limitations: Thin HMA overlays are not recommended where there are structural failures (e.g., fatigue cracking), extensive pavement deterioration, or if there is high-severity thermal cracking. Surface should be uniform to ensure uniform compaction.

Construction Considerations: Surface must be clean. A tack coat prior to overlay placement will help improve the bond to the existing surface. Thin HMA overlays dissipate heat rapidly and, therefore, depend upon minimum specified mix placement temperatures and timely compaction.

Traffic Considerations: Performance is not affected by different ADT or percent trucks. Thin AC overlays are not structural layers and as such should not be subjected to strain from loadings. Such layers may be subject to top-down cracking under certain combinations of loadings, environmental conditions, and pavement structures.

Special Considerations: The minimum lift thickness information provided in Figure 37-1A of the BLRS Manual should be followed when using a thin overlay as a treatment. Localized distressed areas should be repaired prior to the placement of the overlay. If milling is not used in conjunction with the thin HMA overlay, special consideration should be given to bump grinding prior to treatment placement.

Performance Period: 5 to 10 years depending upon thickness.

Relative Cost (\$ to \$\$\$\$): \$\$\$



Step 1. Pre-overlay repair & surface preparation. Localized areas of distress are repaired prior to overlay placement and milling may be used.



Step 2. Tack coat. A tack coat is used to promote bonding between the overlay and the existing pavement.



Step 3. AC Overlay. Material is placed with conventional equipment.



Step 4. Compaction. Steel-wheeled rollers are used to compact the overlay.

GENERAL THIN HMA OVERLAY CONSTRUCTION STEPS

Figure 45-6N

45-6.03(n) Ultra-Thin Bonded Wearing Courses

An ultra-thin bonded wearing course is an alternative to BST, micro-surfacing, or thin HMA overlays as it effectively addresses minor surface distresses and increases surface friction. (See Figure 45-6O)

Treatment Description: The treatment is formed in one pass with the application of a heavy, polymer-modified asphalt emulsion tack coat and a gap-graded, polymer-modified 0.4 to 0.8 in (10 to 20 mm) HMA layer.

Pavement Conditions Addressed: Low-severity cracking (high-severity can be addressed with cold milling); raveling/weathering (loose material must be removed); high-severity friction loss; low-severity roughness; and low-severity bleeding. Provides some increased capacity and retards fatigue cracking but is not suited for rutted pavements.

Application Limitations: Ultra-thin bonded wearing courses are not recommended when structural failures exist (e.g., significant fatigue cracking and deep rutting) or if there is high-severity thermal cracking. They also are not appropriate where there is extensive pavement deterioration or little remaining life.

Construction Considerations: Requires special paving equipment to place the mix. Localized structural problems should be repaired prior to overlay application.

Traffic Considerations: Capable of withstanding high ADT volumes and truck traffic better than other thin treatments.

Special Considerations: Special consideration should be given to bump grinding prior to treatment placement.

Performance Period: 7 to 12 years.

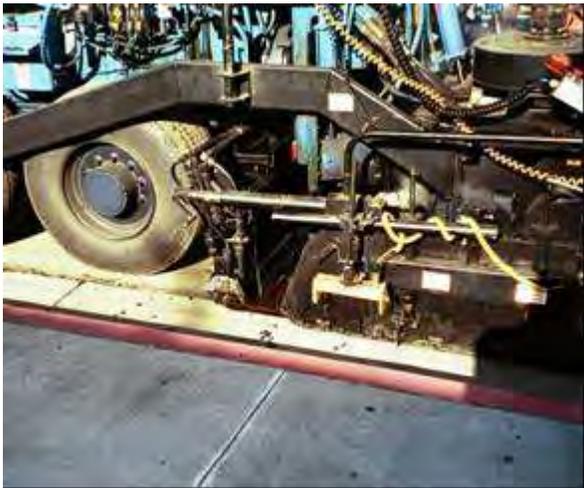
Relative Cost (\$ to \$\$\$\$): \$\$\$



Step 1. Pre-overlay repair & surface preparation. Localized areas of distress are repaired prior to overlay placement.



Step 2. Milling. If necessary, milling is used to remove distress and promote bonding with the existing surface.



Step 3. Tack coat and overlay placement. Special equipment is used to apply the polymer modified emulsion and AC overlay in one pass.



Step 4. Rolling. Steel-wheeled rollers are used to compact the overlay.

GENERAL ULTRA-THIN FRICTION COURSES CONSTRUCTION STEPS

Figure 45-60

45-6.03(o) Ultra-Thin Whitetopping (UTW)

Ultra-thin whitetopping is very effective at correcting many surface-related distresses. (See Figure 45-6P)

Treatment Description: UTW is a thin portland cement concrete (PCC) layer that is applied over an existing AC pavement. UTW is primarily characterized by its very thin slabs (2 to 4 in. [50 to 100 mm]) and short joint spacing (2 to 6 ft [0.6 to 1.8 m]). The UTW layer is bonded to the existing AC to increase load-carrying capacity.

Pavement Conditions Addressed: UTW is very effective at addressing many surface-related distresses such as rutting, washboarding, raveling, roughness, poor friction, shoving, and potholes.

Application Limitations: The existing AC must not be excessively deteriorated and must still have some load-carrying capacity. Severely deteriorated AC pavements with significant structural deterioration, inadequate base/subbase support, poor drainage conditions, or stripping of the AC layers are not candidates for UTW overlays).

Construction Considerations: Because milling is performed prior to the UTW placement, vertical overhead clearances, matching of adjacent shoulder/traffic lane elevations, and the maintenance of curb reveals is generally not a problem; however, this should be verified during the design process. Construction considerations are similar to those associated with traditional PCC paving.

Traffic Considerations: UTW performs well in all traffic conditions.

Special Considerations: This treatment is highly effective at correcting the noted distresses but is also significantly more expensive than other preventive maintenance treatments for AC pavements.

Performance Period: 5 to 15 years.

Relative Cost (\$ to \$\$\$\$): \$\$\$\$



Step 1 & 2. Pre-overlay repair & milling and cleaning. Localized areas of distress are repaired prior to overlay placement. The surface is milled to remove rutting and restore profile prior to PCC placement.



Step 3. PCC placement. PCC is placed using conventional methods.



Step 4. Finishing & texturing. The PCC is finished and textured using conventional methods.



Step 5. Joint sawing & curing. Timely joint sawing is required to establish the contraction joints in the PCC pavement. Curing is important for UTW overlays due to the high surface-area-to-volume ratio.

ULTRA-THIN WHITETOPPING GENERAL CONSTRUCTION STEPS

Figure 45-6P

45-6.03(p) Cold Milling

Cold milling is effective at removing distresses in the top of the pavement, providing a smoother surface by removing vertical deformations, and improving surface friction. (See Figure 45-6Q)

Treatment Description: Cold milling involves the removal of part or all of an existing asphalt concrete surface. This treatment is frequently used to prepare an asphalt surface for an asphalt concrete overlay. It is not generally suggested as a stand alone treatment.

Pavement Conditions Addressed: Adds no structural benefit, but removes surface cracking and roughness, and restores friction. It can also be used to restore proper grades and cross-slopes on existing pavement.

Application Limitations: This treatment is not recommended for structurally deficient pavements.

Construction Considerations: The following are keys to obtaining a quality milled surface:

- Use a good working milling machine with a 12-ft (3.7-m) recommended width
- Control milling speed to achieve a smooth uniform surface (30 ft/min [9.14 m/min] or slower for deep cuts)
- Use a 30-ft (9.1-m) ski to control grade and a stringline for longitudinal guidance
- Perform pavement patching prior to milling
- Remove pavement castings and cover holes prior to milling
- Adjust casting after milling to meet final surface elevation
- If this treatment is used as a stand alone treatment, a fine-toothed milling drum is needed to improve the smoothness and safety of the milled surface

Traffic Considerations: Cold milling can be used at all traffic levels.

Special Considerations: While not generally suggested as a stand alone treatment if the district bureaus review and agree upon the implementation plan, cold milling without applying another treatment to the milled surface may be considered. In order for the milled surface to be used as stand alone treatment, the pavement must be structurally sound with at least 3 inches of the existing asphalt concrete remaining in place and the removed material must be equal to an existing lift (at least 1 to 1.5 in [25 to 38 mm] of binder course remains). Also, the existing mixture must have a high fines content and low air voids content to avoid raveling.

Performance Period: Remaining life of the pavement (doesn't extend life).

Relative Cost (\$ to \$\$\$\$): \$



Step 1. Prepare surface. Patching should be completed before milling. All other in-pavement fixtures (e.g., manholes) need to be protected prior to cold milling.



Step 2. Milling. Milling is used to remove distresses such as segregation, rutting, raveling, or block cracking.

COLD MILLING GENERAL CONSTRUCTION STEPS

Figure 45-6Q

45-6.04 Rigid Pavement Treatment Summaries

45-6.04(a) Crack Sealing

Crack sealing is effective at reducing or delaying moisture damage, as well as crack deterioration and associated roughness. However, roughness can also be increased as a result of the sealing process itself, particularly if placed in an overband configuration. (See Figure 45-6R)

Treatment Description: Crack sealing is an operation involving thorough crack preparation and placement of high-quality materials into or over candidate cracks to significantly reduce moisture infiltration and to retard the rate of crack deterioration. Sealed cracks in PCC pavements deteriorate less and contribute less to the overall deterioration of the pavement. PCC cracks are typically sealed with thermosetting bituminous materials.

Pavement Conditions Addressed: Crack sealing is effective at sealing low- or medium-severity transverse or longitudinal cracks where the crack width is ≤ 0.5 in (13 mm). Full-depth working transverse cracks typically experience the same range of movement as transverse joints; therefore, it is recommended that these cracks be sealed to reduce water and incompressible infiltration.

Application Limitations: Crack sealing is most effective when performed on PCC pavements that exhibit minimal structural deterioration and in which the cracks are not showing other significant distress such as faulting or spalling.

Construction Considerations: Sealant performance is dependent on many construction factors, including material type and placement geometry, and application in a clean and dry substrate.

Traffic Considerations: Performance is not significantly affected by varying ADT or truck levels but should be allowed to cure before opening to traffic. However, improper installation can permit the sealant to fail.

Special Considerations: Crack sealing may have negative effects. Undesirable visual impacts may occur, which include tracking of sealing material by tire action, obscuring lane markings, and adversely affecting skid resistance. Crack sealing may result in a rougher pavement surface when the sealant material is forced out of the cracks during warm months.

Performance Period: 4 to 8 years.

Relative Cost (\$ to \$\$\$\$): \$



Step 1. Crack refacing. Small crack saws are used to reface cracks and create a reservoir for the sealant.



Step 2. Cleaning. Cracks must be clean and dry to enhance sealant bonding.



Step 3. Backer rod installation. Backer rod can be used to control the depth of the sealant in the crack.



Step 4. Application of sealant. The last step is to place the sealant in the refaced crack per governing specifications.

CRACK SEALING

Figure 45-6R

45-6.04(b) Joint Resealing

Joint resealing helps keep moisture out of the pavement layers and incompressibles out of joints, which reduces faulting, pumping, and spalling. (See Figure 45-6S)

Treatment Description: Resealing transverse joints in PCC pavements is intended to minimize the infiltration of surface water into the underlying pavement structure and to prevent the intrusion of incompressibles into the joint. A range of materials from bituminous to silicone are used in various configurations.

Pavement Conditions Addressed: Joint resealing is effective at keeping moisture out of the pavement layers, and incompressibles out of joints, which can result in less faulting, pumping, and spalling.

Application Limitations: Joint resealing is most effective when performed on PCC pavements that exhibit minimal structural deterioration. Material selection should be based on the expected time until next treatment.

Construction Considerations: Sealant performance is dependent on many construction factors, including material type and placement geometry, and application in a clean and dry substrate.

Traffic Considerations: Performance is not affected by different ADT or percent trucks. Silicone sealants which are not properly recessed are more likely to fail in the wheelpath.

Special Considerations: Joint resealing is necessary when the existing sealant has deteriorated to the point that it readily allows water and incompressibles to enter the joint. The primary cause of sealant failure is improper installation (e.g., not preparing joint sidewalls and getting bonding).

Performance Period: 4 to 8 years for hot-poured asphalt sealant; ~8 years for silicone sealant.

Relative Cost (\$ to \$\$\$\$): \$



Steps 1 & 2. Sealant removal & joint refacing. This photo shows the removal of existing sealant. Joints are refaced to create a uniform reservoir for the sealant.



Step 2. Cleaning. Joints must be clean and dry to enhance sealant bonding.



Step 3. Backer rod installation. Backer rod can be used to control the depth of the sealant in the joint.



Step 4. Application of sealant. The last step is to place the sealant in the refaced joint per governing specifications.

JOINT RESEALING GENERAL JOINT RESEALING STEPS

Figure 45-6S

45-6.04(c) Diamond Grinding

Diamond grinding is effective at removing joint faulting and other surface irregularities to restore a smooth-riding surface and increase pavement surface friction. (See Figure 45-6T)

Treatment Description: Diamond grinding is the removal of a thin layer of concrete (generally up to about 0.25 in [6.4 mm]) from the surface of the pavement, using special equipment outfitted with a series of closely spaced, diamond saw blades.

Pavement Conditions Addressed: Diamond grinding is used to remove joint faulting and other surface irregularities to restore a smooth-riding surface and increase pavement surface friction.

Application Limitations: If significant faulting is present, or other signs of structural failure (such as mid-panel cracks or corner breaks), diamond grinding is not appropriate. The presence of materials-related distresses may also preclude the use of diamond grinding. Soft aggregate will wear much quicker and require more frequent grinding.

Construction Considerations: Typically constructed with a moving lane closure with traffic operating in the adjacent lanes. Diamond grinding should be used in conjunction with all restoration techniques including load-transfer restoration, full- and partial depth repair, cross stitching, and subsealing/undersealing.

Traffic Considerations: Grinding may be used to remove faulting, which if the mechanism is not addressed can reoccur due to the continued application of truck traffic. If used to restore friction to a polished pavement (due to vehicle traffic), heavy volumes of traffic may cause the problem to reoccur.

Special Considerations: Note that diamond grinding is a surface repair method because it corrects the existing faulting and wear of PCC pavements. It does nothing to correct pavement distress mechanisms. Therefore, grinding usually is performed in combination with other rehabilitation methods to both repair certain pavement distresses and prevent their recurrence.

Performance Period: 8 to 15 years.

Relative Cost (\$ to \$\$\$\$): \$\$



Diamond grinding process. Multiple passes of the grinding equipment are used to remove material from the pavement surface.



Diamond grinding depth. Generally up to about 0.25 in. (6.4 mm) of the surface is removed in a single pass.

DIAMOND GRINDING CONSTRUCTION

Figure 45-6T

45-6.04(d) Diamond Grooving

Diamond grooving is effective at increasing wet-pavement friction and reducing splash and spray in identified problem areas. (See Figure 45-6U)

Treatment Description: Diamond grooving is the process of cutting narrow, discrete grooves in the PCC surface to reduce hydroplaning and wet-pavement crashes in localized areas. Grooving can be performed in both the longitudinal and transverse directions, but is more commonly performed longitudinally.

Pavement Conditions Addressed: Grooving is conducted to increase wet-pavement friction and reduce splash and spray. Diamond grooving is conducted in localized areas of a project where wet-pavement crashes have historically been a problem (e.g., curves and intersections).

Application Limitations: In general, candidate pavements for grooving should be structurally and functionally sound.

Construction Considerations: Areas to be grooved should be clearly indicated on project plans. The grooves should be cut in accordance with recommendations of the International Grinding and Grooving Association (IGGA), which specify 0.75 in (19mm) spacing with 0.125 in (3mm) depth and width. The entire lane area should be grooved; however, allowance should be made for small areas that were not grooved because of pavement surface irregularities. Grooving is most commonly performed longitudinally due to ease of construction.

Traffic Considerations: Performance is not affected by varying ADT or truck levels.

Performance Period: Information on performance is not readily available; however, lives are expected to be greater than the 8 to 15 years.

Relative Cost (\$ to \$\$\$\$): \$\$

**DIAMOND GROOVING GENERAL CONSTRUCTION STEPS****Figure 45-6U**

45-6.04(e) Full-Depth Repairs

Full-depth repairs are effective at correcting slab distress that extend beyond one-third the pavement depth such as longitudinal and transverse cracking, corner breaks, and joint spalling. (See Figure 45-6V)

Treatment Description: Full-depth repairs are cast-in-place concrete repairs that extend through the full thickness of the existing PCC slab. The technique involves the full-depth removal and replacement of full or half lane-width areas of an existing deteriorated PCC pavement. The minimum specified repair length is typically 6 ft (1.8 m); however, for jointed PCC pavements, in many cases it may be more cost effective and reliable to replace an entire slab.

Pavement Conditions Addressed: Full-depth repairs are used to repair localized distresses and to prepare distressed PCC pavements for a structural overlay to avoid premature failure of the overlay.

Application Limitations: Full-depth repairs are not cost effective if deterioration is widespread within a project. If the existing pavement is structurally deficient, or is nearing the end of its fatigue life, a structural enhancement (such as an overlay) is needed to prevent continued cracking of the original pavement.

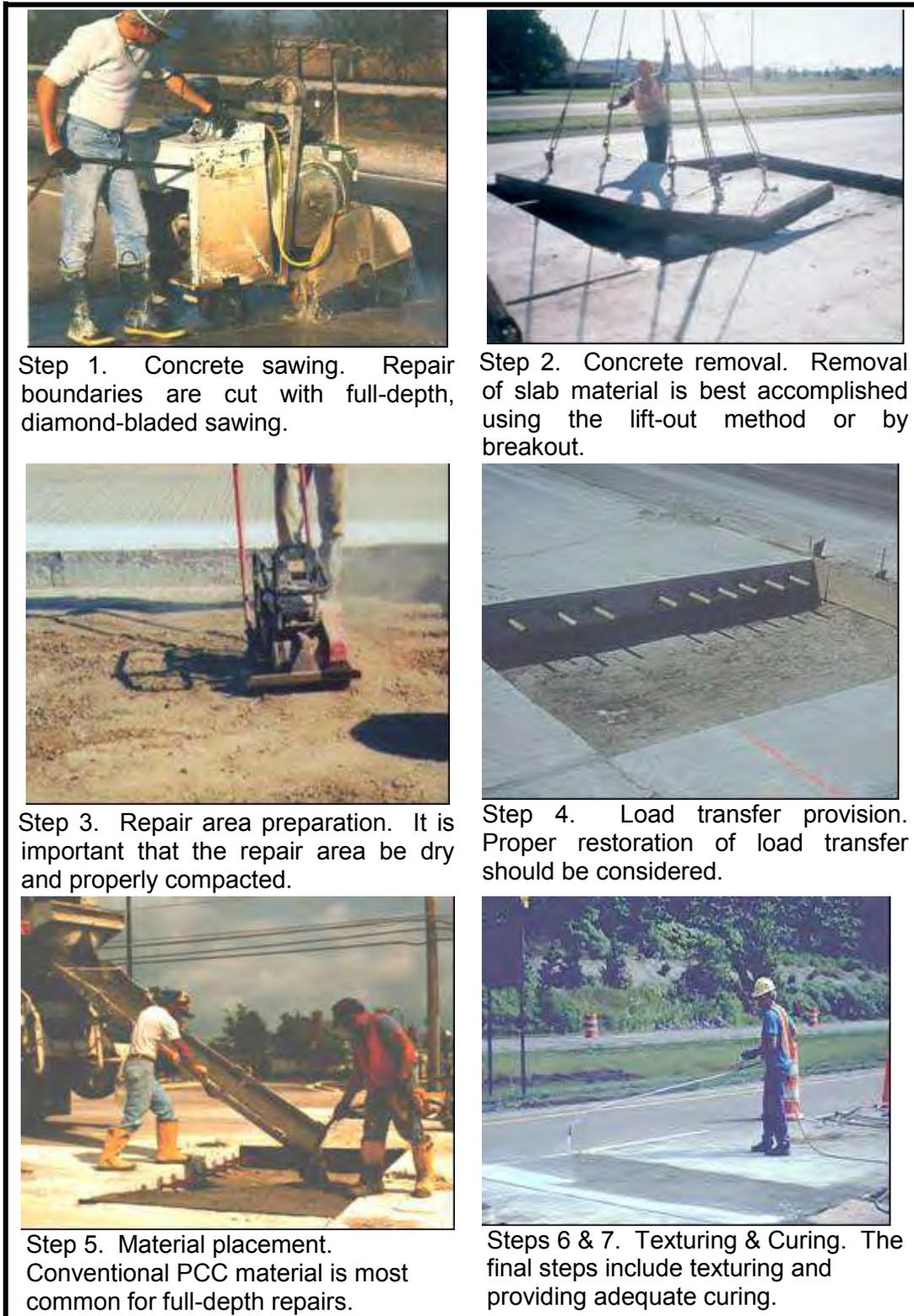
Construction Considerations: During construction, it is very important to properly prepare the base, restore joint load-transfer, and finish, texture, and cure the new material per governing specifications.

Traffic Considerations: Because full-depth repairs have typically been completed using conventional PCC materials, curing time may be an issue in urban areas. High early strength concretes are used in cases where it is not desirable to close a lane overnight.

Special Considerations: It is not desirable to create the large number of closely spaced joints in a pavement that would result from placing a large number of closely spaced patches.

Performance Period: 10 to 15 years.

Relative Cost (\$ to \$\$\$\$): \$\$\$\$



FULL-DEPTH REPAIRS

Figure 45-6V

45-6.04(f) Partial-Depth Repairs

Partial-depth repairs are primarily used to correct joint spalling. They can also be used to correct localized areas of distress that are limited to the upper 1/3 of the slab thickness. (See Figure 45-6W)

Treatment Description: Partial-depth repairs are defined as the removal of small, shallow areas of deteriorated PCC that are then replaced with a suitable repair material. These repairs restore structural integrity and improve ride quality, thereby extending the service life of pavements that have spalled or distressed joints.

Pavement Conditions Addressed: Partial-depth repairs are primarily used to correct joint spalling caused by 1) the intrusion of incompressible materials into the joints, 2) localized areas of scaling, weak concrete, clay balls, or high steel, and 3) the use of joint inserts.

Application Limitations: This treatment is not applicable for pavements with cracking and joint spalling caused by compressive stress buildup in long-jointed pavements; spalling caused by dowel bar misalignment or lockup; cracking caused by improper joint construction techniques (late sawing, inadequate saw cut depth, or inadequate insert placement depth); working cracks caused by shrinkage, fatigue, or foundation movement; and spalls caused by D-cracking or reactive aggregate.

Construction Considerations: During construction, it is very important to properly determine repair boundaries, prepare the patch area, and finish, texture, and cure the new material per governing specifications. If distress is found to extend below the upper 1/3 of the slab, or if steel is exposed, a full-depth repair is required.

Traffic Considerations: Partial-depth repairs perform under all traffic conditions. High early strength concretes are used in cases in which early opening to traffic is required or when it is not desirable to close a lane overnight.

Special Considerations: Partial-depth patches should be a minimum of 4 in (10 cm) by 12 in (30 m).

Performance Period: 5 to 15 years.

Relative Cost (\$ to \$\$\$\$): \$\$\$



Step 1. Repair boundary marking. Determine extent of unsound material, and mark repair boundaries.



Step 2. Concrete removal. Sawing the boundaries and removing deteriorated PCC.



Step 3. Repair area preparation. The repair area should be sandblasted and cleaned to promote good bonding.



Step 4. Joint preparation. It is important to maintain the existing joint reservoir during construction.



Steps 5 & 6. Bonding agent & material placement. Follow manufacturer's recommendations when placing material.



Steps 7 & 8. Curing & joint sealing. The final steps include texturing and providing adequate curing.

PARTIAL-DEPTH REPAIRS

Figure 45-6W

45-6.04(g) Load Transfer Restoration (LTR)

LTR is effective at restoring load transfer at joints and/or transverse cracks on pavements that have significant remaining structural life. (See Figure 45-6X)

Treatment Description: Load transfer restoration (LTR) is the placement of load transfer devices across joints or cracks in an existing jointed PCC pavement to restore load transfer at these locations. Poor load transfer can lead to pumping, joint faulting, and corner breaks.

Pavement Conditions Addressed: Most effective on jointed concrete pavements that have poor load transfer at joints and/or transverse cracks but also have significant remaining structural life. The optimum time to apply this technique is when the pavement is just beginning to show signs of structural distress, such as pumping and the onset of faulting.

Application Limitations: LTR is not applicable when the pavement contains significant faulting, or other signs of structural failure (such as pumping or corner breaks). Pavements with little remaining life or materials-related distresses are also not good candidates.

Construction Considerations: There are different dowel bar retrofit patterns, but three to four bars per wheelpath is typical. Careful consideration must be given in the selection of the patch material and isolation of the joint. Often performed in conjunction with diamond grinding.

Traffic Considerations: The higher the ADT and percent trucks, the greater the potential need for LTR. Low-volume jointed concrete pavements that are not doweled may not need LTR.

Performance Period: A minimum expected life is typically 10 to 15 years; however, many load-transfer restoration projects have been in place for more than 20 years with little or no signs of distress.

Relative Cost (\$ to \$\$\$): \$\$\$



Step 1 & 2. Slot creation and material removal. Slots are cut and concrete material is removed.



Step 3 & 4. Sandblasting and cleaning. Slots are sandblasted and cleaned in preparation for dowel bars.



Step 5. Caulking the joint/crack. The joint/crack edges are caulked to stop the flow of material from the slot.



Step 6. Dowel bar placement. Dowels are placed parallel to the direction of traffic and at mid-slab.



Step 7. Repair material placement. Material should be placed per governing specifications.



Steps 8 & 9. Diamond grinding & joint sealing. Final steps often consist of diamond grinding and joint sealing.

LOAD TRANSFER RESTORATION GENERAL CONSTRUCTION STEPS

Figure 45-6X

Cross Stitching

Cross stitching is effective at strengthening non-working longitudinal cracks. Preventing these crack movements helps prevent roughness and potential safety problems associated with such cracks. (See Figure 45-6Y)

Treatment Description: Cross stitching is a longitudinal crack and joint repair technique that consists of grouting tiebars in holes drilled across non-working longitudinal cracks/joints at an angle to the pavement surface. Cross stitching prevents horizontal and vertical crack movements.

Pavement Conditions Addressed: Cross stitching is effective at strengthening longitudinal cracks and preventing slab migration, mitigating the issue of tiebars being omitted from longitudinal contraction joints, tying roadway lanes or shoulders that are separating and causing a maintenance problem, and tying centerlane joints that are starting to fault.

Application Limitations: Cross stitching is not an appropriate treatment for slabs that have multiple cracks or are shattered into more than 4 to 5 pieces.

Construction Considerations: Holes should be drilled to intersect the slab/joint at mid-depth. Follow the American Concrete Pavement Association (ACPA) construction recommendations.

Traffic Considerations: Performance is not significantly affected by varying ADT or truck levels.

Special Considerations: The treatment is not recommended on transverse cracks.

Performance Period: 15 years.

Relative Cost (\$ to \$\$\$\$): \$\$\$



Step 1. Drilling of holes. Drill holes at a 35° to 45° angle to the surface so they intersect the crack/joint at mid-depth.



Step 2. Epoxy grout insertion. Clean holes with compressed air, and then insert epoxy to promote bonding.



Step 3. Bar insertion. Drive bars into holes containing epoxy.



Step 4. Final grouting. Remove excess material and finish surface of epoxy so that it is flush with the pavement surface.

CROSS STITCHING GENERAL CONSTRUCTION STEPS

Figure 45-6Y

45-6.04(h) Pavement Subsealing/Undersealing

Undersealing fills voids under slabs, thereby reducing deflections and minimizing the development of pumping, corner breaks, faulting, and roughness associated with those distresses. (See Figure 45-6Z)

Treatment Description: Undersealing is the pressure insertion of a flowable material beneath a PCC slab to fill voids between the slab and base, thereby reducing deflections and, consequently, deflection-related distresses such as pumping or faulting. It is most often performed at areas where pumping and loss of support occur, such as beneath transverse joints and deteriorated cracks. The voids being filled by this technique are generally less than 0.12 in (3 mm) thick.

Pavement Conditions Addressed: Undersealing fills voids that, if left unfilled, will lead to pumping, faulting, and other structural deterioration. This treatment performs best if performed before faulting starts to develop.

Application Limitations: Undersealing is not appropriate on pavements with significant faulting, or other signs of structural failure (such as pumping, mid-panel cracking, or corner breaks). Such distresses suggest structural failures that require more costly rehabilitation. Additional strategies, such as dowel bar retrofitting, may be required for pavements without load transfer.

Construction Considerations: Cement-fly ash grout is the most commonly used material, although asphalt and polyurethane also have been used. Slab lift must be closely monitored to avoid damaging slabs. Overfilling voids can contribute to more severe problems than leaving them unfilled.

Traffic Considerations: Performance is not known to be affected by different levels of ADT or percent trucks.

Special Considerations: Pumping (indicated by the presence of holes, depressions, and/or ejected material) is almost certain evidence of voids. If areas do not exhibit physical evidence of voids but are suspect, request nondestructive testing assistance from the Bureau of Materials and Physical Research. Pavement sections that contain voids often occur only on a portion of a project. Blanket subsealing rarely is justified. If subsealing is used on any portion of a project, bridge approaches within the project limits also should be subsealed. The use of this method requires Bureau of Design and Environment approval.

Performance Period: Performance has been variable.

Relative Cost (\$ to \$\$\$): \$\$



Step 1. Locating voids. Many methods are used to locate voids, including FWD testing (shown here).



Step 2. Drilling injection holes. Holes are drilled in a selected pattern at void locations. The drill should be connected to a compressor but it is not in this photo.



Step 3. Injection of material. This photo shows an "expandable grout packer" used to inject cement grout material. Slab lift must be closely monitored during this process to avoid slab damage.



Step 4. Plugging holes. The next step is to plug each of the holes to keep grout material from flowing out through the holes. Then the plugs are removed after the grout is set and the holes are filled with mortar, and the pavement is cleaned prior to opening the road to traffic.

UNDERSEALING GENERAL CONSTRUCTION STEPS

Figure 45-6Z

45-6.05 Drainage Preservation

45-6.05(a) Drainage Preservation

Improvement of subsurface drainage characteristics for pavement systems that show water-related damage or distresses can significantly increase the serviceability and life of the pavement. (See Figure 45-AA)

Treatment Description: The improvement of subsurface drainage characteristics through the use of 1) ditch maintenance to prevent obstructed flow and provide proper cross section, 2) maintenance of existing drainage systems, or 3) the installation of localized drainage, specifically in low-lying areas.

Pavement Conditions Addressed: Stripping and structural distresses (such as fatigue cracking and rutting) related to loss of support under the bound layers.

Application Limitations: Use of drainage preservation will not restore structurally inadequate pavements or repair existing distresses, but should reduce worsening or appearance of new distresses. The installation of new drainage is only helpful if the existing pavement has a horizontally drainable layer. Otherwise, only the water between the shoulder and the pavement will be removed, instead of removing the water between the base and the bound layers.

Construction Considerations: Underdrain installation should occur prior to patching, unless there is a valid reason to do otherwise.

Traffic Considerations: Since the use of drainage preservation will improve the base and subgrade engineering properties, the treatment might help improve the load-carrying capacity of the pavement.

Special Considerations: Drainage preservation is a very worthwhile preservation activity. However, the conduct of ditch maintenance is often considered routine maintenance instead of preventive maintenance. Special justification for the use of federal funds for ditch maintenance is necessary including District and Central BLRS approval.

Performance Period: Varies.

Relative Cost (\$ to \$\$\$\$): Varies



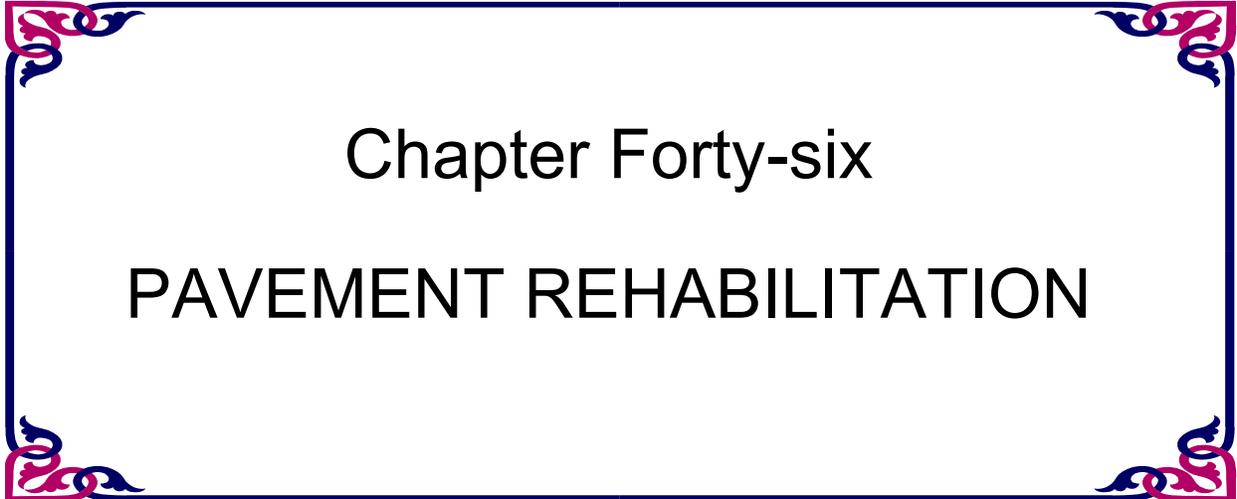
Drainage Preservation. This photo shows an example of a ditch with obstructed flow.

DRAINAGE PRESERVATION GENERAL CONSTRUCTION STEPS

Figure 45-6AA

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Chapter Forty-six
PAVEMENT REHABILITATION

BUREAU OF LOCAL ROADS AND STREETS MANUAL

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Chapter Forty-Six
PAVEMENT REHABILITATION

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Chapter Forty-six PAVEMENT REHABILITATION

46-1 GENERAL

46-1.01 Pavement Rehabilitation Definitions

See Section 44-1.01 of this manual

46-1.02 Minimum HMA Lift Thickness

All Hot Mix Asphalt (HMA) surface, binder, and leveling binder lifts must comply with the lift thicknesses in Figure 44-1A.

46-1.03 Skid Resistance on HMA Surface Courses

See Section 44-1.03 of this manual.

46-1.04 Density Testing on HMA Pavements

See Section 44-1.04 of this manual.

46-1.05 Selection of Rehabilitation Technique

The most important part of rehabilitation process is the proper selection of technique or techniques process to be used. Designers should consider the following criteria when selecting the appropriate rehabilitation technique:

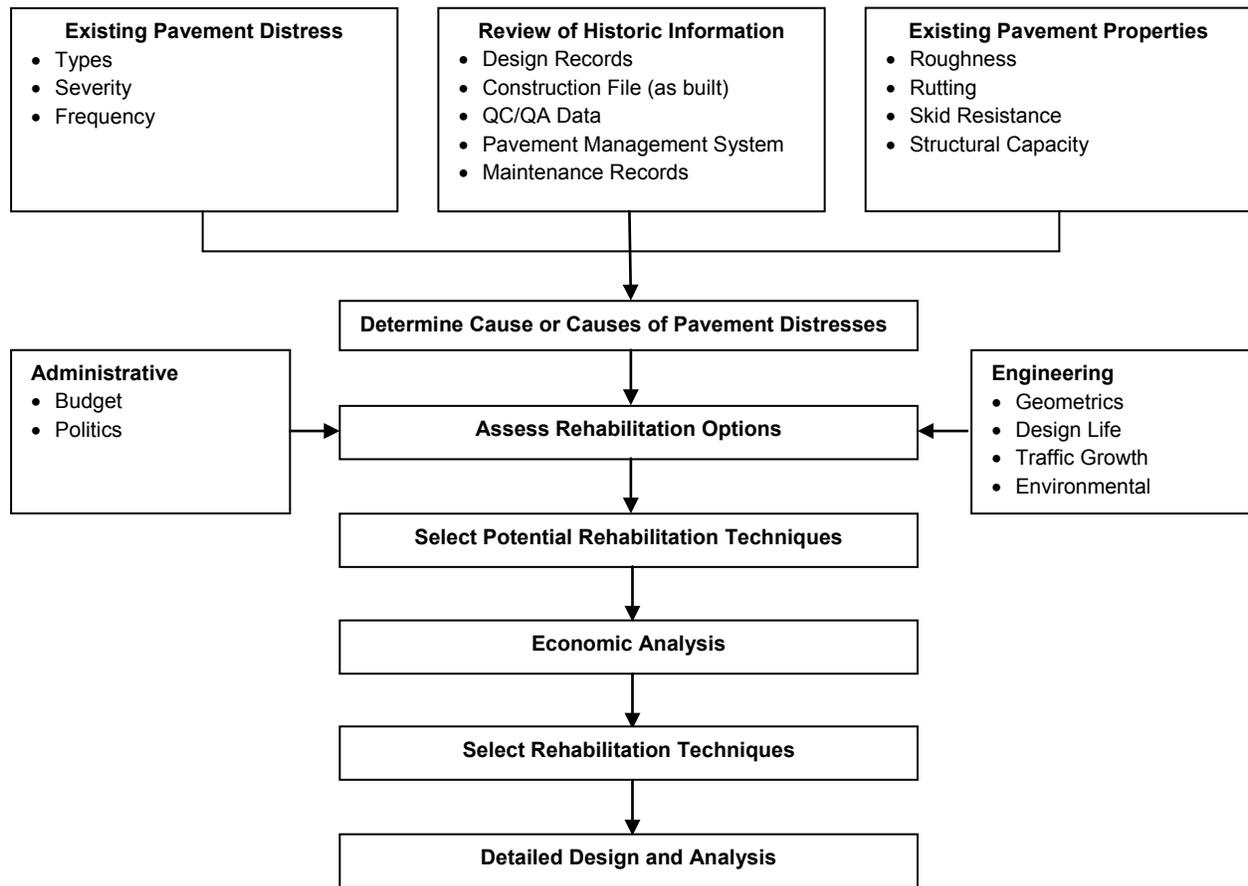
- Pavement Condition
- Construction and Maintenance Records
- Structural Capacity
- Existing Materials In-Place
- Identify Cause of Distresses
- Highway Geometrics
- Economic Analysis

Factors such as design traffic, pavement cross section, in situ materials and climate should be investigated using historic information and pavement assessments. A detailed review of construction/maintenance history and pavement management system will assist in determining:

- Age, type, and thickness of various layers
- Quality of construction material

- Subgrade Stability
- Pavement condition and remaining service life
- Type, severity, and frequency of pavement distresses
- Location and type of patches

If construction records are not available or complete, the designer should consider pulling cores to determine layer thicknesses and test subgrade. The designer should select the most cost effective process.



REHABILITATION TECHNIQUE SELECTION PROCESS

Figure 46-1A

46-1.06 Accessibility Requirement

The rehabilitation policies contained in this chapter are considered alterations for compliance with the Americans with Disabilities Act. Cross walks shall be addressed and work shall be extended beyond the face of curb to install new curb ramps or upgrade existing curb ramps.

46-2 HMA OVERLAYS

46-2.01 Introduction

HMA overlays are used to correct functional and structural deficiencies. Existing pavement conditions and estimates of future traffic dictate the thicknesses of these overlays.

Functional deficiency arises from any conditions that adversely affect the highway user. These include poor surface friction and texture, hydroplaning and splash from wheel path rutting, and excessive weathering, raveling, and block cracking.

Structural deficiency arises from any conditions that adversely affect the load-carrying capability of the pavement structure. These include inadequate thickness, loss of base or subgrade support, and moisture damage. It should be noted that several types of distress (e.g., distresses caused by poor construction techniques, low temperature cracking, base failure) are not initially caused by traffic loads but do become more severe under traffic to the point that they also detract from the load-carrying capability of the pavement.

It is important that the designer consider the type of deterioration present when determining whether the pavement has functional or structural deficiencies. For pavements with adequate existing structure, the overlay thickness is the thickness needed to correct the functional problem. Pavements that are structurally deficient require an overlay designed to upgrade the structural capacity.

46-2.02 Evaluation of Structures Being Resurfaced

All structures greater than 20.0 feet (6.1 m) in length within the limits of a resurfacing project that are not gapped should be evaluated for structural adequacy with the proposed resurfacing. This includes structures with zero increase in surfacing depth, such as those involving removal of surfacing with replacement with of equal thickness. These structures should be evaluated for structural adequacy and submitted to the Bureau of Bridges and Structures (BBS) for approval during the preliminary design phase. All structure condition ratings of these structures must be a "5" or greater. For such structures that are not being gapped, a Form BLR 10220 "Asbestos Determination Certification" will be required. The BBS will evaluate the adequacy of the structure, and record the status of the asbestos Form BLR 10220, before approval.

46-2.03 Reflective Crack Control

On pavements where existing cracks may propagate as reflective cracks, a reflective crack control treatment should be performed prior to the application of the HMA overlay. Such treatment should incorporate approved materials and follow recommended construction practices. Figure 46-2A summarizes the use of reflective crack control treatments.

46-2.03(a) Materials

The following materials have been developed for the control of reflective cracking in HMA overlays. Complete specifications are included in the *Standard Specifications for Road and Bridge Construction*.

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1. System A: Non-woven polypropylene or other approved plastic reinforcing fabric.
2. System B: High strength fabric embedded in a layer of self-adhesive plasticized bitumen.
3. System C: Asphalt rubber membrane interlayer.
4. System D: Composite three layer stress relief membrane.

46-2.03(b) Applications

Reflective crack control treatments are classified into two types of applications. Complete specifications are included the *Standard Specifications for Road and Bridge Construction*.

1. Strip Treatment – Suitable for use on rigid or flexible bases and should be considered for all projects that involve resurfacing of proposed or existing widening joints or where longitudinal reflective cracks would conflict with final traffic control markings thus causing confusion to the motorist. The pavement/ paved shoulder joint should only be considered if tied with an effective load-transfer device.
2. Area Treatment – Suitable for use only on flexible bases. System B or D should not be used for area reflective crack control treatment.

Type of Treatment	Flexible Base	Rigid Base
Strip	System A, B, C or D	System A, B, C or D
Area	System A or C	Not Approved

USE OF REFLECTIVE CRACK CONTROL TREATMENTS
Figure 46-2A

46-2.04 Maintenance with Hot Mix Asphalt (HMA) or Warm Mix Asphalt (WMA)

Maintenance projects are intended to correct surface defects. Maintenance projects are eligible for MFT funding. See Section 14-1.02(i) of this Manual for more details.

46-2.05 Local Agency Functional Overlay (LAFO) Policy

Local Agency Functional Overlay Policy (LAFO) is intended to repair and resurface existing urban and rural roadways on the local agency system as an “interim” improvement until rehabilitation or reconstruction improvement can be funded. LAFO projects are eligible for MFT, State and/or Federal funding. See Section 46-3 of this manual for more details.

46-2.06 Local Agency Structural Overlay (LASO) Policy

Local Agency Structural Overlay (LASO) policy is intended to upgrade the structural capacity of urban and rural roadways on the local system to allow heavier or permitted trucks to travel. LASO projects are eligible for MFT, State and/or Federal funding. See Section 46-4 of this manual for more details.

46-3 LOCAL AGENCY FUNCTIONAL OVERLAY (LAFO) POLICY

46-3.01 Eligibility

The following guidelines should be used when determining a project's eligibility for the LAFO Policy.

46-3.01(a) Length

A project should be a part of a route that extends between logical termini. Rural segments of a project should be at least 1 mile (1.6 km) in length. Urban segments of a project should be at least one block in length with geometric continuity for contiguous blocks.

46-3.01(b) Existing Design Criteria with Construction History

All highways must have met IDOT's design requirements at the time of initial construction. Ensure all design plans are on file and available to IDOT for review upon request. The districts will review projects to verify that all requirements are met. If the highway has been resurfaced since initial construction, verify the design meets the criteria for Section 46-3.01(c)3 and Section 46-3.01(c)4 below in existing design criteria without construction history.

46-3.01(c) Existing Design Criteria without Construction History

Highways and/or streets constructed under a local agency's supervision, where the design plans and construction records are not available to IDOT, will require the following:

1. A typical cross section showing existing and proposed work.
2. A certification from the Local Public Agency's (LPA) engineer that the existing pavement is structurally sound, has adequate pavement design thickness, and is maintained properly. It is recommended that pavement thickness and any widening thickness be verified by coring or other means, at maximum 750 ft (230 m) intervals, alternating left and right of the centerline.
3. A determination that the horizontal and vertical alignments do not deviate more than 15 mph (25 km/h) less than the design speed required under current policy for existing highways; however, the design speed shall not be less than 30 mph (50 km/h). Sag vertical curves generally may be retained
4. A statement from the LPA's design engineer that adequate drainage exists and the proposed work will not negatively impact the pavement drainage capabilities.

46-3.01(d) Geometric Upgrades

Projects involving geometric revisions (other than minor superelevation corrections) will not be eligible under this program.

46-3.01(e) Pavement Widening

Pavement widening, and/or acquisition of right-of-way will not be allowed.

46-3.01(f) Crash History

High crash locations will not be allowed to be improved under the LAFO policy unless a resurfacing or superelevation improvement can be considered an effective countermeasure to prevent future crashes. Highways on the state 5% Safety Report or other locations experiencing higher than expected fatal and serious injury crashes for the traffic volume, geometric characteristics, and/or posted speed limit should be improved according to Chapter 32 or Chapter 33 of the BLRS Manual.

46-3.02 Application

The following requirements will apply to LAFO projects.

46-3.02(a) Construction Limits

Construction limits for rural type cross sections are from the outside edge of the shoulder to the outside edge of shoulder. Protect the surface edges by building up the shoulders with material equal or superior to the existing shoulder material. Construction limits for urban type cross sections will be from face-of-curb to face-of-curb except for where curb ramp are required according to Section 46-1.06.

46-3.02(b) Pavement Repairs

The project shall not have extensive load-related distresses. A maximum of 10% of the pavement area will be allowed to be patched for rigid, composite, and full-depth pavements. A maximum of 20% of the pavement area will be allowed for base repair of conventional flexible pavements.

46-3.02(c) Lane Widths

Projects shall have minimum travel lane widths of 9 ft (2.7 m) for rural sections and 10 ft (3.0 m) for urban sections, centerline to edge of travel lane where there is no parking lane. The minimum parking lane width allowed is 8 ft (2.4 m) including gutter flag.

46-3.02(d) Crown and Cross Slope Adjustment

The use of milling, leveling course, heat scarifying, planing, cold in-place recycling, hot in-place recycling, or other methods of re-establishing the base cross slope and/or crown is highly recommended for LAFO projects.

46-3.02(e) Overlay Thickness

A HMA overlay up to 3.75 in (95 mm), including leveling binder to fill depressions and to correct crown deficiencies, may be placed upon the existing pavement surface. The milling of a HMA pavement to any depth and replacing this material with HMA up to the same thickness as milling operation plus 2 in (50 mm) may be performed under LAFO policy.

For pavements with an existing Average Daily Traffic (ADT) of 400 or less, the use of cold-mix material or aggregate base course will be allowed to improve the existing base. The minimum cold-mix or aggregate base course thickness allowed will be 4 in (100 mm). An A-1 or A-2 surface treatment over the cold-mix material is required. An A-2 or A-3 surface treatment is required for the aggregate base material.

46-3.02(f) Rollover Factor

By thickening the pavement structure, the shoulder cross slopes for rural type cross sections will increase. Through horizontal curves, the maximum rollover factor (algebraic difference between traveled way and shoulder slopes) should not be greater than 10% where the shoulder width is 6 ft (1.8 m) or wider. Where the shoulder width is less than 6 ft (1.8 m), the maximum rollover factor will be 12%.

46-3.02(g) Structures

Structures with structural capacity less than H-15 (M-13.5) on highways functionally classified as local, or HS-15 (MS-13.5) on highways functionally classified as collectors or arterials may be gapped if they are included in the Multi-Year Improvement Program. Gapping is where the resurfacing is terminated prior to the bridge approach guardrail instead of adjacent to the bridge. For structures that have a structural capacity greater than H-15 (M-13.5) on highways functionally classified as local, or HS-15 (MS-13.5) on highways functionally classified as collectors or arterials resurfacing is optional. The existing rail or curb height, condition and adequacy of the bridge to accept the surfacing must be considered.

Structurally sound bridge decks with poor riding quality or worn bituminous surfaces that would jeopardize the safety of the motorist or cause undue discomfort should be repaired and resurfaced. Resurfacing may be extended across decks with appropriate repairs (waterproofing recommended). If the bridge cannot safely carry the additional dead load resulting from resurfacing, gap the bridge.

For structures greater than 20.0 feet (6.1 m) in length that are not being gapped, Form BLR 10220 "Asbestos Determination Certification" will be required. All structure condition ratings of these structures must be a "5" or greater. The Bureau of Bridges & Structures (BBS) will evaluate the structural adequacy of the structure, and record the status of the asbestos Form BLR 10220, before approval of the LAFO project.

Projects with narrow bridges will not be allowed. A bridge width cannot be less than the pavement width of the typical section included in the LAFO project. The local agency has the option of addressing bridge curbs and retrofitting bridge rails.

46-3.02(h) Drainage

Only drainage corrections to restore the road cross section or to correct drainage problems within the eligible segments shall be allowed. This includes replacement/repair of crossroad culverts beneath the roadway and into the foreslopes, damaged curb and gutter, inlets, catch basins, and manholes. Minimal ditch work at the crossroad pipe culverts will be allowed to ensure adequate drainage. Efforts should be made on curb and gutter sections to retain the flow line of the gutter and adequate curb height.

46-3.02(i) Clear Zones

Roadside hazards, such as bridge ends, guardrail, mail boxes, and others, located between the outer edge of shoulders shall be addressed.

46-3.02(j) Documentation

All LAFO projects are considered as Categorical Exclusion Group I. Form BLR 46300, a location map, and a typical section shall be submitted for all LAFO candidate projects regardless of funding. For LAFO projects that involve a structure, the Form BLR 46300 will be forwarded to the Local Bridge Unit for the approval of the Engineer of Bridges and Structures.

46-4 LOCAL AGENCY STRUCTURAL OVERLAY (LASO) POLICY

When it is proposed to place a HMA surface on an existing rigid or full depth HMA pavement, and upgrade the structure of the pavement, the thickness of the overlay may be determined by one of the following procedures. The District BLRS must approve any modifications or different design method.

46-4.01 Structural Pavement Design Procedures

46-4.01(a) AASHTO Guide for Design of Pavement Structure (1993)

Part III, Chapter 5 provides the designer with overlay thickness design procedures to address structural deficiencies in various types of existing pavements (flexible and rigid bases).

46-4.01(b) Modified AASHTO

This method may be used when designing an overlay on existing flexible pavements or flexible base (see Section 46-4.02) or on existing rigid or composite pavements (see Section 46-4.03) by estimating the structural number value of the existing material and determining the IBV of the subgrade. The designer may then select the surface thickness and any additional base thickness required to satisfy the design structural number.

46-4.01(c) Asphalt Institute's "Asphalt Overlays for Highway and Street Rehabilitation" (MS-17) Deflection Analysis

Deflection is the amount of downward vertical movement of a pavement surface due to the application of a load. The magnitude of the pavement deflection is an indicator of the pavement's ability to withstand traffic loading. Research has established correlations between the wheel load, pavement deflections, and repetitions of the load.

Bituminous overlays on existing flexible pavements/bases may be designed by deflection analysis in accordance with the following procedure:

1. Take an appropriate number of deflection readings on the existing roadway to be resurfaced. Obtain pavement deflections at a minimum rate of 20 per mile.
2. Convert the deflection readings to spring (critical period) deflections. Conversions may be based on historical data, the Asphalt Institute's recommended procedure, or engineering judgment.
3. Tabulate the deflections and compute a standard deviation.
4. Deflections that fall outside the mean deflection plus 2 standard deviations should be set aside for special consideration. These areas will require additional treatment and/or additional structure.
5. Compute a traffic factor for the project.
6. Using the mean deflection plus 2 standard deviations, perform the Asphalt Institute's deflection based HMA overlay design procedures.

46-4.02 Modified AASHTO Design for Overlays on Existing Flexible Pavement/Bases

46-4.02(a) Application of Design Method

The modified AASHTO design procedures for flexible pavements enable the designer to determine the material types and thicknesses for the various layers of a flexible pavement that are required to carry a specified volume and composition of traffic for a designated period of time while retaining a serviceability level at or above a selected minimum value. Application of this design method involves the following steps:

1. Determine Traffic Factor. Use the following procedures to determine the traffic factor:
 - a. Determine the facility class (e.g., Class I, II, III, or IV) and the design period; see Sections 46-4.02(b) and 46-4.02(c).
 - b. Determine the actual structural design traffic as described in Section 46-4.02(d).
 - c. Based on the facility class, select the appropriate traffic factor equation from Figure 46-4B; see Section 46-4.02(e).
 - d. Calculate the actual traffic factor for use in design.
2. Determine the Immediate Bearing Value. Determine the Immediate Bearing Value of the roadbed soil; see Section 46-4.02(f).
3. Determine the Required Structural Number (SN_F). Determine the required flexible pavement structural number (SN_F) using the appropriate design nomograph for the facility class (i.e., Figure 46-4D for Class I facilities or Figure 46-4E for Class II, III, and IV facilities); see Section 46-4.02(g).
4. Determine the Existing Structural Number (SN_{F,e}). Determine the existing flexible pavement structural number (SN_{F,e}) using the appropriate coefficients from Figure 46-4F, the thicknesses of the existing pavement structure, and Equation 46-4.1 in Section 46-4.02(h).
5. Determine Structural Overlay Thickness. Determine the overlay thickness using equation 46-4.2 in Section 46-4.02(i).
6. Compare with Minimum Criteria. Compare the selected design with the minimum requirements presented in Figure 46-4G to ensure that the minimum design requirements have been met; see Section 46-4.02(j).

46-4.02(b) Classes of Roads and Streets

The class of the road or street for which the bituminous overlay design is being determined is dependent upon the structural design traffic. These road classifications are defined in Section 44-1.01.

46-4.02(c) Design Period

The design period DP is the length of time in years that the bituminous overlay is being designed to serve the structural design traffic. For bituminous overlays, the minimum DP allowed is 15 years for Class I, II, III, and IV roads and streets. However, designers are encouraged to determine thicknesses for both 15 year and 20 year DP's prior to selecting the final design thickness.

46-4.02(d) Structural Design Traffic

The structural design traffic is the estimated ADT for the year representing one-half of the design period. For example, when the design period is 20 years, the structural design traffic will be an estimate of the ADT projected to 10 years after the construction date.

The structural design traffic is estimated from current traffic count data obtained either by manual counts or from traffic maps published by IDOT. If PV, SU, and MU counts are not available for Class III and IV roads and streets, Figure 46-4A provides an estimate of counts that can be made from the component percentages of the total traffic.

Class of Road or Street	Percentage of Structural Design Traffic		
	PV (%)	SU (%)	MU (%)
III	88	7	5
IV	88	9	3

**PERCENTAGE OF STRUCTURAL DESIGN TRAFFIC
(Class III or IV)**

Figure 46-4A

46-4.02(e) Traffic Factors

For Class I, II, III, and IV roads and streets, the design TF for flexible pavements is determined from the 80,000 pound load limit formulas shown in Figure 46-4B. The formulas are based on the Statewide average distribution of vehicle types and axle loadings, which are directly applicable to most roads and streets.

However, cases will arise in which the average formula should not be used (e.g., a highway where HCV's entering and leaving a site generally travel empty in one direction and fully loaded in the other). These cases should be referred to Central BLRS for special analysis. The local agency must provide Central BLRS with the structural design traffic, the DP, and traffic distribution by PV's, SU's, and MU's.

46-4.02(f) Subgrade

The following material specifically relates to the modified AASHTO design methodology. The Immediate Bearing Value (IBV) plays a critical role in the modified AASHTO design methodology. However, other soil strength test procedures can be used provided that the test results can be directly correlated with those obtained by the IBV test procedure.

The IBV selected for use in design should represent a minimum value for the soil to be used. Preferably, testing should be performed on samples of the soils to be used in construction. It is recommended that a soil survey be made prior to all construction; however, when test data are not available, use the values presented in Figure 46-4C.

See the Bureau of Materials and Physical Research's *Subgrade Stability Manual* for further guidance and information on obtaining field test data.

Class I Roads and Streets	
4 or 5 Lane Pavements (Rural and Urban)	$TF = DP \frac{(0.047 PV + 59.625 SU + 217.139 MU)}{1,000,000}$
6 or More Lane Pavements (Rural)	$TF = DP \frac{(0.029 PV + 53.000 SU + 193.012 MU)}{1,000,000}$
6 or More Lane Pavements (Urban)	$TF = DP \frac{(0.012 PV + 49.025 SU + 178.536 MU)}{1,000,000}$
One-way Streets and Pavements (Rural and Urban)	$TF = DP \frac{(0.073 PV + 66.25 SU + 241.265 MU)}{1,000,000}$
Class II Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \frac{(0.073 PV + 56.03 SU + 192.72 MU)}{1,000,000}$
Class III Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \frac{(0.073 PV + 54.57 SU + 192.175 MU)}{1,000,000}$
Class IV Roads and Streets	
2 Lane Pavement	$TF = DP \frac{(0.073 PV + 4.93 SU + 39.42 MU)}{1,000,000}$

**HMA OVERLAY ON FLEXIBLE PAVEMENT TRAFFIC FACTOR EQUATIONS
(80,000 Pound Load Limit)**

Figure 46-4B

Soil Classification	IBV
A-1	20
A-2-4, A-2-5	15
A-2-6, A-2-7	12
A-3	10
A-4, A-5, A-6	3
A-7-5, A-7-6	2

SUGGESTED IBV VALUES FOR VARIOUS SOIL CLASSIFICATIONS

Figure 46-4C

46-4.02(g) Required Structural Number

Having calculated the traffic factor, only the IBV of the roadbed soil is needed to determine the required structural number of the flexible pavement. The flexible pavement required structural number (SN_F) is obtained by projecting a line through the traffic factor and the IBV on the appropriate design nomograph, either Figure 46-4D for Class I facilities or Figure 46-4E for Class II, III, and IV facilities.

46-4.02(h) Existing Structural Number

The existing structural number ($SN_{F,e}$), an abstract number related to the strength of the total existing pavement structure, is the summation of the existing layer thicknesses multiplied by their corresponding strength coefficients from Figure 46-4F. Use the following equation to determine the existing structural number:

$$SN_{F,e} = a_1'D_1 + a_2'D_2 + a_3'D_3 \quad \text{Equation 46-4.1}$$

Where:

- $SN_{F,e}$ = existing flexible pavement structural number
- $a_1', a_2',$ and a_3' = coefficients of relative strength of the surface, base, and subbase materials, respectively
- $D_1, D_2,$ and D_3 = thickness of the surface, base, and subbase layers, respectively, in

46-4.02(i) Overlay Thickness Design

In determining the structural overlay thickness, the existing structural number is subtracted from the required structural number of the pavement. This needed structural number is then divided by the resurfacing coefficient to determine the resurfacing thickness. Use the following equation to determine the required overlay thickness:

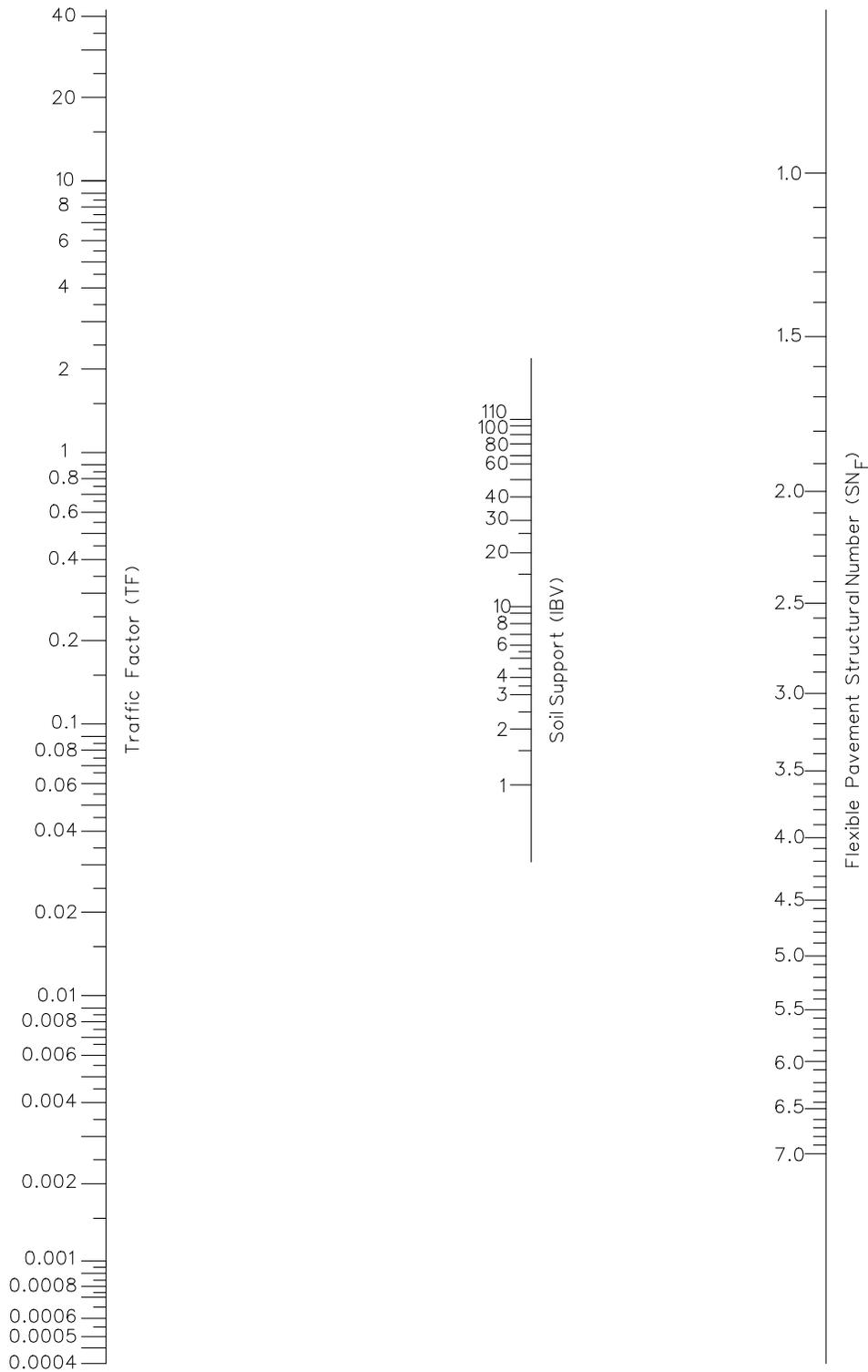
$$D_O = \frac{(SN_F - SN_{F,e})}{a_O} \quad \text{Equation 46-4.2}$$

- Where:
- D_O = thickness of new HMA overlay, in
 - SN_F = required flexible pavement structural number
 - $SN_{F,e}$ = existing flexible pavement structural number
 - a_O = coefficients of relative strength of the overlay material

Typical overlays using a 19.0 mm HMA binder course and a 9.5 mm or 12.5 mm HMA surface course the coefficient of relative strength (a_O) should be 0.36. If HMA surface course mixes are use the entire depth of the overlay, a_O may be increased to 0.40. Contact the Central Bureau of Local Roads and Streets for other special designs.

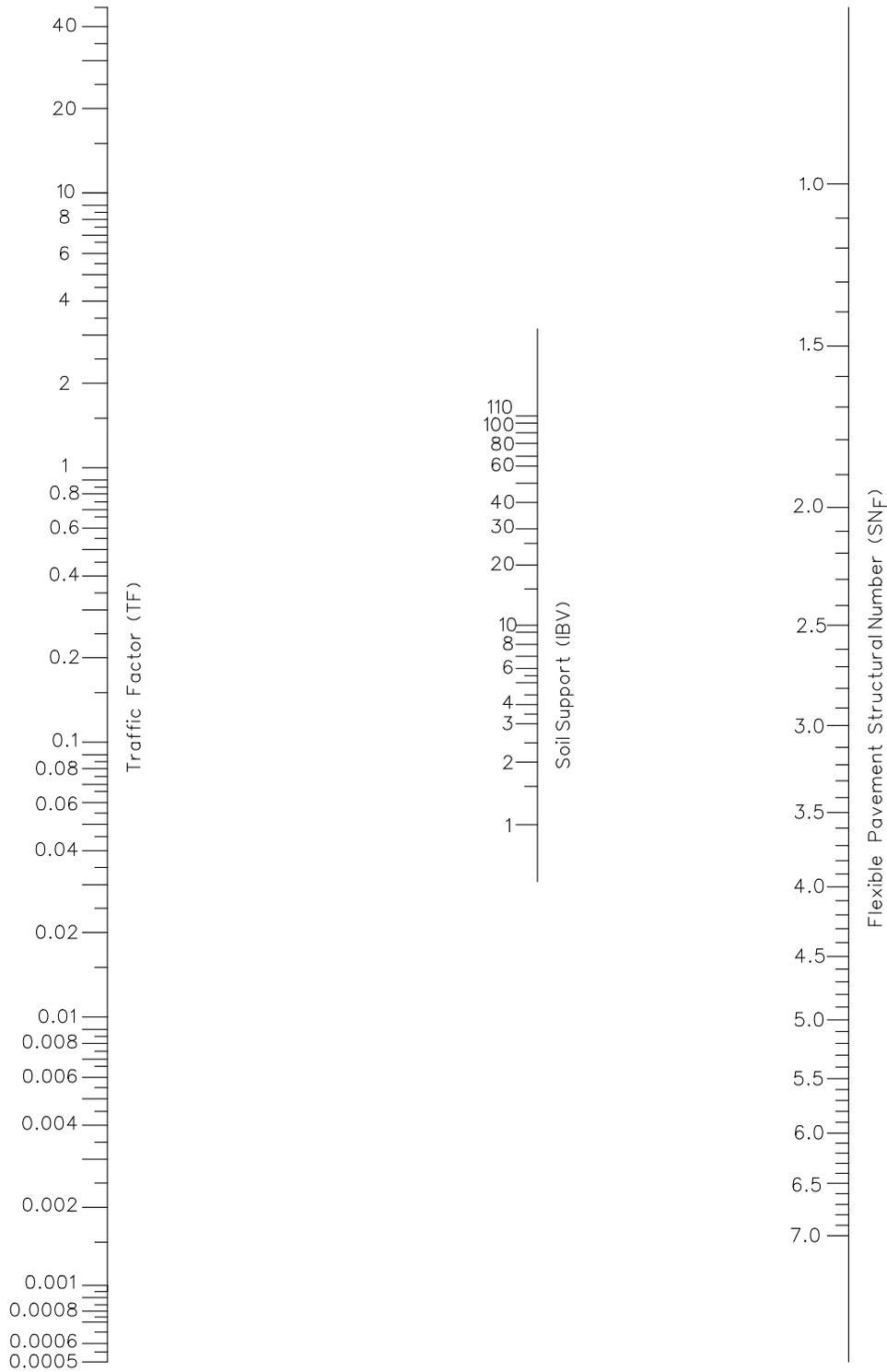
46-4.02(j) Minimum Thickness and Material Requirements

To ensure practical and adequate designs, the minimum design requirements presented in Figure 46-4G have been established. Final pavement thicknesses must comply with this table.



**HMA OVERLAY OVER FLEXIBLE PAVEMENT/BASE DESIGN NOMOGRAPH
(Modified AASHTO Design: Class I Facilities)**

Figure 46-4D



**HMA OVERLAY ON FLEXIBLE PAVEMENT/BASE DESIGN NOMOGRAPH
(Modified AASHTO Design: Class II, III, and IV Facilities)**

Figure 46-4E

STRUCTURAL MATERIALS	MINIMUM STRENGTH REQUIREMENTS			COEFFICIENTS ³		
				In-Place Recycling ⁴	Existing Material at the time of	
	MS ¹	IBV	CS ²			1st Resurfacing
Bituminous Surface				a_1	a_1'	a_1''
Road Mix (Class B)					0.15	0.11
Plant Mix (Class B): Liquid Asphalt	900				0.16	0.12
Plant Mix (Class B): Asphalt Cement					0.23	0.17
Class I (1954 and before)	1700				0.23	0.17
Class I (1955 and later)					0.30	0.23
HMA IL9.5 & IL12.5 (4% voids)				0.40	0.30	0.23
Base Course				a_2	a_2'	a_2''
Aggregate, Type B, Uncrushed		50			0.08	0.06
Aggregate, Type B, Crushed		80			0.10	0.08
Aggregate, Type A		80			0.10	0.08
Waterbound Macadam		110			0.11	0.09
Bituminous Stabilized Granular Material	300				0.12	0.09
	400				0.14	0.11
	800				0.17	0.13
	1000				0.19	0.15
	1200				0.21	0.16
	1500				0.23	0.17
	1700				0.25	0.20
CIR Recycling with Asphalt Products	1250			0.28		
FDR with Asphalt Products	1250			0.25	0.19	0.15
HMA Base Course					0.23	0.17
HMA IL19.0 (4% voids)				0.33	0.25	0.20
Pozzolanic, Type A			600		0.22	0.16
Lime Stabilized Soil			150		0.09	0.07
Select Soil Stabilized with Cement			300		0.12	0.09
			500		0.15	0.11
Cement Stabilized Granular Material			650		0.17	0.13
			750		0.19	0.15
			1000		0.22	0.16
Subbase Course				a_3	a_3'	a_3''
Granular Material, Type B		30			0.09	0.07
Granular Material, Type A, Uncrushed		50			0.10	0.08
Granular Material, Type A, Crushed		80			0.11	0.09
Lime Stabilized Soil			100		0.10	0.08

Notes:

1. Marshall Stability (MS) index or equivalent.
2. Compressive strength (CS) in pounds per square in (psi). For cement stabilized soils and granular materials, use the 7 day compressive strength that can be reasonably expected under field conditions. For lime stabilized soils, use the accelerated curing compressive strength at 120°F for 48 hours. For Pozzolanic, Type A, use the compressive strength after a 14 day curing period at 72°F.
3. Other approved materials of similar strengths may be substituted for those listed in this table.
4. These coefficients may only be used for pavement designs contained in Section 46-6 and 46-7.

**COEFFICIENTS FOR HMA OVERLAY ON FLEXIBLE PAVEMENT OR RECYCLED BASE
 (Modified AASTHO Design)**

Figure 46-4F

Structural Number (SN _F)		Minimum Thickness (in)	Minimum Material ^{1, 2}
From	To	Surface & Binder	Surface & Binder
< 2.50		2	HMA (N _{Design} = 30)
2.50	2.99	3	HMA (N _{Design} = 30)
3.00	3.49	3	HMA (N _{Design} = 50)
≥ 3.50		4	HMA (N _{Design} = 50)

Note:

1. Use Figure 44-4E to determine the appropriate PG Binder Grade.
2. Since polymer modified PG Binders may reduce the amount and rate of reflective cracks, polymer modified PG binders should be considered in all HMA overlay/lifts.

MINIMUM THICKNESS AND MATERIAL REQUIREMENTS FOR HMA OVERLAYS ON FLEXIBLE PAVEMENT/BASE (Modified AASHTO Design)

Figure 46-4G

46-4.03 Modified AASHTO Design for Overlays on Existing Rigid/Composite Pavements

46-4.03(a) Application of Design Method

The design procedures for HMA overlay on rigid/composite pavements enable the designer to select: the thickness of bituminous surface needed to structurally rehabilitate an existing rigid or composite pavement. The resulting composite pavement will be capable of carrying a specified volume and composition of traffic for a designated period of time while retaining a serviceability level at or above a selected minimum value. The composite design method assumes that the existing rigid or composite pavement has reached the end of its design life and is in need of structural rehabilitation. If the existing pavement has not reached the end of its design life, as may be the case when a resurfacing is being designed in conjunction with a lane addition, higher strength coefficients than those discussed in Section 46-4.03(f) may be appropriate. Such cases should be referred to the Central BLRS. Application of the composite design method involves the following steps:

1. Determine Traffic Factor. Use the following procedures to determine the traffic factor:
 - a. Determine the facility class (e.g., Class I, II, III, or IV) and the design period; see Sections 46-4.03(b) and 46-4.03(c).
 - b. Determine the actual structural design traffic as described in Section 46-4.02(d).
 - c. Based on the facility class, select the appropriate traffic factor equation from Figure 46-4H; see Section 46-4.03(d).
 - d. Calculate the actual traffic factor for use in design.
2. Determine the Immediate Bearing Value. Determine the Immediate Bearing Value of the roadbed soil; see Section 46-4.02(f).

3. Determine the Structural Number (SN_C). Determine the required composite pavement structural number (SN_C) using the appropriate design nomograph for the facility class (i.e., Figure 46-4I for Class I facilities or Figure 46-4J for Class II, III, and IV facilities); see Section 46-4.03(e).
4. Determine Thickness. Select the appropriate equation from Section 46-4.03(f) as follows:
 - First Resurfacing: use Equation 46-4.3
 - Second Resurfacing: use Equation 46-4.4

Using the appropriate equation calculate the thickness of the HMA overlay and round the thickness up to the nearest 0.25 in.

Note that these equations do not include provisions for a third resurfacing. Pavements that are in need of a third resurfacing for structural reasons often are badly deteriorated and may no longer be functioning as a rigid pavement. Contact the Central BLRS for guidance in selecting the appropriate strength coefficients for such pavements.

5. Compare with Minimum Criteria. Compare the calculated thickness with the minimum requirements presented in Figure 46-4K; see Section 46-4.03(g). Use the larger of the values for design.

46-4.03(b) Classes of Roads and Streets

The class of the road or street for which the bituminous overlay design is being determined is dependent upon the structural design traffic. These road classifications are defined in Section 44-4.01.

46-4.03(c) Design Period

The design period DP is the length of time in years that the bituminous overlay is being designed to serve the structural design traffic. For bituminous overlays, the minimum DP allowed is 15 years for Class I, II, III, and IV roads and streets. However, designers are encouraged to determine thicknesses for both 15 year and 20 year DP's prior to selecting the final design thickness.

46-4.03(d) Traffic Factors

For Class I, II, III, and IV roads and streets, the design TF for rigid pavements is determined from the 80,000 pound load limit formulas shown in Figure 46-4H. The formulas are based on the Statewide average distribution of vehicle types and axle loadings, which are directly applicable to most roads and streets.

However, cases will arise in which the average formula should not be used (e.g., a highway where HCV's entering and leaving a site generally travel empty in one direction and fully loaded in the other). These cases should be referred to Central BLRS for special analysis. The local agency must provide Central BLRS with the structural design traffic, the DP, and traffic distribution by PV's, SU's, and MU's.

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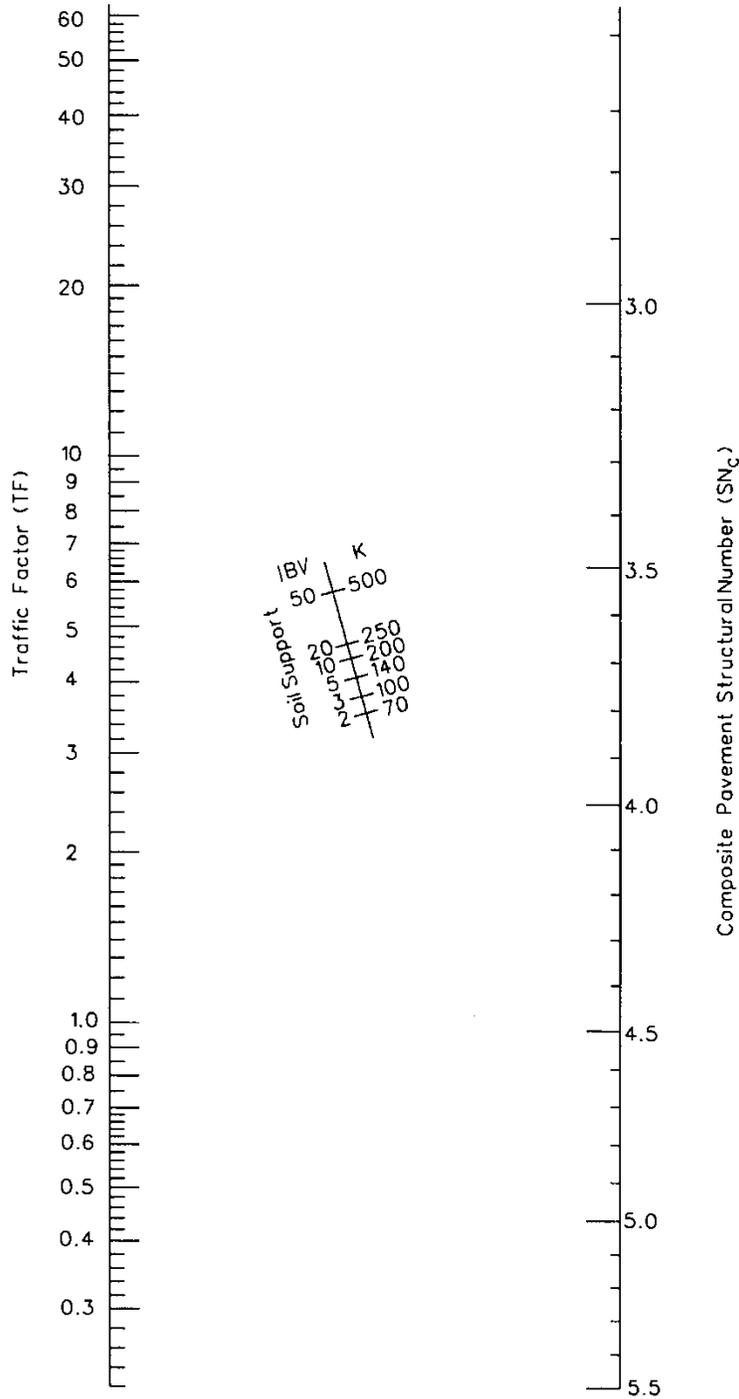
Class I Roads and Streets	
4 or 5 Lane Pavements (Rural and Urban)	$TF = DP \frac{(0.047 PV + 64.715 SU + 313.389 MU)}{1,000,000}$
6 or More Lane Pavements (Rural)	$TF = DP \frac{(0.029 PV + 57.524 SU + 278.568 MU)}{1,000,000}$
6 or More Lane Pavements (Urban)	$TF = DP \frac{(0.012 PV + 53.210 SU + 257.675 MU)}{1,000,000}$
One-way Street Pavements (Rural and Urban)	$TF = DP \frac{(0.073 PV + 71.905 SU + 348.210 MU)}{1,000,000}$
Class II Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \frac{(0.073 PV + 67.890 SU + 283.605 MU)}{1,000,000}$
Class III Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \frac{(0.073 PV + 64.790 SU + 281.235 MU)}{1,000,000}$
Class IV Roads and Streets	
2 Lane Pavement	$TF = DP \frac{(0.073 PV + 63.875 SU + 277.95 MU)}{1,000,000}$

**HMA OVERLAY ON RIGID/COMPOSITE PAVEMENT TRAFFIC FACTOR EQUATIONS
(80,000 Pound Load Limit)**

Figure 46-4H

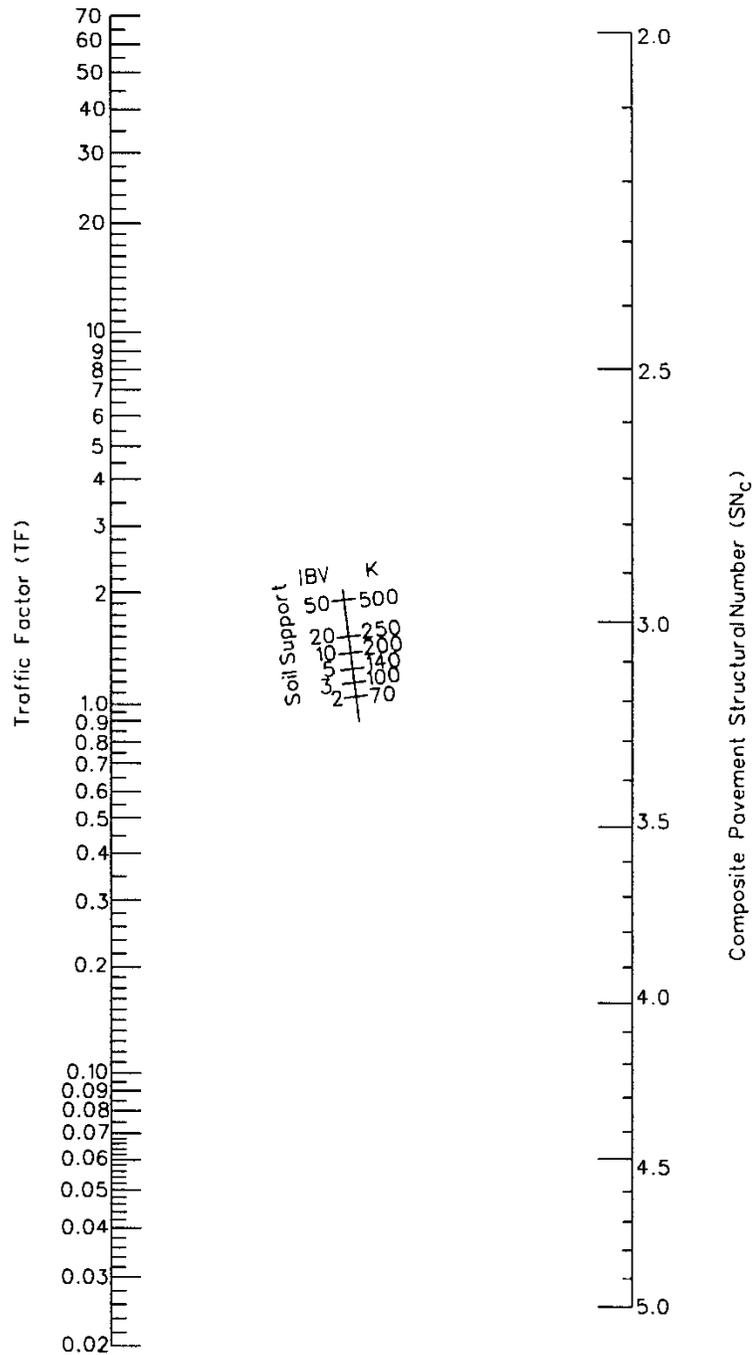
46-4.03(e) Required Composite Pavement Structural Number

Having calculated the traffic factor, only the IBV of the roadbed soil is needed to determine the required structural number of the composite pavement. The composite pavement required structural number (SN_C) is obtained by projecting a line through the traffic factor and the IBV on the appropriate design nomograph, either Figure 46-4I for Class I facilities or Figure 46-4J for Class II, III, and IV facilities.



HMA OVERLAY OVER RIGID/COMPOSITE PAVEMENT/BASE DESIGN NOMOGRAPH
(Modified AASHTO Design: Class I Facilities)

Figure 46-4I



HMA OVERLAY OVER RIGID/COMPOSITE PAVEMENT/BASE DESIGN NOMOGRAPH
(Modified AASHTO Design: Class II, III, and IV Facilities)

Figure 46-4J

46-4.03(f) Thickness Design Equations

The composite pavement structural number (SN_C), an abstract number related to the strength required of the total pavement structure, is a summation of layer thicknesses multiplied by their corresponding strength coefficients. Three design equations incorporate the composite pavement structural number as follows:

$$D_o = \frac{SN_C - 0.26D_C}{0.40} \quad \text{Equation 46-4.3}$$

$$D_o = \frac{SN_C - 0.25D_E - 0.17D_C}{0.40} \quad \text{Equation 46-4.4}$$

- Where: SN_C = composite pavement structural number
 D_o = thickness of new HMA overlay (in)
 D_C = equivalent thickness of existing PCC slab (in)
 D_E = thickness of existing HMA surface (in)

In the case of existing jointed reinforced and non-reinforced PCC pavements of uniform thickness, the equivalent thickness of the PCC slab (D_C) is the actual slab thickness. For a CRC pavement, D_C is the slab thickness multiplied by 1.25.

46-4.03(g) Minimum Thickness and Material Requirements

To ensure practical and adequate designs, the minimum design requirements presented in Figure 46-4K have been established. Final pavement thicknesses must comply with this table.

Structural Number (SN_C)		Minimum Thickness (in)	Minimum Material
From	To	Surface & Binder	Surface & Binder
< 2.50		2	HMA with Low ESAL's
2.50	2.99	3	HMA with Low ESAL's
3.00	3.49	3	HMA (4% voids)
≥ 3.50		4	HMA (4% voids)

MINIMUM THICKNESS AND MATERIAL REQUIREMENTS FOR HMA OVERLAYS ON RIGID/COMPOSITE PAVEMENT (Modified AASHTO Design)

Figure 46-4K

46-4.04 Design Example

* * * * *

Example 46-4.1

Given: Existing 73,280 pound Class I Urban One-way flexible pavement in District 6 with Slow Traffic.

The existing cross section is composed of:

- 3.0 in of Class I HMA surface,
- 12 in of Lime Stabilized Soil base, and
- 4 in of Granular Material, Type A, Crushed.

Design Traffic:

- ADT: 8900
- 94% PV (8366), 5% SU (445), 1% MU (89)

Subgrade Support Rating: Poor IBV = 4

Problem: Design an HMA overlay to upgrade the route to 80,000 pounds.

Solution:

1. This is a structural overlay; therefore, a pavement design procedure must be used. The designer may choose FWD testing, modified AASHTO, or other approved design methods. This example shows the modified AASHTO approach.
2. Using Figure 46-4B, determine the TF equation for a one-way Class I pavement for a design period of 15 years and 20 years.

One-way Streets and Pavements (Rural and Urban)

$$TF = DP \left[\frac{(0.073PV + 66.250SU + 241.265MU)}{1,000,000} \right]$$

$$TF_{20} = 20 \left[\frac{(0.073 \times 8,366 + 66.250 \times 445 + 241.265 \times 89)}{1,000,000} \right]$$

$$TF_{20} = 1.03$$

$$TF_{15} = 15 \left[\frac{(0.073 \times 8,366 + 66.250 \times 445 + 241.265 \times 89)}{1,000,000} \right]$$

$$TF_{15} = 0.77$$

3. Using Figure 46-4D and the given IBV of 4, the required flexible structural number (SN_F) is 3.9 for the 20-year DP and 3.8 for the 15-year DP.

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4. Using Figure 46-4F and equation 46-4.1, determine the existing flexible structural number ($SN_{F,e}$):

$$SN_{F,e} = a_1'D_1 + a_2'D_2 + a_3'D_3$$

$$SN_{F,e} = .30(3) + 0.09(12) + .11(4)$$

$$SN_{F,e} = 2.42$$

5. Using equation 46-4.2, determine the overlay thickness:

$$D_O = \frac{(SN_F - SN_{F,e})}{a_O}$$

$$D_{O,20} = \frac{(3.9 - 2.4)}{.36} \qquad D_{O,15} = \frac{(3.8 - 2.4)}{.36}$$

$$D_{O,20} = 4.17$$

$$D_{O,15} = 3.89$$

These thicknesses should be rounded to the nearest 0.25 in:

$$D_{O,20} = 4.25 \text{ in; and}$$

$$D_{O,15} = 4.00 \text{ in.}$$

6. The minimum overlay thickness (D_O) for $SN_F \geq 3.50$ is 4.0 in (Figure 46-4G). Therefore, either the 15-year or 20-year DP will provide the minimum thickness. The designer should consider using the 20-year DP since this will only increase the pavement thickness by 0.25 in. Based on Figure 44-4D, a PG 70-22 or SBS PG 70-22 binder may be used. Use of polymer modified binders may decrease the amount and rate of reflective cracks; therefore, the SBS PG 70-22 should be used.

Example 46-4.2

Given: Existing 73,280 pound Class I Urban One-way rigid pavement in District 6 with Slow Traffic.

The existing cross section is composed of -

- 8 in of jointed non-reinforced PCC pavement, and
- 4 in of Granular Material, Type A, Crushed.

Design Traffic:

- ADT: 8900
- 94% PV (8366), 5% SU (445), 1% MU (89)

Subgrade Support Rating: Poor IBV = 2

Problem: Design an HMA overlay to upgrade the route to 80,000 pounds.

Solution:

1. This is a structural overlay; therefore, a pavement design must be used. The designer may use modified AASHTO or other approved design methods. This example shows the modified AASHTO approach.
2. Use Figure 46-4H and determine the TF equation for a one-way Class I pavement for a design period of 15 years and 20 years.

One-way Streets and Pavements (Rural and Urban)

$$TF = DP \left[\frac{(0.073PV + 71.905SU + 348.210MU)}{1,000,000} \right]$$

$$TF_{20} = 20 \left[\frac{(0.073 \times 8,366 + 71.905 \times 445 + 348.210 \times 89)}{1,000,000} \right]$$

$$TF_{20} = 1.27$$

$$TF_{15} = 15 \left[\frac{(0.073 \times 8,366 + 71.905 \times 445 + 348.210 \times 89)}{1,000,000} \right]$$

$$TF_{15} = 0.95$$

3. Using Figure 46-4I and the given IBV of 2, the required flexible structural number (SN_c) is 3.3 for the 20-year DP and 3.2 for the 15-year DP.

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3. Using equation 46-4.3, determine the overlay thickness:

$$D_o = \frac{(SN_c - 0.26D_c)}{0.40}$$

$$D_{o,20} = \frac{(3.3 - 0.26(8))}{0.40}$$

$$D_{o,20} = 3.05$$

$$D_{o,15} = \frac{(3.2 - .026(8))}{0.40}$$

$$D_{o,15} = 2.80$$

These thicknesses should be rounded to the nearest 0.25 in: $D_{o,20} = 3.25$ in and $D_{o,15} = 3.00$ in.

4. The minimum overlay thickness (D_o) for $3.00 \leq SN_F < 3.50$ is 3.0 in (Figure 46-4K). Therefore, either the 15-year or 20-year DP will provide the minimum thickness. The designer should consider using the 20-year DP since this will only increase the pavement thickness by 0.25 in. Based on Figure 44-5F, a PG 70-22 or SBS PG 70-22 binder may be used. Use of polymer modified binders may decrease the amount and rate of reflective cracks; therefore, the SBS PG 70-22 should be used.

* * * * *

46-5 PCC INLAY/OVERLAY ON EXISTING ON HMA SURFACES

46-5.01 Introduction

The stopping, starting, standing, and turning actions of vehicles at intersections or other locations may create rutting and other severe conditions for pavement structures with HMA surfaces. The volume and type of vehicles may also distress HMA surfaces. Standing water in ruts (e.g., from rain events) may create a hydroplaning hazard. In addition, snow and ice left in the ruts after snowplowing may be hazardous to the traveling public. Therefore, a PCC inlay/overlay may be a better alternative than HMA. The PCC inlay/overlay has no risk for rutting and a longer service life may be achieved.

A PCC inlay/overlay consists of placing a thin concrete layer on an existing HMA surface. Construction of an inlay/overlay includes milling the existing rutted HMA to correct longitudinal profile and cross-slope irregularities and providing a surface for bonding of the overlay. A PCC inlay/overlay may be considered as an alternative at intersections or other locations where HMA overlays have shown a tendency to rut or have shortened performance lives.

Synthetic fibers are required where the inlay/overlay is 4.0 in. or less, and optional where it exceeds 4.0 in. The synthetic fibers currently used are much different from the fibers originally used in inlay/overlay projects. The original fibers used were mainly to prevent plastic shrinkage cracks. The new fibers will provide structural reinforcement, which will increase flexural toughness and cracking resistance.

These procedures do not apply to a thickness greater than 6.0 in. which is considered an unbonded concrete inlay/overlay.

46-5.01(a) Applicability

These guidelines have been prepared for a rehabilitation strategy that involves a 3.0 in. to 6.0 in. PCC inlay/overlay bonded to a pavement structure that has an HMA surface. This rehabilitation strategy has been previously known as ultrathin whitetopping.

These guidelines may be used to evaluate pavement at an existing intersection or other locations to determine if use of a PCC inlay/overlay is feasible and constructible. These guidelines also contain design steps needed to successfully complete this option. A PCC inlay/overlay requires a thorough review of the existing pavement structure, as well as close attention to utility, profile, and elevation adjustments. This technique requires a bonding action to the underlying HMA surface and multiple joints at an early age to control cracking and curling stresses within the inlay/overlay.

These guidelines are to be followed to review the existing pavement structure, identify design considerations, and prepare a request for review and approval of a PCC inlay/overlay system.

46-5.01(b) Limitations

Performance of PCC inlay/overlay sections can be variable because of the underlying pavement structure. The designer should consider the general constructability of a PCC inlay/overlay at the selected location. The existing HMA layer that is to remain in place shall be a minimum of 2.5 in. thick. If a portion of the PCC inlay/overlay in excess of 5% will be bonded directly to bare concrete, brick, or other old slabs of concrete, this rehabilitation method shall not be used. The 5% limitation is to allow for existing concrete patches or other existing pavement features. Construction is also hindered by complicated geometrics, utility obstructions, traffic demand, and condition of the existing pavement.

The term PCC inlay can be defined as a very minor or no change in grade; and, as such, could limit its use in areas where profile adjustments would be limited (e.g., with existing curb and gutter sections). A PCC overlay would be used where profile grade adjustments are feasible.

This alternative rehabilitation strategy shall apply to Class I, II, III, and IV pavements, but shall not be used for Federal-aid Interstates or when the traffic factor (based on the rigid pavement equations) exceeds 5.0.

46-5.02 Review of Existing Pavement Structure

A thorough investigation of the existing pavement structure should be conducted. The purpose of this investigation is to determine if the section in question is suitable for a PCC inlay/overlay. It is essential that only appropriate sections be selected for this rehabilitation option.

46-5.02(a) Preliminary Pavement Investigation

The designer should research past rehabilitation attempts as well as future plans for the area that surrounds the intersection/roadway. Research of past rehabilitation attempts will provide information on why past rehabilitation methods have not performed as designed. Insight into future plans for the pavement and area surrounding the project may influence the design of the rehabilitation. The designer should check to see if any of the limitations of this application apply.

If it appears that a PCC inlay/overlay can be constructed, then a detailed pavement investigation is necessary to verify the constructability of the inlay/overlay.

46-5.02(b) Detailed Pavement Investigation

Upon completion of the preliminary investigation, a detailed pavement coring plan should be developed and administered. In general, cores will be taken to represent the majority of pavement cross sections and locations within the project. A document with guidelines for material sampling entitled "Guidelines for Material Sampling and Testing of Existing Hot Mix Asphalt Pavements and Overlays," is available through the Bureau of Materials and Physical Research. The coring plan should be completed to specifically address the following points:

- Total pavement thickness and thickness of each layer of concrete and HMA detected.
- Condition and presence of stripping for each HMA layer.

- Condition, compressive strength (optional), presence of D-cracking, and presence of alkali-silica reaction for each concrete layer.
- Identification of locations where patching or alternative rehabilitations methods are recommended.

In addition to the coring plan a general inspection of the project limits should be completed. The inspection should address the following items:

- Intersection of pavement crowns (multi-leg intersections)
- Location of drop inlets
- Location of loop detectors for traffic signals
- Location of sewer manholes, water valves, and all other utility obstructions
- Location of existing surface patches
- Location of high severity distresses
- Location of HMA rutting exceeding 0.35 in (9 mm)
- Clearance for overheads

46-5.02(c) Existing and Projected Average Daily Traffic

An accurate count of the existing Average Daily Traffic (ADT) with a breakdown of percentages for passenger vehicles, single unit, and multiple unit trucks should be performed. In addition, estimates for the projected ADT and classification breakdown should be developed for the design period.

46-5.02(d) Existing Pavement Structure Report

Upon completion of coring and inspection procedures, and collection of traffic data, a report should be created to document this information.

46-5.03 Thickness Design Procedure

46-5.03(a) Classes of Roads and Streets

The class of the road or street for which the concrete inlay or overlay design is being determined is dependent upon the structural design traffic. These road classifications are defined in Section 44-1.01.

46-5.03(b) Design Period

The design period DP is the length of time in years that the concrete inlay or overlay is being designed to serve the structural design traffic. The design period for this pavement type is 15 years.

46-5.03(c) Structural Design Traffic

The structural design traffic is the estimated ADT for the year representing one-half of the design period. For example, when the design period is 15 years, the structural design traffic will be an estimate of the ADT projected to 7.5 years after the construction date.

The structural design traffic is estimated from current traffic count data obtained either by manual counts or from traffic maps published by IDOT. If PV, SU, and MU counts are not available for Class III and IV roads and streets, Figure 46-5A provides an estimate of counts that can be made from the component percentages of the total traffic.

Class of Road or Street	Percentage of Structural Design Traffic		
	PV (%)	SU (%)	MU (%)
III	88	7	5
IV	88	9	3

**PERCENTAGE OF STRUCTURAL DESIGN TRAFFIC
(Class III or IV)**

Figure 46-5A

46-5.03(d) Traffic Factor

For Class I, II, III, and IV roads and streets, the design TF for rigid pavements is determined from the 80,000 pound load limit formulas shown in Figure 46-5B. The formulas are based on the Statewide average distribution of vehicle types and axle loadings, which are directly applicable to most roads and streets.

However, cases will arise in which the average formula should not be used (e.g., a highway where HCV's entering and leaving a site generally travel empty in one direction and fully loaded in the other). These cases should be referred to Central BLRS for special analysis. The local agency must provide Central BLRS with the structural design traffic, the DP, and traffic distribution by PV's, SU's, and MU's.

46-5.03(e) Joint Spacing

A key to the success of a PCC inlay or overlay is proper timing and placement of longitudinal and transverse joints. These joints are hand tooled into plastic concrete or sawed into hardened concrete to provide stress relief induced by drying shrinkage and curing of concrete. Hand tooled joints shall not be used on mainline pavement with a posted speed limit greater than 40 mph because they may not be as smooth as sawed joints, resulting in rougher ride. The joints should be laid out on a regular pattern for both longitudinal and transverse directions (to form squares) based on the spacing used to determine thickness. No skewed joints shall be allowed.

Transverse and longitudinal joints should be laid out to match joints, utility obstructions, and geometrics of the existing pavement including utility cuts as much as possible in advance, recognizing that field adjustments will be required. When feasible, longitudinal joints should be laid out to avoid the wheel path areas of the traveling lanes. The layout of all transverse and longitudinal joints should be detailed on the plan sheets.

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The cost of sawing may significantly influence the cost of a PCC inlay/overlay. A thicker PCC inlay/overlay may be more economical than a thinner one because the greater thickness may allow increased joint spacing, resulting in less sawing. In addition, the use of synthetic fibers for PCC inlays/overlays greater than 4.0 in may be more economical than PCC inlays/overlays without synthetic fibers because the synthetic fibers may allow an increased joint spacing. Again, the amount of sawing is reduced.

Class I Roads and Streets	
4 or 5 Lane Pavements (Rural and Urban)	$TF = DP \frac{(0.047 PV + 64.715 SU + 313.389 MU)}{1,000,000}$
6 or More Lane Pavements (Rural)	$TF = DP \frac{(0.029 PV + 57.524 SU + 278.568 MU)}{1,000,000}$
6 or More Lane Pavements (Urban)	$TF = DP \frac{(0.012 PV + 53.210 SU + 257.675 MU)}{1,000,000}$
One-way Street Pavements (Rural and Urban)	$TF = DP \frac{(0.073 PV + 71.905 SU + 348.210 MU)}{1,000,000}$
Class II Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \frac{(0.073 PV + 67.890 SU + 283.605 MU)}{1,000,000}$
Class III Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \frac{(0.073 PV + 64.790 SU + 281.235 MU)}{1,000,000}$ TF minimum = 0.5
Class IV Roads and Streets	
2 or 3 Lane Pavements	$TF = DP \frac{(0.073 PV + 63.875 SU + 277.950 MU)}{1,000,000}$

TRAFFIC FACTOR EQUATIONS (80,000 LB LOAD LIMIT)

Figure 46-5B

46-5.03(f) Thickness Design

Based on the traffic factor, the thickness of the underlying HMA material, panel size, and fibers/no fibers, the PCC inlay/overlay thickness may be determined either from Figures 46-5C through 46-5J or by using a computer program which is available from BDE: www.dot.il.gov/desenv/pdp.html. The inlay/overlay thickness shall be 3.0 in to 6.0 in, with 0.5 in increments allowed.

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The thicknesses shown in Figures 46-5C through 46-5J were calculated using the computer program with the following default values as design inputs:

- Elastic Modulus of HMA Layer (E_{AC}) = 350,000 psi
- Elastic Modulus of PCC Overlay or Inlay (E_C) = 3,600,000 psi
- Modulus of Rupture (MOR) = 750 psi
- Modulus of Subgrade (k) = 100 pci
- Coefficient of Thermal Expansion (CTE) = 5.5×10^{-6} in./in./°F
- Percent of Panels with Cracking (P_{cr}) = 20%
- Reliability Factor (R) = 85%
- Temperature Gradient (ΔT) = -1.4 °F/in.
- Occurrence of Temperature Gradient ($\% Time$) = 58%

The following list defines the variables shown in Figures 46-5C through 46-5J:

- $R_{150,3}$ = Residual Strength Ratio (percent); where the net deflection is calculated as $L/150$ (L = span length) and is limited to 3 mm
- h_{AC} = Thickness of existing hot-mix asphalt remaining after milling
- h_C = Thickness of new PCC inlay/overlay
- L = Joint spacing for longitudinal and transverse directions

<i>With Synthetic Fibers ($R_{150,3} = 20\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
---	---	3
≤ 0.065	---	3.5
≤ 0.7	---	4
≤ 5	≤ 0.05	4.5
≤ 5	≤ 0.27	5
≤ 5	≤ 1.2	5.5
≤ 5	≤ 4.5	6

<i>Without Synthetic Fibers ($R_{150,3} = 0\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
≤ 0.042	---	4.5
≤ 0.15	---	5
≤ 0.45	≤ 0.014	5.5
≤ 1	≤ 0.033	6

PCC INLAY/OVERLAY THICKNESSES WHERE $h_{AC} = 2.5$ in

Figure 46-5C

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<i>With Synthetic Fibers ($R_{150,3} = 20\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
≤ 0.025	---	3
≤ 0.25	---	3.5
≤ 2.5	≤ 0.02	4
≤ 5	≤ 0.12	4.5
≤ 5	≤ 0.6	5
≤ 5	≤ 2.5	5.5
≤ 5	≤ 5	6

<i>Without Synthetic Fibers ($R_{150,3} = 0\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
≤ 0.09	---	4.5
≤ 0.31	---	5
≤ 0.82	≤ 0.023	5.5
≤ 1.6	≤ 0.05	6

PCC INLAY/OVERLAY THICKNESSES WHERE $h_{AC} = 3.0$ in

Figure 46-5D

<i>With Synthetic Fibers ($R_{150,3} = 20\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
≤ 0.14	---	3
≤ 1.3	≤ 0.011	3.5
≤ 5	≤ 0.06	4
≤ 5	≤ 0.35	4.5
≤ 5	≤ 1.5	5
≤ 5	≤ 5	5.5
≤ 5	≤ 5	6

<i>Without Synthetic Fibers ($R_{150,3} = 0\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
≤ 0.23	---	4.5
≤ 0.67	≤ 0.016	5
≤ 1.6	≤ 0.04	5.5
≤ 2.9	≤ 0.083	6

PCC INLAY/OVERLAY THICKNESSES WHERE $h_{AC} = 3.5$ in

Figure 46-5E

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<i>With Synthetic Fibers ($R_{150,3} = 20\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
≤ 1	---	3
≤ 5	≤ 0.042	3.5
≤ 5	≤ 0.21	4
≤ 5	≤ 1.1	4.5
≤ 5	≤ 4.5	5
≤ 5	≤ 5	5.5
≤ 5	≤ 5	6

<i>Without Synthetic Fibers ($R_{150,3} = 0\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
≤ 0.63	≤ 0.012	4.5
≤ 1.6	≤ 0.033	5
≤ 3.4	≤ 0.075	5.5
≤ 5	≤ 0.14	6

PCC INLAY/OVERLAY THICKNESSES WHERE $h_{AC} = 4.0$ in

Figure 46-5F

<i>With Synthetic Fibers ($R_{150,3} = 20\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
≤ 5	≤ 0.037	3
≤ 5	≤ 0.19	3.5
≤ 5	≤ 0.86	4
≤ 5	≤ 4	4.5
≤ 5	≤ 5	5
≤ 5	≤ 5	5.5
≤ 5	≤ 5	6

<i>Without Synthetic Fibers ($R_{150,3} = 0\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
≤ 1.9	≤ 0.03	4.5
≤ 4.2	≤ 0.07	5
≤ 5	≤ 0.16	5.5
≤ 5	≤ 0.26	6

PCC INLAY/OVERLAY THICKNESSES WHERE $h_{AC} = 4.5$ in

Figure 46-5G

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<i>With Synthetic Fibers ($R_{150,3} = 20\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
≤ 5	≤ 0.22	3
≤ 5	≤ 0.95	3.5
≤ 5	≤ 4.2	4
≤ 5	≤ 5	4.5
≤ 5	≤ 5	5
≤ 5	≤ 5	5.5
≤ 5	≤ 5	6

<i>Without Synthetic Fibers ($R_{150,3} = 0\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
≤ 5	≤ 0.077	4.5
≤ 5	≤ 0.16	5
≤ 5	≤ 0.3	5.5
≤ 5	≤ 0.48	6

PCC INLAY/OVERLAY THICKNESSES WHERE $h_{AC} = 5.0$ in

Figure 46-5H

<i>With Synthetic Fibers ($R_{150,3} = 20\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
≤ 5	≤ 1.5	3
≤ 5	≤ 5	3.5
≤ 5	≤ 5	4
≤ 5	≤ 5	4.5
≤ 5	≤ 5	5
≤ 5	≤ 5	5.5
≤ 5	≤ 5	6

<i>Without Synthetic Fibers ($R_{150,3} = 0\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
≤ 5	≤ 0.21	4.5
≤ 5	≤ 0.4	5
≤ 5	≤ 0.67	5.5
≤ 5	≤ 0.95	6

PCC INLAY/OVERLAY THICKNESSES WHERE $h_{AC} = 5.5$ in

Figure 46-5I

BUREAU OF LOCAL ROADS & STREETS
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<i>With Synthetic Fibers ($R_{150,3} = 20\%$)</i>			<i>Without Synthetic Fibers ($R_{150,3} = 0\%$)</i>		
Design Parameters		Inlay/Overlay Thickness, h_c (in.)	Design Parameters		Inlay/Overlay Thickness, h_c (in.)
Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.		Traffic Factor $L = 48$ in.	Traffic Factor $L = 72$ in.	
≤ 5	≤ 5	3	≤ 5	≤ 0.62	4.5
≤ 5	≤ 5	3.5	≤ 5	≤ 1	5
≤ 5	≤ 5	4	≤ 5	≤ 1.5	5.5
≤ 5	≤ 5	4.5	≤ 5	≤ 1.9	6
≤ 5	≤ 5	5			
≤ 5	≤ 5	5.5			
≤ 5	≤ 5	6			

PCC INLAY/OVERLAY THICKNESSES WHERE $h_{AC} = 6.0$ in

Figure 46-5J

46-5.04 Other Design Considerations

46-5.04(a) Drainage Considerations

Maintaining proper drainage through the design and during construction is important. During construction, maintaining drainage is especially critical for projects that include an inlay.

46-5.04(b) Pavement Preparation and Profile

The existing pavement surface shall be milled to correct profile irregularities, remove any foreign materials, and remove oxidized HMA from the surface. Milling will also increase the surface area for bonding of the PCC inlay/overlay. If patching will be required on the project, the designer needs to keep in mind that if a portion of the PCC inlay/overlay in excess of 5% will be bonded directly to bare concrete or brick, this pavement type shall not be used.

46-5.04(c) Final Finish

Locations with a posted speed limit greater than 40 mph shall use a Type A final finish. All other locations shall use a rough broom final finish struck perpendicular to the direction of traffic flow in lieu of a Type B final finish. The rough broom finish shall be used across the entire surface area of the inlay/overlay including any hand-tooled joints.

46-5.04(d) Traffic Control

The control of traffic through the project must be considered and well established prior to the time of construction. The best alternative for traffic control is to completely close the project to traffic. This alternative may be difficult for urban projects. If closure to traffic is not possible, traffic control must be established that will effectively move traffic through the project with minimal disruption to construction operations and traffic flow. Traffic control that can be left unattended overnight must be anticipated for each stage of construction.

46-5.04(e) Construction Staging

Construction staging for a PCC inlay/overlay project must be considered with respect to the construction timeframe and traffic flow through the project. The project must be staged in such a way that continuous traffic flow will be maintained. Construction staging must also consider the geometrics of the project and any lane to lane drop off restrictions that may be present with the overlay thickness.

PCC inlays/overlays have a traffic opening strength of 550 psi flexural or 3,000 psi compressive. The current PCC mix design specified may obtain the opening strength in as little as three days if properly proportioned. If the inlay/overlay must be opened to traffic in a shorter time frame, consult the District Materials Office for an acceptable high-early-strength PCC mixture.

46-5.05 Example Calculations

Example 46-5.1

Given: Existing two-way, two-lane Class III flexible pavement.

The existing cross section has a remaining HMA layer thickness of 4.0 inches.

Design Traffic:

- ADT = 1200
- 88% PV (1056); 7% SU (84); 5% MU (60)

Problem: Design a concrete overlay with and without fibers in the concrete, and with 48-inch and 72-inch panel (4 designs).

Solution:

1. Using Figure 46-5B, determine the TF for a two-way, two-lane Class III pavement for a design period of 15 years.

$$TF = DP \left[\frac{(0.073PV + 64.790SU + 281.235 MU)}{1,000,000} \right]$$

$$TF = 15 \left[\frac{(0.073 \times 1056 + 64.790 \times 84 + 281.235 \times 60)}{1,000,000} \right]$$

$$TF = 0.336$$

2. Analysis:

Figure 46-5F is used and the following thicknesses of concrete are obtained:

For 48" panel with fibers, concrete thickness = 3.0 inches;

For 72" panel with fibers, concrete thickness = 4.5 inches;

For 48" panel without fibers, concrete thickness = 4.5 inches; and

For 72" panel without fibers, concrete thickness = not feasible (The traffic factor exceeds the capacity of 6.0-inch maximum design;

3. Costs for concrete, fibers, and saw cutting should be obtained to determine which combination of fibers/no fibers and panel size gives the most economical design

46-6 FLEXIBLE PAVEMENT IN-PLACE RECYCLING

46-6.01 Introduction

Flexible pavements may be recycled using a variety of equipment, recycling agents, and processes. There are three general categories: Hot In-Place Recycling (HIR), Cold In-Place Recycling (CIR), and Full Depth Reclamation (FDR).

A thorough investigation of the existing pavement structure should be conducted. The purpose of this investigation is to determine if the section in question is suitable for an in-place recycling project. It is essential that only appropriate sections be selected for this rehabilitation option. If existing pavement structure is adequate further material investigation will be needed to select recycling technique and design. Pavements with deteriorations or distresses due to subgrade or drainage problems should only be considered for in-place recycling if additional work is undertaken to correct the subgrade and drainage deficiencies. Figure 46-1A shows appropriate distresses that may be addressed using an in-place recycling treatment.

Pavement Distress	In-Place Recycling Process		
	HIR	CIR	FDR
Raveling	Green	Yellow	Red
Potholes	Yellow	Green	Orange
Bleeding	Yellow	Yellow	Yellow
Skid Resistance	Yellow	Yellow	Orange
Rutting	Yellow	Green	Orange
Corrugations	Yellow	Green	Orange
Shoving	Yellow	Green	Orange
Fatigue Cracking	Red	Green	Green
Edge Cracking	Red	Orange	Green
Slippage Cracking	Yellow	Green	Yellow
Block Cracking	Red	Green	Green
Longitudinal Cracking	Yellow	Green	Yellow
Traverse Cracking	Yellow	Green	Green
Reflective Cracking	Yellow	Green	Green
Discontinuity Cracking	Red	Green	Green
Ride Quality	Green	Green	Red
Structural Improvement	Orange	Yellow	Green



IN-PLACE RECYCLING PAVEMENT DISTRESS SELECTION

Figure 46-6A

Projects developed in accordance with this section will be eligible for MFT, State, and/or Federal funding.

46-6.02 Hot In-Place Recycling (HIR)

HIR is an on-site, in-place rehabilitation method which consists of heating, softening, scarifying, mixing, placing, and compacting 0.75 in (19 mm) to 2 in (50 mm) of the existing bituminous pavement. The following pavement distresses may be treated by HIR:

- Surface Defects (Raveling, Potholes, Bleeding, Skid Resistance)
- Permanent Deformation (Rutting, Corrugations, and Shoving)
- Slippage, Longitudinal, Transverse, and Reflective Cracking
- Ride Quality

HIR may be divided into Surface Recycling, Remixing, and Repaving sub-categories.

46-6.02(a) HIR - Surface Recycling

HIR - Surface Recycling should be considered when pavement distresses are contained in the top 1 in (25 mm). Drying and heating of the existing asphalt pavement surface is performed with pre-heating units that are followed behind by a heating/scarification unit. After scarification, an asphalt modifier is applied to the scarified pavement prior to mixing, placing, and compacting the recycled pavement.

After completing the HIR – Surface Recycling process, a maximum 2.0 in (50 mm) HMA surface course shall be placed. LR400-3 should be used for this work.

46-6.02(b) HIR - Remixing

HIR – Remixing should be considered when significant modification of the existing asphalt pavement is needed to correct specific pavement distresses and/or the recycled mix is to function as the wearing course. HIR – Remixing will require more in-depth investigation and mix design. HIR – Remixing may be performed as a single stage or multiple stages.

Since design procedures and specifications have not been developed, HIR – Remixing needs to follow the experimental feature requirement in Section 11-3.06 of this manual.

46-6.02(c) HIR - Repaving

HIR – Repaving should be considered when other HIR processes will not restore the pavement profile or surface requirements and/or a thin HMA or specialty mix is required as a surface course. HIR – Repaving will require more in-depth investigation and mix design. HIR – Repaving may be performed as a single pass or multiple pass; however, the recycled lift and the new HMA surface course are compacted as one lift.

Since design procedures and specifications have not been developed, HIR – Repaving needs to follow the experimental feature requirement in Section 11-3.06 of this manual.

46-6.03 Cold In-Place Recycling (CIR)

46-6.03(a) General

CIR is an on-site, in-place rehabilitation method which consists of cold milling or pulverizing, mixing with emulsified asphalt or foamed asphalt, placing, and compacting 2 in (50 mm) to 6 in (150 mm) of the existing bituminous pavement. The following pavement distresses may be treated by CIR:

- Surface Defects (Raveling, Potholes, Bleeding, Skid Resistance)
- Permanent Deformation (Rutting, Corrugations, and Shoving)
- Fatigue, Edge, and Block Cracking
- Slippage, Longitudinal, Transverse, and Reflective Cracking
- Stripping
- Ride Quality

CIR of composite pavements (HMA overlays of rigid pavements) may be a more economical option than removing all HMA overlays down to bare concrete and then putting back a thick HMA overlay. However, this option is only feasible if the underlying concrete is in fairly good condition. Evidence of extensive slab movements such as pumping or differential settlement in a composite pavement may indicate potentially unstable or non-uniform subgrade support or material-related distress such as alkali-silica reactivity or D-cracking in the underlying concrete.

Contact the Central Bureau of Local Roads and Streets for assistance if CIR of a composite pavement is desired.

46-6.04 Full Depth Reclamation (FDR)

46-6.04(a) General

FDR is an on-site, in-place rehabilitation method which consists of uniformly pulverizing, mixing with emulsified asphalt or foamed asphalt, placing, and compacting the full thickness of the existing bituminous pavement and/or underlying materials (base and/or subbase) at the maximum depth of 10 in (250 mm). The following pavement distresses may be treated by FDR:

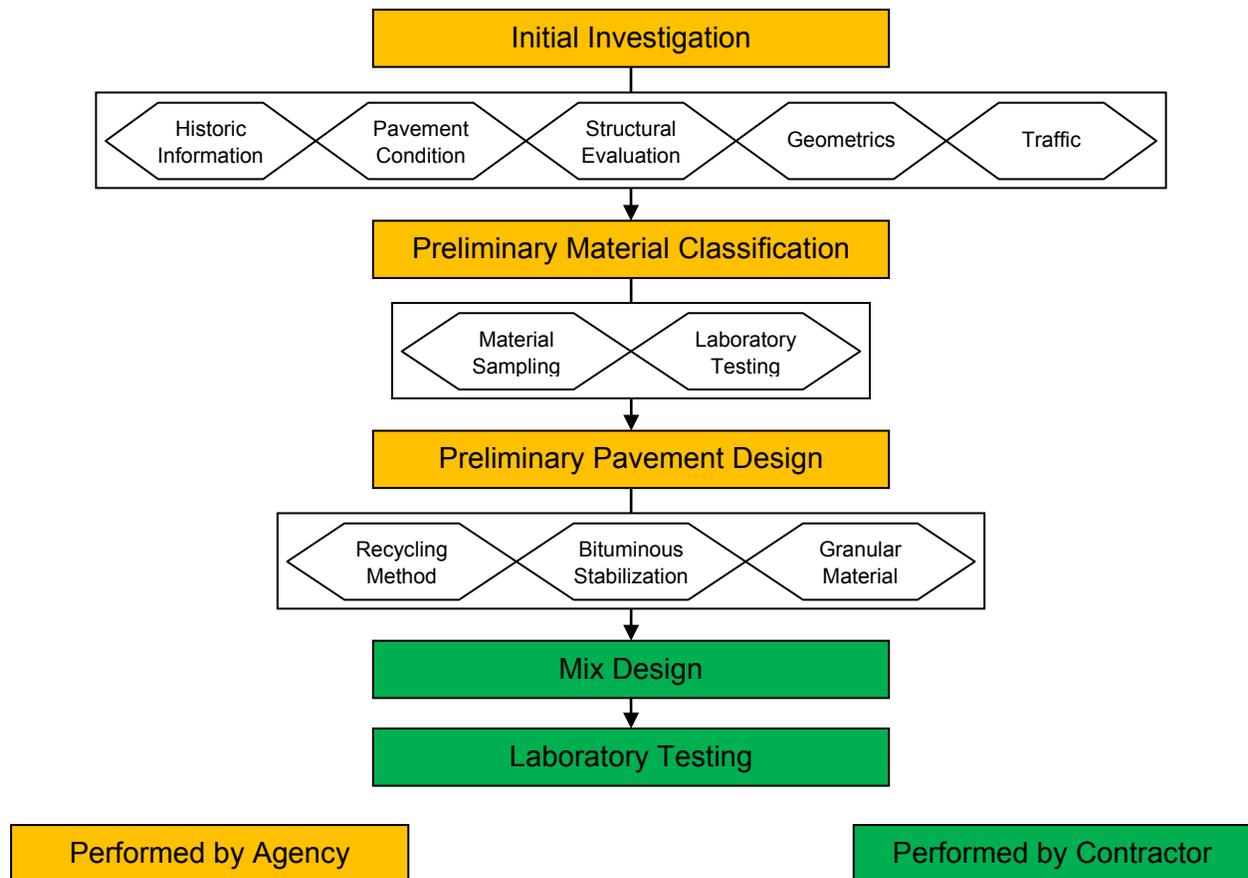
- Surface Defects (Raveling, Potholes, Bleeding, Skid Resistance)
- Permanent Deformation (Rutting, Corrugations, and Shoving)
- Fatigue, Edge, and Block Cracking
- Slippage, Longitudinal, Transverse, and Reflective Cracking
- Stripping
- Ride Quality

46-6.05 CIR and FDR Design Procedures

The designer will evaluate if CIR or FDR is an appropriate rehabilitation technique by conducting an initial investigation of historic information, pavement condition, structural capacity, highway geometrics, and traffic. Utilizing information from the initial investigation, the designer divides the project into segments of similar materials and/or performance for material classification, development of a pavement design, and cost estimate. This information may be used to compare CIR/FDR rehabilitation to other rehabilitation techniques to determine the best project.

If CIR or FDR is selected as the preferred alternative, the contractor shall conduct a more detailed analysis of the current pavement. The contractor shall develop a CIR or FDR mix design for approval by the designer based on additional sampling and testing. If the mix design does not perform adequately, the specified recycling parameters may need revised. The designer should anticipate 6 weeks from the notice to proceed for the contractor to submit a mix design. Therefore, working days will not start until the designer has approved the contractor mix design. Completion date contracts are discouraged.

Figure 46-6A outlines the CIR or FDR design procedures.



CIR/FDR PROJECT SELECTION AND EVALUATION

Figure 46-6B

46-6.05(a) Initial Investigation

An investigation into the design traffic, the available materials, the pavement structure and the climate should be performed. This initial investigation of the existing conditions will determine if the existing pavement conditions are suitable for the CIR/FDR since it is essential that only appropriate sections be selected for these rehabilitation options. Construction and maintenance records should be reviewed to determine variations in materials and typical pavement section.

1. Historic Information. The designer should review construction and maintenance records to determine:
 - Age of highway;
 - Thickness, age, and type of bituminous material used for each layer/treatment;
 - Top size and quality of aggregates for each layer/treatment;
 - Presence of any paving fabrics, interlayers, or unique mixes;
 - Patching location, age, and material used; and
 - Crack sealing location, age, and material used.
2. Pavement Condition. The existing pavement condition and the type, frequency, and severity of the distresses will indicate the depth and/or type of recycling needed.
 - CIR/FDR is best suited for pavements that are structurally sound and have well drained bases. The CIR/FDR process destroys the existing crack pattern; however, the Designer should consider crack depth and potential for reflective cracking when determining CIR thickness.
 - The presence of large or frequent patches increases the variability of the existing materials. Large full-depth patches may require a unique mix design. Furthermore, patches may indicate locations with thinner pavement structures, poor subgrade or higher groundwater which may need corrected as part of the highway rehabilitation.
 - Rutting may also be corrected with CIR/FDR if the appropriate stabilizing agent(s) and/or granular materials are used and the cause of the rutting is within the recycled thickness. If rutting is the result of a weak subgrade, CIR may not be a viable option; however, FDR may still be possible if subgrade stabilization is performed after pulverization and before reclamation.
3. Structural Evaluation. The designer should evaluate the pavement to ensure the CIR/FDR project will provide sufficient structural capacity and to verify that the underlying subgrade will provide sufficient support for construction equipment and adequate compaction of recycled mixture. Criteria for CIR/FDR pavement design is discussed in Section 46-6.05(c).
4. Geometrics. The designer should perform a detailed geometric assessment.
 - Major realignments or drainage corrections may be difficult using CIR. The designer may want to consider FDR or other rehabilitation techniques in these situations.
 - Granular shoulders that have sufficient granular material and good subgrade may be incorporated into the CIR/FDR process to provide a uniform base course for selected surface wearing course.

- The location and elevation of utility covers (manholes and valves) should be identified. Manholes and valves should be lowered at least 4 in (100 mm) below the CIR/FDR treatment depth. Upgrading of existing underground utilities should be completed prior to the CIR/FDR project.
 - Existing pavement on structures should not be treated with the CIR/FDR process; however, structures' condition rating and capacity should be evaluated to determine if the structures will support the CIR/FDR construction equipment.
 - Most transverse or longitudinal slope corrections may be corrected by cold planning, adding new granular or RAP material, and/or using a leveling binder under the surface wearing course.
6. Traffic. The designer should determine existing and forecasted traffic patterns and volumes to determine proper traffic control during the CIR/FDR project and for developing a pavement design.

46-6.05(b) Preliminary Material Classification

The designer should use historic information and pavement condition survey to divide project into area/segments of similar material and/or performance. The frequency of sampling to ensure representative samples varies with the size of the project, the variation in pavement structure, and the variability of existing material. However, at least one sample should be taken every 1600 to 2500 ft (500 to 760 m).

The laboratory testing of the in situ materials includes testing of surface, base course, subbase, and subgrade by using core sampling and/or test pits. Coring may be done using either wet or dry coring usually 6 in (150 mm) in diameter; however, coring may not allow a representative sample of aggregate subbase to be collected. Therefore, coring is not recommended if the recycling depth includes a granular layer. Test pits may also be used by means of sawing and then excavating the pavement to expose, sample and test underlying materials; however, test pits are usually more expensive, take longer, and have a significant impact on traffic than coring. Test pits do provide a larger, more representative sample than coring.

Core samples should be examined to confirm historic information including pavement layers, surface treatments, specialty mixes, or geotextile paving fabrics and to identify evidence of distresses such as stripping or rutting. If test pits are used, the visual inspection should be performed using the vertical edges of the test pits. After visual inspection, samples are crushed for further testing.

Representative samples from the bituminous layers being recycled will be tested to determine:

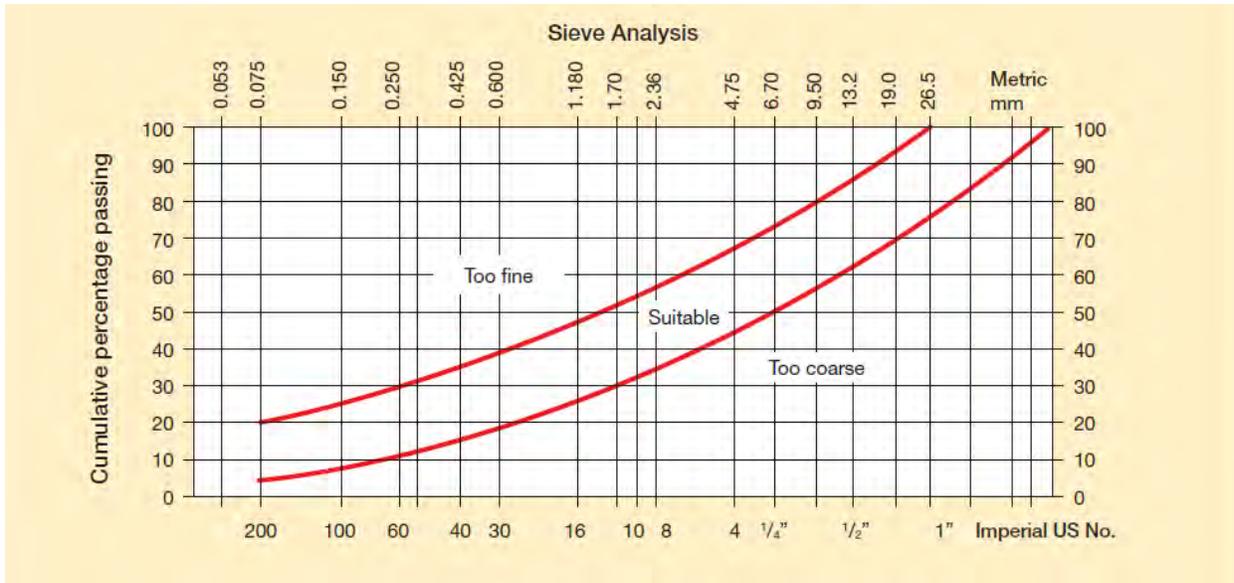
- Moisture content (if dry sampling has been used);
- Asphalt binder content (ignition or extraction); and
- Aggregate properties of bituminous layer including gradation and angularity (natural or crushed, crushed faces).

Representative samples from the granular layers being recycled will be tested to determine:

- Moisture content (if dry sampling has been used);
- Gradation and angularity (natural or crushed, crushed faces);

- Plastic index; and
- Sand equivalent value.

Figure 46-6B and Figure 46-6C provide information concerning gradations suitable for CIR and FDR using emulsified asphalt and foamed asphalt.



Sieve Size		Percent Passing			
		CIR/FDR with Emulsified Asphalt		CIR/FDR with Foamed Asphalt	
		Ideal	Less Suitable	Ideal	Less Suitable
2 in	50 mm	100		100	
1 ½ in	37.5 mm	87 – 100		87 – 100	
1 in	25 mm	77 – 100	100	77 – 100	100
¾ in	19 mm	66 – 99	99 – 100	66 – 99	99 – 100
½ in	12.5 mm	67 – 87	87 – 100	67 – 87	87 – 100
⅜ in	9.5 mm	49 – 74	74 – 100	49 – 74	74 – 100
No. 4	4.75 mm	35 – 56	56 – 95	35 – 56	56 – 95
No. 8	2.36 mm	25 – 42	42 – 78	25 – 42	42 – 78
No. 16	1.18 mm	18 – 33	33 – 65	18 – 33	33 – 65
No. 50	300 µm	8 – 21	21 – 43	10 – 24	24 – 43
No. 200	75 µm	2 – 9	9 – 20	4 – 10	10 – 20

Note: Adapted from the 2010 Wirtgen Cold Recycling Technology guide.

GRADATION SUITABLE FOR CIR/FDR TREATMENT

Figure 46-6B

46-6.05(c) Pavement Design

A structural pavement design is not needed if a CIR/FDR project meets one of the following criteria.

- The project meets the eligibility requirements the Local Agency Functional Overlay policy as defined in Section 46-3.01. The designer should follow the HMA thickness requirements in Section 46-3.02 or the designer will require a surface treatment (such as seal coat, micro-surfacing, or cape seal);
- The project is included in a Local Agency Pavement Preservation program as defined in Chapter 45. The designer will require a surface treatment (such as seal coat, micro-surfacing, or cape seal) or HMA surface course; or
- The project is included in an annual maintenance program defined in Chapter 14. The designer will require a surface treatment (such as seal coat, micro-surfacing, or cape seal) or HMA surface course.

For all other CIR/FDR projects, the modified AASHTO design procedure for FDR or CIR pavements will enable the designer to determine the HMA overlay thickness required to carry specified volume and composition of traffic for a designated period of time while retaining serviceability level at or above a selected minimum value.

1. Determine Traffic Factor. Determine the traffic factor (TF) according to Sections 46-4.02(b), (c), (d), and (e).
2. Determine the Immediate Bearing Value. Determine the Immediate Bearing Value (IBV) of the road bed soil according to Section 46-4.02(f).
3. Required Final Structural Number. Determine the required structural number (SN_F) according to Section 46-4.02(g)
4. FDR or CIR Pavement Structural Number. The FDR or CIR pavement structural number (SN_R) is the FDR or CIR pavement thickness multiplied by its corresponding strength coefficient from Figure 46-4F. For CIR pavements, the summation of the remaining layers multiplied by their coefficients from Figure 46-4F must be added to the CIR layer product (see equation 46-6.1). For FDR, the FDR layer product is equal to SN_R (see equation 46-6.2).

Use the following equations to determine the structural number for FDR or CIR:

$$SN_R = a_1 D_R + a_1'' D_1 + a_2'' D_2 + a_3'' D_3 \quad \text{Equation 46-6.1}$$

$$SN_R = a_1 D_R \quad \text{Equation 46-6.2}$$

Where: SN_R = FDR or CIR recycling pavement structural number
 $a_1, a_1'', a_2'',$ and a_3'' = coefficient of relative strength of the FDR or CIR layer, and remaining surface, base, and subbase materials
 D_R, D_1, D_2, D_3 = depth of the FDR or CIR pavement, and thickness of remaining surface, base, and subbase layers

5. Overlay Thickness Design. If $SN_R \geq SN_F$, a HMA overlay is not required; however, the pavement shall be covered with a surface treatment such as seal coat, micro-surfacing, or cape seal.

If $SN_R < SN_F$, a HMA overlay thickness (D_O) is required. In determining the HMA overlay thickness, the in-place recycling pavement structural number is subtracted from the required structural number of the pavement. This needed structural number is then divided by the resurfacing coefficient to determine the resurfacing thickness.

Use the following equation to determine the required HMA overlay thickness:

$$D_O = \frac{(SN_F - SN_R)}{a_O} \quad \text{Equation 46-4.2}$$

Where:

- D_O = thickness of new HMA overlay, in
- SN_F = required flexible pavement structural number
- SN_R = FDR pavement structural number
- a_O = coefficients of relative strength of the overlay material

For typical overlays using a 19.0 mm HMA binder course and a 9.5 mm or 12.5 mm HMA surface course, the coefficient of relative strength of the overlay material (a_O) should be 0.36. If HMA surface course mixes are use the entire depth of the overlay, a_O may be increased to 0.40. Contact the Central Bureau of Local Roads and Streets for other special designs.

46-6.05(d) Determination of Project Criteria

The designer will use the initial investigation, preliminary material classification, and pavement design to establish project segments and depth of recycling; to select the type of recycling process (CIR or FDR) and bituminous stabilization agent (foamed asphalt or emulsified asphalt); and to determine if additional granular material is needed. The designer will use LR400-4, LR400-5, LR400-6, or LR400-7 as the contract special provision and included copies of the material testing in the contract documents.

46-6.05(e) Mix Design

The designer will require the contractor to submit a mix design meeting the performance criteria for asphalt emulsion (see Figure 46-6D) or foamed asphalt (see Figure 46-6E) stabilization. The designer will provide at least six weeks from the notice to proceed date for the contractor to perform the mix design. Depending on mix design results, the structural pavement design may need altered and/or additional laboratory testing performed.

The mix design varies somewhat depending on whether engineered asphalt emulsion or foamed asphalt is used as a stabilizing agent. Regardless of the bituminous stabilization used, the mix design should contain the following:

- Determine suitability of reclaimed material and necessary additives (coarse aggregate, fine aggregate, cement, fly ash, etc.);
- Establish optimum moisture content and optimum fluid content;
- Determine optimum bitumen content; and
- Confirm mechanical properties of the mix

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Test Method	CIR	FDR Type 1 ¹	FDR Type 2 ²	Test Purpose
Superpave Gyrotory Compaction, 1.25° angle, 600 kPa	30 gyrations at 4 in (100 mm) ³	30 gyrations at 6 in (150 mm)	30 gyrations at 6 in (150 mm)	Laboratory Density Indicator
Modified Proctor, ASTM D1557, Method C	N/A	Report	Report	Optimum Moisture
Design Moisture Content	Report	Report	Report	Dispersion of Emulsion
Bulk Specific Gravity (Density), ASTM D 6752 or ASTM D2726	Report	Report	Report	Laboratory Density Indicator
Rice (Maximum Theoretical) Specific Gravity, ASTM D2041	Report	Report	Report	Laboratory Density Indicator
Air Voids, Modified	Report	Report	Report	Laboratory Density Indicator
Marshall Stability, ASTM D 1559, lbs	1,250 ³ minimum	N/A	N/A	Stability Indicator
Retained Stability	70% minimum	N/A	N/A	Moisture Damage Resistance
Raveling Test, ASTM D 7196	2% maximum	N/A	N/A	Raveling Resistance
Sand Equivalent, ASTM D 2419, Method B	N/A	Report	Report	
Modified Proctor, ASTM D 1557, Method C	N/A	Report	Report	Optimum Moisture Content for Density and Compaction
Short Term Strength (STS), ASTM D 1560, Part 13, 175 g/25 mm of width	N/A	175 minimum	150 minimum	Stability Indicator
Indirect Tensile Strength, ASTM D 4867, psi	N/A	40 minimum	35 minimum	Strength Indicator
Conditioned Indirect Tensile Strength, ASTM D 4867, psi	N/A	25 minimum	20 minimum	
Gradation for Design Millings, AASHTO T 27	Report	Report	Report	
Additional Additive(s) ⁴ Coarse Aggregate Fine Aggregate RAP Fly Ash Cement ⁵	Report Report Report Report Report	Report Report Report Report Report	Report Report Report Report Report	
Emulsified Asphalt ⁴ Distillation Residue, % Residue Penetration, dmm Optimum Emulsion Content, % Residual Asphalt to Cement Content Ratio ⁵	Report Report Report Report	Report Report Report Report	Report Report Report Report	

- Notes:
1. FDR Type 1 mixtures contain < 8% passing No. 200.
 2. FDR Type 2 mixtures contain ≥ 8% passing No. 200 or for all granular mixtures.
 3. If 6 in (150 mm) samples are used, the Marshall Stability is required to be 2,500 lbs minimum.
 4. Report shall include type/gradation and producer/supplier.
 5. Cement Content shall be a maximum of 1.0 %. The residual asphalt content to cement content ratio shall be 3:1.

CIR/FDR ASPHALT EMULSION MIX DESIGN REQUIREMENTS

Figure 46-6D

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PAVEMENT REHABILITATION

Apr 2012

Test Method	CIR	FDR	Test Purpose
Gradation for Design Millings, AASHTO T 27	Report	Report	
Plasticity Index	< 10	< 10	
Modified Proctor, ASTM D1557, Method C	Report	Report	Optimum Moisture Content and Maximum Dry Density for Density and Compaction
Design Moisture Content	Report	Report	Dispersion of Emulsion
Foamed Asphalt Expansion Ratio ¹	8 minimum	8 minimum	Measurement of Foamed Asphalt Viscosity
Foamed Asphalt Half-life, s	6 minimum	6 minimum	Measurement of Foamed Asphalt Stability
Optimum Foamant Water Content	Report	Report	
Marshall Density, AASHTO T245 (IL Modified), blows	75	75	Laboratory Density Indicator
Bulk Specific Gravity (Density), ASTM D 6752 or ASTM D2726	Report	Report	Laboratory Density Indicator
Rice (Maximum Theoretical) Specific Gravity, ASTM D2041	Report	Report	Laboratory Density Indicator
Air Voids	Report	Report	Laboratory Density Indicator
Indirect Tensile Strength, AASHTO T283 (IL Modified), Dry, psi Wet (Conditioned), psi Tensile Strength Ratio (TSR), %	45 minimum 30 minimum 70%	45 minimum 30 minimum 70%	Strength Indicator
Raveling Test, 10°C and 50% Humidity	2% maximum	N/A	Raveling Resistance
Additional Additive(s) ² Coarse Aggregate Fine Aggregate RAP Fly Ash Cement	Report Report Report Report 1.0% maximum	Report Report Report Report 1.0% maximum	
Asphalt Binder ² PG Grade Penetration, dmm	Report Report	Report Report	

Notes: 1. If the ambient temperature at the time of construction is expected to be 50°F to 77°F (10°C to 25°C) the foamed expansion ratio should be increased to 10.
2. Report shall include type/gradation and producer/supplier.

CIR/FDR FOAMED ASPHALT MIX DESIGN REQUIREMENTS

Figure 46-6E

46-7 RUBBLIZATION

See Section 54-5.03 of the Bureau of Design & Environment Manual.

46-8 RESOURCES

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5. *Technical Guideline: Bitumen Stabilised Materials (A Guideline for the Design and Construction of Bitumen Emulsion and Foamed Bitumen Stabilised Materials)*, Asphalt Academy, 2009
6. *Wirtgen Cold Recycling Technology*, Wirtgen GmbH, 2010



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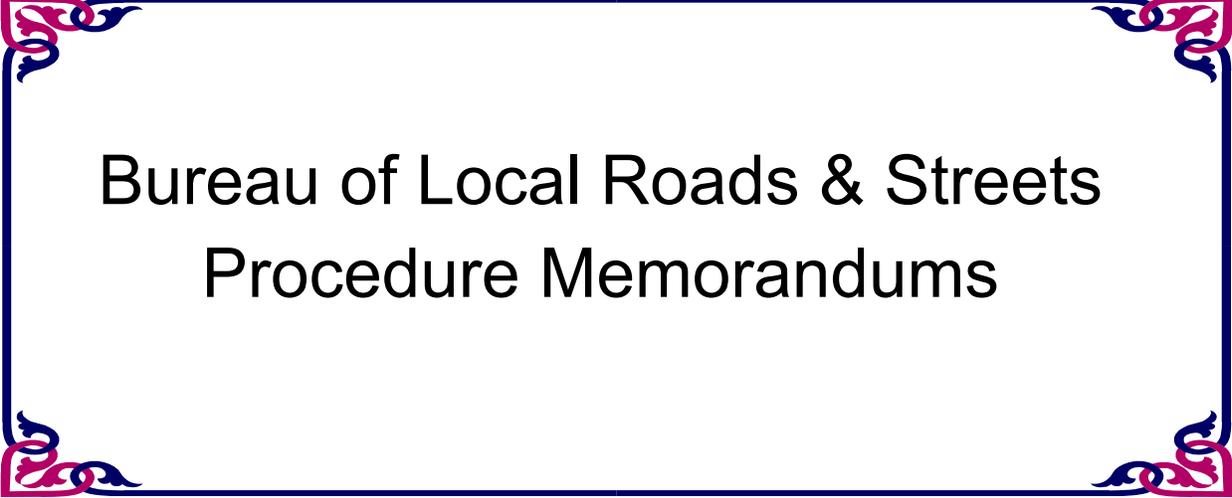
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PM Number	Date Issued	Date Effective	Subject	Status*
2005-01	06/22/05	7/15/2005	Mobilization	Incorporated
2005-02	06/22/05	7/15/2005	Retainage	Incorporated
2005-03	06/22/05	7/15/2005	Requirements for Responsible Bidders	Incorporated
2005-04	07/01/05	7/1/2005	FHWA Section 4(f) Policy Paper	Active
2005-05	08/31/05	8/10/2005	Prevailing Wage Act	Incorporated
2005-06	08/31/05	8/2/2005	Competitive Bidding Threshold	Incorporated
2005-07	10/31/05	1/13/2005	NBIS Rules Changes - Qualifications for Bridge Inspection Personnel	Incorporated
2005-08	12/16/05	12/31/2006	Hot Mix Asphalt Overlay Policy	Incorporated
2005-09	12/21/05	12/31/2005	Disadvantaged Business Enterprise Payment Reporting	Incorporated
2005-10	12/21/05	12/31/2005	Amendment to Federal-Aid Agreement	Incorporated
2006-01	03/28/06	4/1/2006	APPRENTICESHIP AND TRAINING PROGRAM FOR LOCAL LET MATERIAL PROPOSALS	Modified
2006-02	04/21/06	4/21/2006	Guidance for Determining De Minimis Impacts to Section 4(f) Resources	Active
2006-03	07/12/06	9/22/2006	Plan Approval and Release Signature Block	Incorporated
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2008-02	02/28/08	2/28/2008	GOLF CARTS AND NEIGHBORHOOD VEHICLES	Incorporated
2008-03	03/06/08	3/1/2008	DENSITY TESTING ON HMA PAVEMENTS	Incorporated
2008-04	04/15/08	4/15/2008	JURISDICTIONAL TRANSFER AGREEMENTS	Incorporated
2008-05	10/17/08	1/1/2009	ECOLOGICAL COMPLIANCE ASSESSMENT TOOL (EcoCAT) AND MFT CERTIFICATION/PROJECT STATUS FORM	Incorporated
2008-06	10/01/08	10/1/2008	Use of Commercial and Department Wetland Mitigation Bank Site Credits	Active
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2008-08	10/31/08	11/3/2008	Definition of Major/Minor Change in Plans	Incorporated
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2009-04	10/13/09	10/26/2009	MAINTENANCE PERIOD AND MAINTENANCE GROUP DEFINITIONS	Incorporated
2009-05	12/28/09	1/1/2010	ASSET MANAGEMENT	Incorporated
2009-06	12/29/09	1/1/2010	96TH ILLINOIS GENERAL ASSEMBLY'S 2009 LEGISLATIVE CHANGES	Incorporated
2010-01	04/16/10	4/19/2010	HIGHWAY-RAIL GRADE CROSSING APPROACH GEOMETRIC DESIGN	Incorporated
2010-02	08/27/10	9/1/2010	Unsignalized Pedestrian Crosswalk Signs	Incorporated
2011-01	11/23/11	1/1/2012	Pavement Maintenance, Rehabilitation, and Design Policies	Incorporated
2011-02	11/23/11	1/1/2012	Local Agency Pavement Preservation Policy	Incorporated
2011-03	11/28/11	12/1/2011	Highway Signing	Incorporated
2011-04	11/28/11	1/1/2012	Maintenance Groups	Incorporated
2012-01	01/06/12	4/1/2012	CONSTRUCTION SUPERVISION FOR FEDERAL AID PROJECTS	Incorporated
2012-02	03/30/12	4/1/2012	COLD IN-PLACE RECYCLING AND FULL DEPTH RECLAMATION	Incorporated
2012-03	08/27/12	9/1/2012	Changes in Functional Classification Terminology	Incorporated
2012-04	10/24/12	10/24/2012	2010 Highway Capacity Manual	Incorporated

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PM Number	Date Issued	Date Effective	Subject	Status*
2012-05	10/24/12	10/24/2012	MUTCD Revisions	Incorporated
2012-06	11/15/12	2/1/2013	Consultant Agreements	Incorporated
2012-07	11/26/12	11/26/2012	Ash Tree Removal Due to Emerald Ash Borer	Incorporated
2013-01	07/12/13	7/1/2013	Ecological Compliance Assessment Tool (EcoCAT)	Incorporated
2013-02	07/12/13	7/15/2013	Special Waste	Incorporated
2013-03	07/12/13	7/15/2013	Evaluation of Farmland Conversion Impacts	Incorporated
2013-04	07/25/13	7/31/2013	WORK ZONE TRANSPORTATION MANAGEMENT PLANS	Incorporated
2013-05	07/25/13	7/31/2013	Complete Streets	Incorporated
2013-06	07/25/13	7/31/2013	Noise Analysis	Incorporated
2013-07	10/15/13	10/15/2013	Motor Fuel Tax Usage	Incorporated
2013-08	10/23/13	10/25/2013	Bicycle Facilities	Incorporated
2013-09	10/29/13	10/29/2013	Speed Humps and Speed Tables	Incorporated
2013-10	10/31/13	1/1/2014	Public Rights-of-way Accessibility Guidelines (PROWAG)	Incorporated
2013-11	12/31/13	1/1/2014	Local Lettings	Incorporated
2014-01	04/25/14	4/25/2014	Local Lettings	Incorporated
2014-02	05/23/14	5/23/2014	Treatment or Removal of Ash Trees due to Emerald Ash Borer	Incorporated
2014-03	06/27/14	6/30/2014	Bridge Inventory and Inspections	Incorporated
2015-01	09/01/15	9/1/2015	Joint Funding Agreements	Incorporated
2016-01	07/07/16	7/7/2016	Categorical Exclusions	Incorporated
2016-02	07/29/16	8/1/2016	BLRS Policy Manual Rewrite	Incorporated
2017-01	05/31/17	6/1/2017	BLRS Policy Manual Rewrite - Chapter 5	Incorporated
2017-02	11/29/17	11/29/2017	BLRS Policy Manual Rewrite - Chapter 5	Incorporated
2018-01	07/02/18	06/30/2018	BLRS Policy Manual Rewrite Ch 1-4, 6, 7,18, 21, 44	Incorporated

* Incorporated - These Procedure Memorandums have been inserted into the BLRS Manual. See Disposition Table for location.

Active - These Procedure Memorandums supplement or replace sections of the BLRS Manual.

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PM-2(1)

Disposition Table

PM Number	Subject	Disposition
2005-01	Mobilization	Incorporated into 13-4.06 and 25-1.05(f) of the BLRS Manual (July 2005 Revision).
2005-02	Retainage	Incorporated into 13-2.04(c) and 25-1.03(c) of the BLRS Manual (July 2005 Revision).
2005-03	Requirements for Responsible Bidders	Incorporated into 12-3.03(a) of the BLRS Manual (July 2005 Revision).
2005-05	Prevailing Wage Act	Incorporated into 12-2.01(e) of the BLRS Manual (Sept 2005 Revision).
2005-06	Competitive Bidding Threshold	Incorporated into 12-1.02(a) and 12-1.02(c) of the BLRS Manual (Sept 2005 Revision).
2005-07	NBIS Rules Changes - Qualifications for Bridge Inspection Personnel	Incorporated into 6-3.02 of the BLRS Manual (January 2006 Revision)
2005-08	Hot Mix Asphalt Overlay Policy	Replaced Section 37-8 of the BLRS Manual (January 2006 Revision)
2005-09	Disadvantaged Business Enterprise Payment Reporting	Replaced Section 5-6 and Section 24-2 of the BLRS Manual (January 2006 Revision)
2005-10	Amendment to Federal-Aid Agreement	Replaced Section 5-3 of the BLRS Manual (January 2006 Revision)
2006-01	APPRENTICESHIP AND TRAINING PROGRAM FOR LOCAL LET MATERIAL PROPOSALS	Replaced Chapter 12 of the BLRS Manual (April 2006 Revision)
2006-03	Plan Approval and Release Signature Block	Incorporated into 11-2.04 and 23-2.04 of the BLRS Manual (July 2006 Revision)
2006-04	Elimination of Direct Labor Multiplier on Federally Funded Projects	Replaced Section 5-5 and 5-6 of the BLRS Manual (July 2006 Revision)
2006-05	PARK ZONE SIGNS	Adds Section 39-2.08(b) to the BLRS Manual (November 2006 Revision)
2006-06	Design Guidance for Median and Curb Treatments at Railroad Grade Crossings	Incorporated into Section 40-1.01(f) of the BLRS Manual (November 2006 Revision)
2006-07	APPRENTICESHIP AND TRAINING CERTIFICATION	Adds Section 12-4 to the BLRS Manual (December 2006 Revision)
2006-08	ENGINE BRAKING SIGNS	Adds Section 39-2.06(j) to the BLRS Manual (December 2006 Revision)
2006-09	DESIGNATION OF TRUCK ROUTES	Incorporated into Section 3-2.02(d) to the BLRS Manual dated December 2006.
2007-01	Categorical Exclusion Group II Approval Documentation	Incorporated into Section 19-1.04(c) of the BLRS Manual dated January 2007
2007-02	LETTING AND CONTRACT AWARD – MFT AND STATE FUNDS	Incorporated into Sections 12-1, 12-2, and 12-3 of the BLRS Manual dated April 2007

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BUREAU OF LOCAL ROADS AND STREETS

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BLRS Procedure Memorandums

June 2018

Disposition Table

PM Number	Subject	Disposition
2007-03	CONTEXT SENSITIVE SOLUTIONS	Adds Section 10-5 and Section 21-7 to the BLRS Manual (May 2007 Revision)
2007-04	Value Engineering Program	Adds Sections 4-1.15 and Sections 17-2.03 to the BLRS Manual (June 2007 Revision)
2007-05	HIGHWAY BRIDGE PROGRAM (HBP) APPROACH LIMITS	Incorporated into Sections 4-1, Section 32-2 and Section 35-3 of the BLRS Manual dated October 2007.
2008-01	FINAL RULE ON MAINTAINING SIGN RETROREFLECTIVITY	Replaced Section 39-2 of the BLRS Manual (February 2008 Revision)
2008-02	GOLF CARTS AND NEIGHBORHOOD VEHICLES	Replaced Section 39-2 of the BLRS Manual (February 2008 Revision)
2008-03	DENSITY TESTING ON HMA PAVEMENTS	Incorporated into Section 37-1 of the BLRS Manual (February 2008 Revision)
2008-04	JURISDICTIONAL TRANSFER AGREEMENTS	Incorporated into Section 5-2 of the BLRS Manual (April 2008 Revision)
2008-05	ECOLOGICAL COMPLIANCE ASSESSMENT TOOL (EcoCAT) AND MFT CERTIFICATION/PROJECT STATUS FORM	Incorporated in Section 10-1 and Section 20-9 of the BLRS Manual (October 2008 Revision)
2008-07	Invoice Processing	Adds Section 5-11 to the BLRS Manual (November 2008 Revision)
2008-08	Definition of Major/Minor Change in Plans	Incorporated in Section 13-2 of the BLRS Manual (November 2008 Revision)
2009-01	CATEGORICAL EXCLUSIONS AND DESIGN APPROVAL	Replaced Chapter 19 of the BLRS Manual (January 2007 Revision) and incorporated in Section 22-2 of the BLRS Manual (June 2006 Revision).
2009-02	HIGHWAY LIGHTING PLAN REVIEW	Revises Section 11-2 dated July 2006, Section 11-7 dated January 2006, and Section 23-7 dated January 2006 of the BLRS Manual.
2009-03	EMERALD ASH BORER	Revises Section 41-10 dated January 2006 of the BLRS Manual.
2009-04	MAINTENANCE PERIOD AND MAINTENANCE GROUP DEFINITIONS	Revises Section 5-5 dated July 2006, Section 11-7 dated April 2009, Section 12-2 dated April 2007, Section 14-2 dated January 2006 and Section 14-3 dated January 2006 of the BLRS Manual.
2009-05	ASSET MANAGEMENT	Revises Section 4-1 dated October 2007 and Section 4-3 dated January 2006 of the Bureau of Local Roads & Streets Manual.
2009-06	96TH ILLINOIS GENERAL ASSEMBLY'S 2009 LEGISLATIVE CHANGES	Revises Sect 3-2.05(a) -PA 96-0034 (HB0255); Sect 4-2.02(a), 4-2.03, 9-2.01(c) & 9-2.02 -PA 96-0366 (HB0641); Sect 4-2.04 & figure 4-3A - PA 96-0034 (HB0255); and Sect 12-1.02(a) & 12-1.02(b) -PA 96-0170 (HB0585)

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Disposition Table

PM Number	Subject	Disposition
2010-01	HIGHWAY-RAIL GRADE CROSSING APPROACH GEOMETRIC DESIGN	This memorandum replaces Figure 33-3B in Section 33-3 of the BLRS Manual dated January 2006.
2010-02	Unsignalized Pedestrian Crosswalk Signs	Revises Section 39-2 of the BLRS Manual dated October 2008.
2011-01	Pavement Maintenance, Rehabilitation, and Design Policies	Makes the following changes to the BLRS Manual: revises Sections 14-1.02; moves Section 33-4 into a new Chapter as Section 46 3, Sections 37-1 through 37-7 into a new chapter as Sections 44-1 through 44-7, Section 37-8 into a new chapter as Section 46 4, and Section 37-9 into a new chapter as Section 44-8; deletes Section 33-5 and 33-6; and creates Section 46-5, 46-6, and 46-7.
2011-02	Local Agency Pavement Preservation Policy	Creates Chapter 46 of the BLRS Manual.
2011-03	Highway Signing	Revises Section 39-2 of the BLRS Manual dated August 2010.
2011-04	Maintenance Groups	Revises Sections 5-5 and 14-2 of the BLRS Manual dated October 2009.
2012-01	CONSTRUCTION SUPERVISION FOR FEDERAL AID PROJECTS	Revises Section 25-1.02(c) of the BLRS Manual dated January 2006.
2012-02	COLD IN-PLACE RECYCLING AND FULL DEPTH RECLAMATION	Revises Section 46-6 of the BLRS Manual dated January 2012.
2012-03	Changes in Functional Classification Terminology	Revises Section 27-3 of the BLRS Manual dated January 2006.
2012-04	2010 Highway Capacity Manual	Revises Section 27-6 of the BLRS Manual dated January 2006.
2012-05	MUTCD Revisions	Revises Section 39-2 of the BLRS Manual dated December 2011.
2012-06	Consultant Agreements	Combines Sections 5-5 and 5-6 of the BLRS Manual dated January 2012 and July 2006.
2012-07	Ash Tree Removal Due to Emerald Ash Borer	Revises Section 14-1 of the BLRS Manual dated January 2012.
2013-01	Ecological Compliance Assessment Tool (EcoCAT)	This memorandum supersedes Section 10-1 dated October 2008, Section 20-2 dated October 2008, Section 20-8 dated October 2008, and Section 20-9 dated October 2008 of the Bureau of Local Roads & Streets Manual.
2013-02	Special Waste	This memorandum supersedes Section 20-2 dated October 2008 and Section 20-12 dated October 2008 of the Bureau of Local Roads & Streets Manual.

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BLRS Procedure Memorandums

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Disposition Table

PM Number	Subject	Disposition
2013-03	Evaluation of Farmland Conversion Impacts	This memorandum supersedes Section 10-1 dated October 2008 and Section 20-10 dated January 2006 of the Bureau of Local Roads & Streets Manual.
2013-04	WORK ZONE TRANSPORTATION MANAGEMENT PLANS	This memorandum supersedes Section 10-2 dated July 2008 and Section 22-2 dated February 2009 of the Bureau of Local Roads & Streets Manual.
2013-05	Complete Streets	This memorandum supersedes Section 10-2 dated July 2008 and Section 22-2 dated February 2009 of the Bureau of Local Roads & Streets Manual.
2013-06	Noise Analysis	This memorandum supersedes Section 20-6 dated January 2006 of the Bureau of Local Roads & Streets Manual.
2013-07	Motor Fuel Tax Usage	This memorandum supersedes Section 4-3 dated November 2012 and Section 14-1 dated November 2012 of the Bureau of Local Roads & Streets Manual.
2013-08	Bicycle Facilities	This memorandum supersedes Chapter 42 dated January 2006 of the Bureau of Local Roads & Streets Manual.
2013-09	Speed Humps and Speed Tables	This memorandum creates a new Section 41-12 of the Bureau of Local Roads & Streets Manual.
2013-10	Public Rights-of-way Accessibility Guidelines (PROWAG)	This memorandum replaces Chapter 8 dated April 2005 and supersedes Section 41-6 dated October 2008 of the Bureau of Local Roads & Streets Manual.
2013-11	Local Lettings	This memorandum replaces Chapter 12 dated December 2009 of the Bureau of Local Roads & Streets Manual.
2014-01	Local Lettings	This memorandum supersedes portions of PM2013-11 dated December 31, 2013 and Sections 12-2.01(b), 12-3.04(a), 12-3.06(b), 12-3.07, and 12-3.08(a) dated December 2013 of the Bureau of Local Roads & Streets Manual.
2014-02	Treatment or Removal of Ash Trees due to Emerald Ash Borer	This memorandum supersedes Procedure Memorandum 2012-07 dated November 26, 2012 and revises Section 14-1 dated October 2013 of the Bureau of Local Roads & Streets Manual.
2014-03	Bridge Inventory and Inspections	This memorandum supersedes Chapter 6 of the Bureau of Local Roads and Streets Manual dated January 2006 and revised February 2008.
2015-01	Joint Funding Agreements	This memorandum adds requirements to Sections 5-3.01(b) of the Bureau of Local Roads & Streets Manual, and revise BLR Forms 05310 and BLR 05311.

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PM-2(5)

Disposition Table

PM Number	Subject	Disposition
2016-01	Categorical Exclusions	This memorandum replaces Chapter 19 of the Bureau of Local Roads & Streets Manual dated February 2009 and Chapter 22 of the Bureau of Local Roads & Streets Manual dated January 2006 with revisions dated July 2013.
2016-02	BLRS Policy Manual Rewrite	This memorandum replaces Chapters 27 through 33 of the Bureau of Local Roads & Streets Policy Manual.
2017-01	BLRS Policy Manual Rewrite - Chapter 5	This memorandum replaces Chapter 5 of the Bureau of Local Roads & Streets Policy Manual.
2017-02	BLRS Policy Manual Rewrite - Chapter 5	This memorandum replaces Chapter 5 of the Bureau of Local Roads & Streets Policy Manual.

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BUREAU OF LOCAL ROADS AND STREETS

PM-2(6)

BLRS Procedure Memorandums

June 2018

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: 2005-01
SUBJECT: MOBILIZATION
ISSUED DATE: June 22, 2005
EFFECTIVE DATE: July 15, 2005

This memorandum adds Section 4.06 to Chapter 13 and Section 1.05(f) to Chapter 25 of the Bureau of Local Roads and Streets Manual dated April 2005.

Section 671 of the Standard Specifications for Road and Bridge Construction (SSRBC) contains the requirements for mobilization. The 2002 SSRBC allowed contractors to receive 3% of the contract price up front. This initial payment was then deducted from future payments. LR 671 *Mobilization* was issued to eliminate this section of the SSRBC if local agencies did not want mobilization payments.

In January 2003, Section 671 was revised to include a MOBILIZATION pay item. This allowed contractors to bid mobilization as a line item. If projects did not include the MOBILIZATION pay item, Section 671 did not apply. MOBILIZATION was an option on all local projects regardless of letting type. Therefore, the Bureau of Local Roads & Streets eliminated LR 671.

As of April 2005, the Office of the Chief Counsel requires prime contractors to pay subcontractors mobilization on state contracts. Therefore, BDE 80143 "Subcontractor Mobilization Payments" and the MOBILIZATION pay item is required for all local projects on state lettings after the effective date.

A handwritten signature in cursive script that reads "Charles J. Dingersoll".

Engineer of Local Roads and Streets

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SUBCONTRACTOR MOBILIZATION PAYMENTS (BDE)

Effective: April 2, 2005

To account for the preparatory work and operations necessary for the movement of subcontractor personnel, equipment, supplies, and incidentals to the project site and for all other work or operations that must be performed or costs incurred when beginning work approved for subcontracting in accordance with Article 108.01 of the Standard Specifications, the Contractor shall make a mobilization payment to each subcontractor.

This mobilization payment shall be made at least 14 days prior to the subcontractor starting work. The amount paid shall be equal to 3 percent of the amount of the subcontract reported on form BC 260A submitted for the approval of the subcontractor's work.

This provision shall be incorporated directly or by reference into each subcontract approved by the Department.

80143



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: 2005-02
SUBJECT: RETAINAGE
ISSUED DATE: June 22, 2005
EFFECTIVE DATE: July 15, 2005

This memorandum supersedes Chapter 13 Section 2.04(c) and Chapter 25 Section 1.03(c) of the Bureau of Local Roads and Streets Manual dated April 2005.

Subpart B Administrative Requirements for DBE Programs for Federally-Assisted Contracting of 49 CFR 26.29(b) provides three mechanisms for retainage administration on federal-aid contracts:

1. Awarding agencies may decline withholding retainage from prime contractors and prohibit prime contractors from withholding retainage from subcontractors.
2. Awarding agencies may decline withholding retainage from prime contractors and require prime contractors to make full and prompt payment of any retainage kept from subcontractors within 30 days after the subcontractor's work is satisfactorily completed.
3. Awarding agencies may hold retainage from prime contractors and provide for prompt and regular incremental acceptances of the prime contract, pay retainage to prime contractors based on these acceptances, and require prime contractors to make full and prompt payment of any retainage kept from subcontractors within 30 days after the prime contractor receives retainage payments for that work.

605 ILCS 5/5-409 requires counties to withhold 10% of the value of the work then completed as retainage until 50% of the work has been completed. After 50% of the work is completed, the county must withhold at least 5% of the total adjusted contract price.

Therefore, if a local project contains federal funds, the local agency must comply with 49 CFR 26.29(b). If no federal funds are involved, the department will continue to apply the requirements of 605 ILCS 5/5-409 to all local projects.

The department administers projects on the state letting using the second option by using BDE Special Provision 80029 "Disadvantaged Business Enterprise Participation" and BDE Special Provision 80116 "Partial Payments". These special provisions should be included in all local projects that are federally funded. BDE 80116 is not allowed and retainage is required for projects with no federal funds and locally let.

A handwritten signature in black ink that reads "Charles J. Dingersoll". The signature is written in a cursive style with a large initial 'C' and 'D'.

Engineer of Local Roads and Streets

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§ 26.21**Subpart B—Administrative Requirements for DBE Programs for Federally-Assisted Contracting****§ 26.21 Who must have a DBE program?**

(a) If you are in one of these categories and let DOT-assisted contracts, you must have a DBE program meeting the requirements of this part:

(1) All FHWA recipients receiving funds authorized by a statute to which this part applies;

(2) FTA recipients receiving planning, capital and/or operating assistance who will award prime contracts (excluding transit vehicle purchases) exceeding \$250,000 in FTA funds in a Federal fiscal year;

(3) FAA recipients receiving grants for airport planning or development who will award prime contracts exceeding \$250,000 in FAA funds in a Federal fiscal year.

(b)(1) You must submit a DBE program conforming to this part by August 31, 1999 to the concerned operating administration (OA). Once the OA has approved your program, the approval counts for all of your DOT-assisted programs (except that goals are reviewed by the particular operating administration that provides funding for your DOT-assisted contracts).

(2) You do not have to submit regular updates of your DBE programs, as long as you remain in compliance. However, you must submit significant changes in the program for approval.

(c) You are not eligible to receive DOT financial assistance unless DOT has approved your DBE program and you are in compliance with it and this part. You must continue to carry out your program until all funds from DOT financial assistance have been expended.

[64 FR 5126, Feb. 2, 1999, as amended at 64 FR 34570, June 28, 1999; 65 FR 68951, Nov. 15, 2000]

§ 26.23 What is the requirement for a policy statement?

You must issue a signed and dated policy statement that expresses your commitment to your DBE program, states its objectives, and outlines responsibilities for its implementation.

49 CFR Subtitle A (10–1–04 Edition)

You must circulate the statement throughout your organization and to the DBE and non-DBE business communities that perform work on your DOT-assisted contracts.

§ 26.25 What is the requirement for a liaison officer?

You must have a DBE liaison officer, who shall have direct, independent access to your Chief Executive Officer concerning DBE program matters. The liaison officer shall be responsible for implementing all aspects of your DBE program. You must also have adequate staff to administer the program in compliance with this part.

§ 26.27 What efforts must recipients make concerning DBE financial institutions?

You must thoroughly investigate the full extent of services offered by financial institutions owned and controlled by socially and economically disadvantaged individuals in your community and make reasonable efforts to use these institutions. You must also encourage prime contractors to use such institutions.

§ 26.29 What prompt payment mechanisms must recipients have?

(a) You must establish, as part of your DBE program, a contract clause to require prime contractors to pay subcontractors for satisfactory performance of their contracts no later than 30 days from receipt of each payment you make to the prime contractor.

(b) You must ensure prompt and full payment of retainage from the prime contractor to the subcontractor within 30 days after the subcontractor's work is satisfactorily completed. You must use one of the following methods to comply with this requirement:

(1) You may decline to hold retainage from prime contractors and prohibit prime contractors from holding retainage from subcontractors.

(2) You may decline to hold retainage from prime contractors and require a contract clause obligating prime contractors to make prompt and full payment of any retainage kept by prime contractor to the subcontractor within

30 days after the subcontractor's work is satisfactorily completed.

(3) You may hold retainage from prime contractors and provide for prompt and regular incremental acceptances of portions of the prime contract, pay retainage to prime contractors based on these acceptances, and require a contract clause obligating the prime contractor to pay all retainage owed to the subcontractor for satisfactory completion of the accepted work within 30 days after your payment to the prime contractor.

(c) For purposes of this section, a subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the recipient. When a recipient has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.

(d) Your DBE program must provide appropriate means to enforce the requirements of this section. These means may include appropriate penalties for failure to comply, the terms and conditions of which you set. Your program may also provide that any delay or postponement of payment among the parties may take place only for good cause, with your prior written approval.

(e) You may also establish, as part of your DBE program, any of the following additional mechanisms to ensure prompt payment:

(1) A contract clause that requires prime contractors to include in their subcontracts language providing that prime contractors and subcontractors will use appropriate alternative dispute resolution mechanisms to resolve payment disputes. You may specify the nature of such mechanisms.

(2) A contract clause providing that the prime contractor will not be reimbursed for work performed by subcontractors unless and until the prime contractor ensures that the subcontractors are promptly paid for the work they have performed.

(3) Other mechanisms, consistent with this part and applicable state and local law, to ensure that DBEs and

other contractors are fully and promptly paid.

[68 FR 35553, June 16, 2003]

§ 26.31 What requirements pertain to the DBE directory?

You must maintain and make available to interested persons a directory identifying all firms eligible to participate as DBEs in your program. In the listing for each firm, you must include its address, phone number, and the types of work the firm has been certified to perform as a DBE. You must revise your directory at least annually and make updated information available to contractors and the public on request.

§ 26.33 What steps must a recipient take to address overconcentration of DBEs in certain types of work?

(a) If you determine that DBE firms are so overconcentrated in a certain type of work as to unduly burden the opportunity of non-DBE firms to participate in this type of work, you must devise appropriate measures to address this overconcentration.

(b) These measures may include the use of incentives, technical assistance, business development programs, mentor-protégé programs, and other appropriate measures designed to assist DBEs in performing work outside of the specific field in which you have determined that non-DBEs are unduly burdened. You may also consider varying your use of contract goals, to the extent consistent with § 26.51, to ensure that non-DBEs are not unfairly prevented from competing for subcontracts.

(c) You must obtain the approval of the concerned DOT operating administration for your determination of overconcentration and the measures you devise to address it. Once approved, the measures become part of your DBE program.

§ 26.35 What role do business development and mentor-protégé programs have in the DBE program?

(a) You may or, if an operating administration directs you to, you must establish a DBE business development program (BDP) to assist firms in gaining the ability to compete successfully



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: 2005-03
SUBJECT: REQUIREMENTS FOR RESPONSIBLE BIDDERS
ISSUED DATE: June 22, 2005
EFFECTIVE DATE: July 15, 2005

This memorandum supersedes Chapter 12 Section 3.03(a) of the Bureau of Local Roads and Streets Manual dated April 2005.

Public Act 93-0642 amended 30 ILCS 500, the *Illinois Procurement Code*, by adding section 30-22 *Construction Contracts; Responsible Bidder Requirements* effective June 1, 2004. To be a responsible bidder on a construction contract, this public act requires a bidder comply with six minimum requirements. These requirements do not apply to federally funded construction projects if such application would jeopardize the receipt or use of federal funds.

The Illinois Procurement Code does not apply to local agencies; however, the following statutes require the Illinois Department of Transportation (IDOT) to approve local agency contracts that use Motor Fuel Tax (MFT), or other funds received from the State, and are let to the lowest responsible bidder:

- 605 ILCS 5/5-402 Department approval and supervision required when certain funds are used; agreement between Department and County Highway Superintendent's Office
- 605 ILCS 5/5-403 Procedure when work is to be performed under supervision and approval of Department; resolutions; bids and letting of contracts
- 605 ILCS 5/6-701.1 Construction of roads and grades; procedure.
- 605 ILCS 5/7-203 Ordinances specifying purposes of motor fuel tax funds; Department approval for specifications and work; bidding and letting of contracts; inspection of work by Department

Therefore, IDOT's Office of Chief Counsel has determined that the department must use the requirements outlined in 30 ILCS 500/30-22 as minimum requirements when approving any local let construction projects that use MFT funds or other state funding source provided federal funds are not included. The department has defined local let construction projects to include general maintenance contracts; however, this does not include projects let as material proposals according to Chapter 12, Section 1.01(b) and Section 1.02(b), of the Bureau of Local Roads and Streets Manual.

BLR 12220 (formerly BLR 5704) has been revised to add an apprenticeship and training certification statement. All prospective bidders must submit this completed statement with their bid. If a bidder's certification statement is not completed their bid should be discarded. This statement does not apply to federal aid projects.

A handwritten signature in black ink that reads "Charles J. Dingsoll". The signature is written in a cursive style with a large, prominent 'C' at the beginning.

Engineer of Local Roads and Streets

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Attachments

Public Act 093-0642
HB3048 Re-Enrolled

LRB093 07661 JAM 07841 b

AN ACT relating to procurement.

Be it enacted by the People of the State of Illinois,
represented in the General Assembly:

Section 5. The Illinois Procurement Code is amended by
adding Section 30-22 as follows:

(30 ILCS 500/30-22 new)

Sec. 30-22. Construction contracts; responsible bidder requirements. To be considered a responsible bidder on a construction contract for purposes of this Code, a bidder must comply with all of the following requirements and must present satisfactory evidence of that compliance to the appropriate construction agency:

(1) The bidder must comply with all applicable laws concerning the bidder's entitlement to conduct business in Illinois.

(2) The bidder must comply with all applicable provisions of the Prevailing Wage Act.

(3) The bidder must comply with Subchapter VI ("Equal Employment Opportunities") of Chapter 21 of Title 42 of the United States Code (42 U.S.C. 2000e and following) and with Federal Executive Order No. 11246 as amended by Executive Order No. 11375.

(4) The bidder must have a valid Federal Employer Identification Number or, if an individual, a valid Social Security Number.

(5) The bidder must have a valid certificate of insurance showing the following coverages: general liability, professional liability, product liability, workers' compensation, completed operations, hazardous occupation, and automobile.

(6) The bidder and all bidder's subcontractors must

participate in applicable apprenticeship and training programs approved by and registered with the United States Department of Labor's Bureau of Apprenticeship and Training.

The provisions of this Section shall not apply to federally funded construction projects if such application would jeopardize the receipt or use of federal funds in support of such a project.



Notice to Bidders

RETURN WITH BID

Route
County
Local Agency
Section

Time and Place of Opening of Bids

Sealed proposals for the improvement described below will be received at the office of

until o'clock M., (address) Proposals will be opened and read publicly
at o'clock M., (date) at the office of (date) (address)

Description of Work

Name Length feet (miles)
Location
Proposed Improvement

Bidders Instructions

- 1. Plans and proposal forms will be available in the office of
2. If prequalification is required, the 2 low bidders must file within 24 hours after the letting an "Affidavit of Availability" (Form BC 57), in triplicate, showing all uncompleted contracts awarded to them and all low bids pending award for Federal, State, County, Municipal and private work. One copy shall be filed with the Awarding Authority and 2 copies with the IDOT District Office.
3. All proposals must be accompanied by a proposal guaranty as provided in BLRS Special Provision for Bidding Requirements and Conditions for Contract Proposals contained in the "Supplemental Specifications and Recurring Special Provisions".
4. The Awarding Authority reserves the right to waive technicalities and to reject any or all proposals as provided in BLRS Special Provision for Bidding Requirements and Conditions for Contract Proposals contained in the "Supplemental Specifications and Recurring Special Provisions".
5. Bidders need not return the entire contract proposal when bids are submitted unless otherwise required. Portions of the proposal that must be returned include the following:
a. BLR 12210 - Contract Cover
b. BLR 12220 - Notice to Bidders
c. BLR 12221 - Contract Proposal
d. BLR 12222 - Contract Schedule of Prices
e. BLR 12223- Signatures
f. BLR 12230 - Proposal Bid Bond (if applicable)
6. The quantities appearing in the bid schedule are approximate and are prepared for the comparison of bids. Payment to the Contractor will be made only for the actual quantities of work performed and accepted or materials furnished according to the contract. The scheduled quantities of work to be done and materials to be furnished may be increased, decreased or omitted as hereinafter provided.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BDE PROCEDURE MEMORANDUM

NUMBER: 46-05

BLRS PROCEDURE MEMORANDUM

NUMBER: 2005-04

SUBJECT: FHWA Section 4(f) Policy Paper and Final Nationwide Programmatic Section 4(f) Evaluation and Determination for Federal-Aid Transportation Projects That Have a Net Benefit to a Section 4(f) Property

DATE: July 1, 2005

This memorandum clarifies and expands the previous guidance on Section 4(f). This information supersedes the current information in Chapter 26-2 of the BDE Manual and 20-3 of the LRS Manual. The attached 4(f) Policy Paper and Federal Register Notice of Net Benefit to Section 4(f) Properties will be included in future updates of the BDE Manual and the LRS Manual.

Background

The information presented in the Section 4(f) Policy Paper is FHWA's official policy on the applicability of Section 4(f) to various types of land and resources and other Section 4(f) related issues. The paper is divided into three main sections: the Introduction, Section 4(f) Evaluation, and Section 4(f) Applicability. The paper also includes Appendices, an Analysis of Case Law and the Section 4(f) Evaluation Diagram. The introduction replaces and considerably revises the former Section 4(f) Background and Section 4(f) Evaluation sections of the 1989 document. This comprehensive overview provides an organized approach to Section 4(f) and emphasizes key elements of the Section 4(f) process. The Section 4(f) Applicability section is the heart of the Policy Paper. It includes guidance, in question and answer format, on the applicability of Section 4(f) to various situations often encountered in the project development process.

The "Final Nationwide Programmatic Section 4(f) Evaluation and Determination for Federal-Aid Transportation Projects That Have a Net Benefit to a Section 4(f) Property" Notice in the Federal Register is a programmatic evaluation that provides a procedural option for demonstrating compliance with the statutory requirements of Section 4(f). It is in addition to the existing nationwide programmatic evaluations, all of which remain in effect. This action is intended to promote environmental stewardship by encouraging the development of measures that enhance Section 4(f) properties and to

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BLRS PROCEDURE MEMORANDUM 2005-04**

July 1, 2005

Page 2

streamline the Section 4(f) by reducing the time it takes to prepare, review and circulate a draft and final individual Section 4(f) Evaluation

Applicability

The procedures in this memorandum are applicable to all Federally funded State and Local Roads highway projects.

Contact the BDE at 217-782-7526 (for State projects) or BLRS at 217-782-3805 (for Local Roads projects) if there are questions concerning this information.

Engineer of Design and Environment

Michael L. Hine

Engineer of Local Roads and Streets

Charles J. Driggs

Attachments

Note: The attachments are available for download at the following:

www.environment.fhwa.dot.gov/projdev/4fpolicy.htm and

<http://a257.g.akamaitech.net/7/257/2422/01jan20051800/edocket.access.gpo.gov/2005/05-7812.htm>



U.S. Department
of Transportation
**Federal Highway
Administration**

FHWA Section 4(f) Policy Paper

**Office of Planning, Environment and Realty
Project Development and Environmental Review**

March 1, 2005

HARD COPIES UNCONTROLLED

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INTRODUCTION

Section 4(f) was created when the United States Department of Transportation (USDOT) was formed in 1966. It was initially codified at 49 U.S.C. 1653(f) (Section 4(f) of the USDOT Act of 1966) and only applies to USDOT agencies. Later that year, 23 U.S.C. 138 was added with somewhat different language, which applied only to the highway program. In 1983, Section 1653(f) was reworded without substantive change and recodified at 49 U.S.C. 303. In their final forms, these two statutes have no real practical distinction and are still commonly referred to as Section 4(f):

"It is hereby declared to be the national policy that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. The Secretary of Transportation shall cooperate and consult with the Secretaries of the Interior, Housing and Urban Development, and Agriculture, and with the States in developing transportation plans and programs that include measures to maintain or enhance the natural beauty of the lands traversed. After the effective date of the Federal-Aid Highway Act of 1968, the Secretary shall not approve any program or project (other than any project for a park road or parkway under section 204 of this title) which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance as determined by the Federal, State, or local officials having jurisdiction thereof, or any land from an historic site of national, State, or local significance as so determined by such officials unless (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park, recreational area, wildlife and waterfowl refuge, or historic site resulting from such use. In carrying out the national policy declared in this section the Secretary, in cooperation with the Secretary of the Interior and appropriate State and local officials, is authorized to conduct studies as to the most feasible Federal-aid routes for the movement of motor vehicular traffic through or around national parks so as to best serve the needs of the traveling public while preserving the natural beauty of these areas."

23 U.S.C. 138

The Federal Highway Administration (FHWA) originally issued the *Section 4(f) Policy Paper* in September 1987. There was a minor amendment in 1989 adding two additional questions and answers. This 2005 paper provides updated comprehensive guidance on when and how to apply the provisions of Section 4(f) on FHWA projects that propose to use 4(f) land or resources. The information presented in this paper is not regulatory, but is the official policy of FHWA on the applicability of Section 4(f) to various types of land and resources and other Section 4(f) related issues. The paper creates no private right of action and its guidance is not judicially binding on the FHWA.

Previous versions of this policy paper are no longer applicable. This issuance also rescinds the November 15, 1989, *Memorandum: Alternatives Selection Process for Projects Involving Section 4(f) of the DOT Act*, signed by Ali Sevin, Director of the Office of Environmental Policy, and by the creation of Question and Answer 24, supersedes the August 22, 1994, *Interim Guidance on Applying Section 4(f) On Transportation Enhancement Projects and National Recreation Trails*.

Purpose of this Paper

This paper explains how Section 4(f) applies generally and to specific situations where resources meeting the Section 4(f) criteria may be involved. It is based on court decisions, experience and on policies developed by FHWA and USDOT over the years. This paper serves as a guide for the applicability of Section 4(f) for common project situations often encountered by FHWA Division Offices, State Departments of Transportation and other partners.

For specific projects that do not completely fit the situations or parameters described in this paper, it is advisable to contact the FHWA Division Office. In turn, the Division Office may contact the Washington Headquarters' Office of Project Development and Environmental Review, the Resource Center Environmental Technical Service Team, and/or the Office of the Chief Counsel. For more information on Section 4(f) refer to the Environmental Guidebook (www.environment.fhwa.dot.gov/guidebook/index.htm) and the FHWA Re: NEPA Community of Practice (<http://nepa.fhwa.dot.gov>).

Important Points

At the outset, a few important points about Section 4(f) must be understood.

- **Section 4(f) Authority and Responsibility:** Section 4(f) applies only to the actions of agencies within the USDOT. While other agencies may have an interest in Section 4(f), the agencies within the USDOT are responsible for applicability determinations, evaluations, findings and overall compliance.
- **Section 4(f) Applicability:** Section 4(f) applies to any significant publicly owned public park, recreation area, or wildlife and waterfowl refuge and any land from an historic site of national, state or local significance.
- **Public Ownership and Public Access Criteria:** Section 4(f) applies to significant publicly owned public parks and recreational areas that are open to the public, and to significant publicly owned wildlife and waterfowl refuges, irrespective of whether these areas are open to the public or not, since the "major purpose" of a refuge may make it necessary for the resource manager to limit public access. When private institutions, organizations or individuals own parks, recreational areas or wildlife and waterfowl refuges, Section 4(f) does not apply to these properties, even if such areas are open to the public. If a governmental body has a permanent proprietary interest in the land (such as fee ownership or easement), it is considered "publicly owned" and thus, Section 4(f) may be applicable. Section 4(f) also applies to all historic sites of national, state or local significance, whether or not these sites are publicly owned or open to the public. Except in unusual circumstances, only historic properties on or eligible for inclusion on the National Register of Historic Places are protected under Section 4(f).
- **Significance Criteria:** A publicly owned park, recreation area or wildlife and waterfowl refuge must be a "significant" resource for Section 4(f) to apply. Pursuant to 23 C.F.R. 771.135 (c), 4(f) resources are presumed to be significant unless the official having jurisdiction over the site concludes that the entire site is not significant. Even if this is done, FHWA must make an independent evaluation to assure that the official's finding of significance or non-significance is reasonable.
- **Feasible and Prudent Criteria:** Numerous legal decisions on Section 4(f) have resulted in a USDOT policy that findings of "no feasible and prudent alternatives" and "all possible planning to minimize harm", must be well documented and supported. A feasible alternative is an alternative that is possible to engineer, design and build. The leading United States Supreme Court case, commonly known as Overton Park, (Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402 (1971)), held that to find that an alternative (that avoids a 4(f) resource) is not "prudent" one must find that there are unique problems or unusual factors involved with the use of such alternatives. This means that the cost, social, economic and environmental impacts, and/or community disruption resulting from such alternatives reach extraordinary magnitudes. One can use a totality of these circumstances to establish that these unique problems, unusual factors or other impacts reach extraordinary magnitudes. FHWA has incorporated this decision into existing regulations found at 23 C.F.R. 771.135(a)(2).
- **Documentation and Coordination:** The statute does not require the preparation, distribution or circulation of any written document. The statute also does not contain a public comment element. Other than the U.S. Departments of the Interior, Housing and Urban Development and

Agriculture, the statute also does not require or establish any procedures for coordinating with either other agencies or the public. USDOT has developed departmental requirements for documenting Section 4(f) decisions. For example, the requirements of DOT Order 5610.1C and its predecessors have been incorporated into FHWA regulations. FHWA developed procedures for the preparation, circulation and coordination of Section 4(f) documents in two places; 23 Code of Federal Regulations (C.F.R.) Section 771.135, and FHWA's *Technical Advisory, Guidance for Preparing and Processing of Environmental and Section 4(f) Documents: T 6640.8A*. Both of these sources of information are available at the FHWA NEPA Project Development Website: www.environment.fhwa.dot.gov/projdev/index.htm.

Two purposes of a written Section 4(f) evaluation are to establish an administrative record and to ensure that FHWA has followed the regulatory and statutory requirements. The administrative record is the agency's written record that memorializes the basis for determining that there is no feasible and prudent alternative to the use of the 4(f) resource and demonstrates that FHWA used all possible planning and measures to minimize harm. Likewise, when circulated with the NEPA document, it permits FHWA to obtain comments on avoidance alternatives and measures to minimize harm.

If a Section 4(f) evaluation is legally challenged, it is reviewed in accordance with the Administrative Procedure Act (APA) that provides judicial deference to USDOT actions. Under the APA, the agency's action must be upheld unless it is arbitrary, capricious, an abuse of discretion or otherwise not in accordance with law (5 U.S.C. 706 (2)(A)). The court will review the administrative record to determine whether FHWA complied with the elements of Section 4(f). If an inadequate administrative record is prepared, the court will lack the required Section 4(f) elements to review and, therefore, will be unable to defer to it (this is even truer if no Section 4(f) Evaluation is prepared). While agency decisions are entitled to a presumption of regularity and courts are not empowered to substitute their judgment for that of the agency, courts will carefully review whether the agency followed the applicable requirements.

Therefore, the administrative record should contain the following essential information:

- 1) The applicability or non-applicability of Section 4(f) to a property used by a project;
- 2) The coordination efforts with the officials having jurisdiction over or administering the land (relative to significance of the land, primary use of the land, mitigation measures, etc.);
- 3) The location and design alternatives that would avoid the use altogether or minimize the use and harm to the 4(f) land;
- 4) Analysis of impacts of avoidance and Section 4(f) use alternatives; and
- 5) All measures to minimize harm, such as design variations, landscaping and other mitigation.

The Section 4(f) analysis process is diagramed in Appendix B.

- **Other Laws and Requirements:** There are often concurrent requirements of other Federal agencies when 4(f) lands are involved in highway projects.¹ It should be noted that Section 4(f) has requirements that are independent from obligations found in these other authorities. In the instance where more than one Federal law is applicable to the 4(f) resource, just because the requirements of one law have been complied with, does not necessarily mean that Section 4(f) is

¹ Examples include: Compatibility determinations for the use of lands in the National Wildlife Refuge System and the National Park System, consistency determinations for the use of public lands managed by the Bureau of Land Management, determinations of direct and adverse effects for Wild and Scenic Rivers under the jurisdiction of such agencies as the U.S. Fish and Wildlife Service, National Park Service, Bureau of Land Management, and Forest Service, and approval of land conversions covered by the Federal-aid in Fish Restoration and the Federal-Aid in Wildlife Restoration Acts (the Dingell-Johnson and Pittman-Robertson Acts), the Recreational Demonstration Projects and the Federal Property and Administrative Service (Surplus Property) Acts, and Section 6(f) of the Land and Water Conservation Fund Act.

also satisfied. FHWA must demonstrate compliance with all the different requirements of applicable law in addition to its Section 4(f) responsibility.

Project mitigation required by other substantive laws can help FHWA satisfy the requirement that a project include all possible planning to minimize harm to a 4(f) resource if it is used. A good example of this is the terms of the Memorandum of Agreement (MOA) with the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) when an historic property is adversely affected (under Section 106 of the National Historic Preservation Act) by a FHWA project. Nevertheless, if more reasonable measures to minimize harm to the 4(f) resource can be taken, simply complying with another statutes mitigation measures is not enough.

SECTION 4(f) EVALUATION

When a project proposes to use resources protected by Section 4(f), a Section 4(f) evaluation must be prepared. The following information provides guidance on the key areas of a Section 4(f) evaluation.

Section 4(f) Evaluation Format and Approval

The Section 4(f) evaluation may be developed and processed as a stand-alone document, as in the case of a categorical exclusion (CE) determination, or incorporated into an environmental assessment (EA) or environmental impact statement (EIS) as a separate section of those documents. The format and content for these evaluation documents are addressed in the FHWA *Technical Advisory T 6640.8a, Guidance for Preparing and Processing of Environmental and Section 4(f) Documents, October 30, 1987* (www.environment.fhwa.dot.gov/projdev/impTA6640.htm).

The FHWA Division Office or the Federal Lands Highway Division approves all Section 4(f) evaluations. Prior to Division Office approval, all final Section 4(f) evaluations must undergo legal sufficiency review in accordance with 23 C.F.R. 771.135(k). It is advisable and strongly recommended that the Division Office provide copies of the administrative or pre-draft Section 4(f) evaluation to the appropriate legal staff for preliminary review instead of submitting only the pre-final evaluation for legal sufficiency review.

Alternatives Analysis

The intent of the Section 4(f) statute and the policy of the USDOT is to avoid the use of significant public parks, recreation areas, wildlife and waterfowl refuges and historic sites as part of a project, unless there is no feasible and prudent alternative to the use of such land.² In order to demonstrate that there is no feasible and prudent alternative to the use of 4(f) land, the evaluation must address both location alternatives and design shifts that totally avoid the 4(f) land. As noted before, supporting information must demonstrate that there are unique problems or unusual factors involved with the alternatives that avoid the use of 4(f) land, such as findings that these alternatives result in costs, environmental impacts or community disruption of extraordinary magnitudes. Likewise, design shifts that cannot totally avoid use but that minimize the impact, must also be employed unless they are not feasible and prudent.

The Section 4(f) evaluation must address the purpose and need of the project. The need must be sufficiently explained and be consistent with the need set forth in any concurrent National Environmental Policy Act (NEPA) documentation. The Section 4(f) evaluation may reference the purpose and need included in a NEPA document, without reiteration, when the evaluation is included as a chapter of the document. Any alternative that is determined to not meet the need of the project, including the no-build alternative, is not a feasible and prudent alternative³. The evaluation must include this analysis.

² "Significance" of one of these types of properties is presumed unless an official with jurisdiction determines that the entire site is not significant.

³ Alaska Center for Environment v. Armbrister, 131 F.3d 1285, 1288 (9th Cir. 1987); Arizona Past and Future Foundation v. Lewis, 722 F.2d 1423, 1428 (9th Cir. 1983); Hickory Neighborhood Defense League v. Skinner, 910 F.2d 159, 163 (4th Cir. 1990); Eagle Foundation, Inc. v. Dole, 813 F.2d 798, 804 (7th Cir. 1987); Committee to Preserve Boomer Lake Park v. USDOT,

It is important to point out that the standard for evaluating alternatives under NEPA and the standard for evaluating alternatives under Section 4(f) are different. In general, under NEPA, FHWA can advance to detailed study any reasonable alternative, among a range of alternatives, as long as there is sufficient information that shows a well-reasoned decision to include that alternative. However, under Section 4(f), if there is a feasible and prudent alternative that avoids the use of a 4(f) resource, among alternatives that use a 4(f) resource, the alternative that must be selected is the one that avoids the 4(f) resource.

Likewise, the test under NEPA, to eliminate a reasonable alternative is based on a number of independent factors or a totality of cumulative factors. However, simply because under NEPA an alternative (that meets the purpose and need) is determined to be unreasonable, does not by definition, mean it is imprudent under the higher substantive test of Section 4(f). Therefore, it is possible for an alternative that was examined but dismissed during the preliminary NEPA alternative screening process to still be a feasible and prudent avoidance alternative under Section 4(f). In other words, there is more room to reject alternatives as unreasonable under NEPA than there is to find those same alternatives are imprudent under Section 4(f).

Feasible and Prudent Standard

The first test under Section 4(f) is to determine which alternatives are feasible and prudent. An alternative is feasible if it is technically possible to design and build that alternative. The second part of the standard involves determining whether an alternative is prudent or not, which is more difficult to define.

An alternative may be rejected as not prudent for any of the following reasons:

- 1) It does not meet the project purpose and need,
- 2) It involves extraordinary operational or safety problems,
- 3) There are unique problems or truly unusual factors present with it,
- 4) It results in unacceptable and severe adverse social, economic or other environmental impacts,
- 5) It would cause extraordinary community disruption,
- 6) It has additional construction costs of an extraordinary magnitude, or
- 7) There is an accumulation of factors that collectively, rather than individually, have adverse impacts that present unique problems or reach extraordinary magnitudes.

Where sufficient analysis demonstrates that a particular alternative is not feasible and prudent, the analysis or consideration of that alternative as a viable alternative comes to an end. If all alternatives use land from 4(f) resources, then an analysis must be performed to determine which alternative results in the least overall harm to the 4(f) resources. If the net harm to 4(f) resources in all the alternatives is equal, then FHWA may select any one of them. In other words, if the project proposes to use similar amounts of similar 4(f) resources, there is no alternative that would cause the least overall harm. In either situation, it is essential that the agency having jurisdiction over the 4(f) resource be consulted.

It should be noted that the net harm analysis is governed by all the possible mitigation that could be done to minimize harm to the 4(f) resource. The net harm should be determined in consultation with the agency having jurisdiction over the resource or, in the case of historic sites, the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO), as appropriate. By including mitigation, impacts on the 4(f) property could be reduced or eliminated. The alternative that results in the least net harm must be selected.

Not all uses of 4(f) resources have the same magnitude of impact and not all 4(f) resources have the same quality. A qualitative evaluation is required. For example, evaluation of the net impact should consider whether the use of the 4(f) property involves:

4 F.3d 1543, 1550 (10th Cir. 1993); Druid Hills v. FHWA, 772 F.2d 700 (11th Cir. 1985); Ringsred v. Dole, 828 F.2d 1300, 1304 (8th Cir. 1987).

- 1) A large taking or a small taking in relation to the overall size of the resource, or
- 2) Shaving an edge of a property as opposed to cutting through its middle, or
- 3) Altering part of the land surrounding an historic building rather than removing the building itself, or
- 4) Examining the key features of the 4(f) resource, or
- 5) An unused portion of a park rather than a highly used portion.

When different alternatives propose to use different 4(f) resources, the importance of the resources must be considered. For example, three marginal acres of a large park may be less important than one acre of a smaller city park. To provide support for these complex evaluations, the officials with jurisdiction over the 4(f) resources should be consulted and their opinions memorialized in the administrative record.

As Congress gave 4(f) resources paramount importance, care should be taken to apply consistent standards throughout the length of any given project. For example, it would be inconsistent to accept a restricted roadway cross section in order to reduce the project costs or to gain a minimal safety benefit, when at other locations on the same project this restricted roadway cross section is rejected as unacceptable in order to avoid a park. This same concept should be applied between projects as well.

Examples of the Alternative Selection Process

One of the most difficult areas of analysis is the evaluation of alternatives, and their impacts on both 4(f) and non-4(f) resources, and then deciding which alternative to select. Issues such as, what role does mitigation play in selecting alternatives, what to do if there are multiple 4(f) properties used and how other important resources in the project vicinity should be considered, make this area of analysis complex. It is essential to document the reasoning for dismissing an alternative as well as the reasoning for selecting an alternative. This documentation will become a key part of the administrative record. To address some of these scenarios, consider the following three project examples. Also, refer to the summary table on Page 7, following this discussion.

On project 1, Alternatives C and D are determined not to be feasible and prudent. While these alternatives may or may not use land from a 4(f) resource, it is immaterial since they simply cannot be built. Thus, no further analysis of C or D is warranted. Since Alternatives A and B are feasible and prudent and because B does not use land from a 4(f) resource, Alternative B must be selected. It is not necessary to determine the relative harm that Alternative A has on the 4(f) resources, because B is a feasible and prudent avoidance alternative.

On project 2, Alternatives C and D are determined not to be feasible and prudent. No further consideration need be given these alternatives. Of the remaining feasible and prudent alternatives, both Alternatives A and B use land from 4(f) resources. FHWA can approve only the feasible and prudent alternative that has the least overall harm to the 4(f) resource. Here, B must be selected since the harm to 4(f) resources is the least. When there are multiple alternatives that use a 4(f) resource, it should be noted that simply because an alternative uses more acreage, that might not be the greatest Section 4(f) use. In conclusion, to determine which alternative has the least harm, one should evaluate the importance of the 4(f) resource, the potential for mitigation and confer with the official(s) with jurisdiction over the 4(f) resource.

On project 3, all the build alternatives use 4(f) resources, such that there are no feasible and prudent alternatives that avoid the 4(f) resources. As all four alternatives use 4(f) land, one needs to evaluate the impacts both to 4(f) and non-4(f) resources to select the prudent and least overall harm alternative. Among the 4 alternatives, A and B have almost equal Section 4(f) net impacts but more impacts than Alternatives C and D, so neither A nor B can be selected. However, between Alternatives C and D, C has more Section 4(f) impacts than D. Therefore, usually one must choose Alternative D as illustrated in the example in project 2 above. There are times; however, that there will be additional important non-Section 4(f) environmental impacts that must go into the equation of what is the prudent alternative. If Alternative C has slightly higher Section 4(f) impacts than Alternative D, but there are additional important environmental impacts associated with Alternative D (that Alternative C does not have), it may be more prudent to choose Alternative C. Examples of non-4(f) resources could be an endangered species or

critical habitat being taken, CERCLA or superfund site problems, the elimination of valuable wetlands, and/or major environmental justice issues. In this instance, the prudent decision is the one that causes the overall least harm to all environmental resources, both 4(f) and non-4(f) resources. Section 4(f) plays a significant role in this decision-making process but in total, the prudent choice here is not the alternative that uses the least amount of 4(f) property. Therefore, Alternative C would be advanced. The courts have accepted this totality of impacts analysis⁴.

Project	Alternative	Feasible and Prudent Alternative?	Uses 4(f) Land?	Relative Net Harm to Section 4(f) Land After Mitigation
1	A	Yes	Yes	NA ^a
	B	Yes	No	None
	C	No	Yes (NA) ^b	NA
	D	No	No (NA) ^b	NA
2	A	Yes	Yes	Greater
	B	Yes	Yes	Lesser
	C	No	Yes (NA) ^b	NA ^b
	D	No	No (NA) ^b	NA ^b
3	A	(NA) ^c	Yes	Equal to B, but more than C or D
	B		Yes	Equal to A but more than C or D
	C		Yes	Harm to 4(f) greater than alt. D, but with less overall impacts to important resources
	D		Yes	Harm to 4(f) less but with more overall impacts

^a In project 1, there is a feasible and prudent alternative, which does not use Section 4(f) protected property (Alt. B). Any alternative which uses Section 4(f) protected property must be eliminated from further consideration.

^b Since this alternative is not feasible and prudent, it should be eliminated from further consideration. Whether Section 4(f) land is used and the relative harm to Section 4(f) protected properties are no longer relevant factors.

^c Since all alternatives use 4 (f) resources, a prudent and feasible avoidance alternatives analysis is not required.

Measures to Minimize Harm and Mitigation

In addition to determining that there are no feasible and prudent alternatives to avoid the use of 4(f) resources, the project approval process requires the consideration of “all possible planning to minimize harm” on the 4(f) resource. Minimization of harm entails both alternative design modifications that lessen the impact on 4(f) resources and mitigation measures that compensate for residual impacts. Minimization and mitigation measures should be determined through consultation with the official of the agency owning or administering the resource. Neither the Section 4(f) statute nor regulation requires the replacement of 4(f) resources used for highway projects, but this option is appropriate under 23 C.F.R. 710.509 as a mitigation measure for direct project impacts.

Mitigation measures involving public parks, recreation areas, or wildlife and waterfowl refuges may involve a replacement of land and/or facilities of comparable value and function, or monetary

⁴ Hickory Neighborhood Defense League v. Skinner, 910 F.2d 159, 163 (4th Cir. 1990); Eagle Foundation, Inc. v. Dole, 813 F.2d 798, 805 (7th Cir. 1987); Louisiana Env. Society, Inc. v. Dole, 707 F.2d 116, 122 (5th Cir. 1983); Committee to Preserve Boomer Lake Park v. USDOT, 4 F.3d 1543, 1550 (10th Cir. 1993).

compensation, which could be used to enhance the remaining land. Mitigation of historic sites usually consists of those measures necessary to preserve the historic integrity of the site and agreed to in accordance with 36 C.F.R. Part 800, by FHWA, the State Historic Preservation Officer (SHPO) or the Tribal Historic Preservation Officer (THPO), and as appropriate, the Advisory Council on Historic Preservation (ACHP). In any case, the cost of mitigation should be a reasonable public expenditure in light of the severity of the impact on the 4(f) resource in accordance with 23 C.F.R. 771.105(d). Section 6(f) of the Land and Water Conservation Fund Act has its own mitigation requirements, but as noted before, these can be part of the 4(f) minimization requirement if the resource cannot be avoided⁵.

Coordination

Preliminary coordination prior to the circulation of the draft Section 4(f) evaluation should be accomplished with the official(s) of the agency owning or administering the resource, the Department of Interior (DOI) and, as appropriate, the Departments of Agriculture (USDA) and Housing and Urban Development (HUD). The preliminary coordination with DOI and HUD should be either at the appropriate field office or at the regional level. The preliminary coordination with USDA should be with the appropriate National Forest Supervisor. There should be coordination with USDA whenever a project uses land from the National Forest System. Since the Housing and Urban Rural Recovery Act of 1983 repealed the use restrictions for the Neighborhood Facilities Program authorized by Title VII of the HUD Act of 1965 and the Open Space Program authorized by Title VII of the Housing Act of 1961, the number of instances where coordination with HUD should be accomplished has been substantially reduced. Coordination with HUD should occur whenever a project uses a 4(f) resource where HUD funding (other than the above) had been utilized.

If any issues are raised by these agencies resulting from the circulation of the draft Section 4(f) evaluation, follow up coordination must be undertaken to resolve the issues. In most cases the agency's response will indicate a contact point for the follow up coordination. However, case law indicates that if reasonable efforts to resolve the issues are not successful (one of these agencies is not satisfied with the way its concerns were addressed) and the issues were disclosed and received good-faith attention from the decision maker, FHWA has met the procedural obligation under Section 4(f) to consult with and obtain the agency's comments. Section 4(f) does not require more.

Programmatic Section 4(f) Evaluations

As an alternative to preparing an individual Section 4(f) evaluation, FHWA may, in certain circumstances utilize a programmatic evaluation. Under a programmatic Section 4(f) evaluation, certain conditions are laid out such that, if a project meets the conditions it will satisfy the requirements of Section 4(f) that there is no feasible and prudent alternative and that the project includes all possible planning to minimize harm. These conditions generally relate to the type of project, the severity of impacts to 4(f) property, the evaluation of alternatives, the establishment of a procedure for minimizing harm to the 4(f) resource, adequate coordination with appropriate entities and the NEPA class of action. Programmatic Section 4(f) statements have certain elements in common; (1) they involve projects with typical and limited range of alternatives; and (2) the official having jurisdiction over the land agrees with the use evaluation and the proposed mitigation. Programmatic evaluations can be nationwide, region-wide, or statewide. The development of statewide or regional programmatic evaluations must be coordinated with the Office of Project Development and Environmental Review and the Office of Chief Counsel.

⁵ State and local governments often obtain grants through the Land and Water Conservation Fund Act to acquire or make improvements to parks and recreation areas. Section 6(f) of this Act prohibits the conversion of property acquired or developed with these grants to a non-recreational purpose without the approval of the Department of the Interior's (DOI) National Park Service. Section 6(f) directs DOI to assure that replacement lands of equal value, location and usefulness are provided as conditions to such conversions. Consequently, where conversions of Section 6(f) lands are proposed for highway projects, replacement lands will be necessary. Regardless of the mitigation proposed, the Section 4(f) evaluation should document the National Park Service's tentative position relative to Section 6(f) conversion.

There are currently four approved Nationwide Programmatic Section 4(f) Evaluations. These evaluations are found at the links provided below to the FHWA Environmental Guidebook and the Project Development Website:

- 1) Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges. This evaluation sets forth the basis for approval that there are no feasible and prudent alternatives to the use of certain historic bridge structures to be replaced or rehabilitated with Federal funds and that the projects include all possible planning to minimize harm resulting from such use.
(www.environment.fhwa.dot.gov/guidebook/vol2/doc15j.pdf and www.environment.fhwa.dot.gov/projdev/4fbridge.htm)
- 2) Final Nationwide Section 4(f) Evaluation and Approval for Federally-Aided Highway Projects with Minor Involvements with Public Parks, Recreation Lands, and Wildlife and Waterfowl Refuges. This programmatic evaluation is applicable for projects that improve existing highways and use minor amounts of publicly owned public parks, recreation lands, or wildlife and waterfowl refuges that are adjacent to existing highways.
(www.environment.fhwa.dot.gov/guidebook/vol2/doc15g.pdf and www.environment.fhwa.dot.gov/projdev/4fmparks.htm)
- 3) Final Nationwide Section 4(f) Evaluation and Approval for Federally-Aided Highway Projects with Minor Involvements with Historic Sites. This programmatic evaluation has been prepared for projects that improve existing highways and use minor amounts of land (including non-historic improvements thereon) from historic sites that are adjacent to existing highways where the effect is determined not to be adverse.
(www.environment.fhwa.dot.gov/guidebook/vol2/doc15e.pdf and www.environment.fhwa.dot.gov/projdev/4fmhist.htm)
- 4) Section 4(f) Statement and Determination for Independent Bikeway or Walkway Construction Projects. This 1977 negative declaration applies to bikeway and/or walkway projects that require the use of land from Section 4(f) resources.
(www.environment.fhwa.dot.gov/guidebook/vol2/doc15m.pdf and www.environment.fhwa.dot.gov/projdev/4fbikeways.htm)

The fact that these programmatic Section 4(f) evaluations are approved does not mean that these types of projects are exempt from or automatically comply with the requirements of Section 4(f). Section 4(f) does, in fact, apply to each of the types of projects addressed by these programmatic evaluations. Furthermore, the programmatic Section 4(f) does not relax the Section 4(f) standards of feasible and prudent and minimization of harm. The FHWA Division Administrator or Division Engineer is responsible for reviewing each individual project to determine that it meets the criteria and procedures of the specific programmatic Section 4(f) evaluation. The FHWA Division Administrator's or Division Engineer's determinations will be thorough and will clearly document the items that have been reviewed. The written analysis and determinations will be combined in a single document, placed in the project record and will be made available to the public upon request. This programmatic evaluation will not change the existing procedures for project compliance with the National Environmental Policy Act (NEPA) or with public involvement requirements.

Programmatic Section 4(f) evaluations streamline the documentation and approval process and amount of interagency coordination that is required for an individual Section 4(f) evaluation. Draft and final evaluations do not need to be prepared and FHWA legal sufficiency review is not required. Interagency coordination is required only with the official(s) with jurisdiction and not with DOI, USDA, or HUD (unless the Federal agency has a specific action to take, such as DOI approval of a conversion of land acquired using Land and Water Conservation Funds).

Section 4(f) Applicability

The following questions and answers provide guidance on the applicability of Section 4(f) to various types of land, resources and project situations. The examples represent FHWA's policy on the situations most often encountered in the project development process. For advice on specific situations or issues not covered in this paper, the FHWA Division Office should be consulted, and if necessary the Division Office can contact the Washington Headquarters Office of Project Development and Environmental Review and/or the Office of the Chief Counsel. An analysis of Section 4(f) case law as it relates to many of the following situations and examples is included in Appendix A, for your information.

1. Use of Resources

Question A: What constitutes a "use" of land from a publicly owned public park, public recreation area, wildlife refuge and waterfowl refuge or historic site?

Answer A: Section 4(f) "use" is defined and addressed in the FHWA/FTA Regulations at 23 C.F.R. 771.135(p). A "use" occurs when:

- 1) Land from a 4(f) site is permanently incorporated into a transportation facility,
- 2) There is a temporary occupancy of land that is adverse in terms of the Section 4(f) statute's preservationist purposes (23 C.F.R. 771.135(p)(7)), or
- 3) When there is a constructive use of land (23 C.F.R. 771.135(p)(2)).

Land will be considered permanently incorporated into a transportation project when it has been purchased as right-of-way or sufficient property interests have been otherwise acquired for the purpose of project implementation. For example, a "permanent easement" which is required for the purpose of project construction or that grants a future right of access onto 4(f) property, such as for the purpose of routine maintenance by the transportation agency, would be considered a permanent incorporation of land into a transportation facility.

Project activities involving the restoration, rehabilitation or maintenance of highways, bridges or other eligible transportation facilities (23 C.F.R. 771.135(f)) that are on or eligible for the National Register of Historic Places will not "use" land from these 4(f) resources when the project does not adversely effect (under Section 106 of the National Historic Preservation Act) the historic qualities of the facility for which it was determined eligible for the National Register of Historic Places, and the State Historic Preservation Officer has been consulted and does not object to the finding of no historic properties adversely affected (see also Question 4).

Question B: How is "constructive use" defined and determined?

Answer B: 23 C.F.R. 771.135(p) defines what a constructive use is. FHWA has identified certain project situations where a constructive use will occur and when a constructive use will not occur (see 23 C.F.R. 771.135(p)(4) and (5)). Constructive use is only possible in the absence of permanent incorporation or temporary occupancy of the type that constitutes a use of 4(f) land by a transportation project. Constructive use only occurs in those situations where, including mitigation, the proximity impacts of a project on the 4(f) property are so severe that the activities, features or attributes that qualify the property or resource for protection under Section 4(f) are substantially impaired. Substantial impairment occurs when the activities, features or attributes of the 4(f) property are substantially diminished (23 C.F.R. 771.135(p)(2)), which means that the value of the resource in terms of its Section 4(f) significance will be meaningfully reduced or lost. The degree of impact and impairment should be determined in consultation with the officials having jurisdiction over the resource.

An example of such an impact might be the traffic noise resulting from a new or improved highway facility proposed near an amphitheater that substantially interferes with the use and enjoyment of the noise-sensitive resource, and the conditions set forth in 23 C.F.R. 771.135(p) are satisfied. For additional information on noise, please refer to FHWA noise regulations at 23 C.F.R. 772.

Constructive use determinations will be rare⁶. The impacts outlined in 23 C.F.R. 771.135(p)(4), involving projects adjacent to or in the proximity of 4(f) resources should be carefully examined. If it is determined that the proximity impacts do not cause a substantial impairment, FHWA can reasonably conclude that there is no constructive use. FHWA has determined that certain impacts constitute a constructive use and that others do not (see 23 C.F.R. 771.135(p)(4) and (5)). Environmental documents should of course contain the analysis of any potential proximity effects and consider whether or not there is substantial impairment to a 4(f) resource. Except for responding to review comments in environmental documents, which specifically address constructive use, the term "constructive use" need not be used. Where a constructive use determination is likely, the FHWA Division Office must consult with the Headquarters Office of Project Development and Environmental Review during development of the preliminary-draft Section 4(f) evaluation.

Question C: When does temporary occupancy of a 4(f) resource result in a 4(f) use?

Answer C: In general, Section 4(f) does not apply to the temporary occupancy, including those resulting from a right-of-entry, construction, other temporary easements or short-term arrangements, of a significant publicly owned public park, recreation area or wildlife and waterfowl refuge, or any significant historic site where temporary occupancy of the land is so minimal that it does not constitute a use within the meaning of Section 4(f).

A temporary occupancy will not constitute a use of 4(f) resource when all of the conditions set forth in 23 C.F.R. 771.135(p)(7) are met:

- (1) Duration (of the occupancy) must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
- (2) Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the 4(f) resource are minimal;
- (3) There are no anticipated permanent adverse physical impacts, nor will there be interference with the activities or purpose of the resource, on either a temporary or permanent basis;
- (4) The land being used must be fully restored, i.e., the resource must be returned to a condition which is at least as good as that which existed prior to the project; and
- (5) There must be documented agreement of the appropriate Federal, State, or local officials having jurisdiction over the resource regarding the above conditions.

In the situation where a project does not meet all of the above criteria, the temporary occupancy will be considered a use of the 4(f) resource and the appropriate Section 4(f) analysis will be required.

2. Public Parks, Public Recreation Areas and Wildlife and Waterfowl Refuges

Question A: When is publicly owned land considered to be a park, recreation area or wildlife and waterfowl refuge and who makes this determination?

Answer A: Publicly owned land is considered to be a park, recreation area or wildlife and waterfowl refuge when the land has been officially designated as such by a Federal, State or local agency and the officials of these governmental entities, having jurisdiction over the land, determine that one of its major purposes and functions is for park, recreation or as a refuge. Incidental, secondary, occasional or dispersed park, recreational or refuge activities do not constitute a major purpose.

For the most part the "officials having jurisdiction" are the officials of the agency owning or administering the land. There may be instances where the agency owning or administering the land has delegated or

⁶ The FHWA's constructive use policy was formalized in regulation on April 1, 1991, with the addition of paragraph (p) to 23 C.F.R. 771.135. The November 12, 1985, memorandum from Mr. Ali F. Sevin, Director of the Office of Environmental Policy to the Regional Federal Highway Administrators is no longer applicable.

relinquished its authority to another agency, via an agreement on how some of its land will function or be managed. FHWA will review this agreement and determine which agency has authority on how the land functions. If the authority has been delegated or relinquished to another agency, that agency must be contacted to determine the major purpose(s) of the land. Management plans that address or officially designates the major purpose(s) of the property should be reviewed as part of this determination. After consultation, and in the absence of an official designation of purpose and function by the officials having jurisdiction, FHWA will base its decision on its own examination of the actual functions that exist.

The final decision on applicability of Section 4(f) to a particular property or type of land is made by FHWA. In reaching this decision, however, FHWA will rely on the official having jurisdiction over the resource to identify the kinds of activities and functions that take place, and that these activities constitute a major purpose. Documentation of the determination of non-applicability should be included in the environmental document or project record.

Question B: How should the significance of public parks, recreation areas and wildlife and waterfowl refuges be determined?

Answer B: "Significance" determinations, on publicly owned land considered to be parks, recreation areas or wildlife and waterfowl refuges, pursuant to Answer 2 A above, are made by the Federal, State, or local officials having jurisdiction over the land. As discussed above, the "officials having jurisdiction" are officials of the agency owning or administering the land. For certain types of 4(f) resources, more than one agency may have jurisdiction or interest in the property.

Except for certain multiple-use land holdings, discussed in Question 6, significance determinations must consider the entire property and not just the portion of the property proposed for use by the project. The meaning of the term "significance", for purposes of Section 4(f), should be explained to the officials having jurisdiction. Significance means that in comparing the availability and function of the park, recreational area or wildlife and waterfowl refuge, with the park, recreation or refuge objectives of the community or authority, the resource in question plays an important role in meeting those objectives. Management plans or other official forms of documentation regarding the land, if available and up-to-date, are important in this determination. If a determination from the official with jurisdiction cannot be obtained, and a management plan is not available or does not address significance of the 4(f) land, it will be presumed to be significant until FHWA reviews the determination and reaches a different conclusion. All determinations, whether stated or presumed, are subject to review by FHWA for reasonableness.

Question C: Are publicly owned parks and recreation areas, which are significant but not open to the public as a whole, subject to the requirements of Section 4(f)?

Answer C: The requirements of Section 4(f) would apply if the entire public park or public recreation area permits visitation by the general public at any time during the normal operating hours of the facility. Section 4(f) would not apply when visitation is permitted to only a select group and not the entire public. Examples of select groups include residents of a public housing project; military and their dependents (see also Question 11 B); students of a school; and students, faculty, and alumni of a college or university. FHWA does, however, strongly encourage the preservation of such parks and recreation areas; even though they may not be open to the general public.

It should be noted that wildlife and waterfowl refuges have not been included in this discussion. The statute uses the modifying term public to parks and recreation areas and, therefore, the "open to the public" requirement only applies to park and recreational area lands. Many wildlife and waterfowl refuges allow public access, while others may not, especially during certain times or seasons of the year. In these cases, the publicly owned resource should be examined by the FHWA Division Office to determine that the primary purpose of the property and resource is for wildlife or waterfowl refuge and not for other non-Section 4(f) activities (see also Question 20).

Question D: When does an easement or lease agreement with a governmental body constitute "public ownership"?

Answer D: Case law holds that land subject to a public easement in perpetuity can be considered publicly owned land for the purpose the easement exists. Under special circumstances, lease agreements may also constitute a permanent and proprietary interest in the land. Such lease agreements must be determined on a case-by-case basis and such factors as the term of the lease, the understanding of the parties to the lease, cancellation clauses and the like should be considered. Any questions on whether or not the leasehold or other interest constitutes public ownership should be referred to the Federal Highway Administration Division Office, and if necessary the FHWA Division Office should consult with the Washington Headquarters Office of Project Development and Environmental Review and the Office of the Chief Counsel.

3. Historic Sites

Question A: How is the significance (for Section 4(f) purposes) of historic sites determined?

Answer A: Pursuant to the National Historic Preservation Act (NHPA), the FHWA Federal Lands Highway Division (for Federal-lands projects) or FHWA Division in cooperation with the Applicant, i.e. State Department of Transportation (for Federal-aid projects) consults with the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) and if appropriate, with local officials to determine whether a site is on or eligible for the National Register of Historic Places. In case of doubt or disagreement between FHWA and the SHPO or THPO, a request for a determination of eligibility may be made to the Keeper of the National Register. A third party may also seek the involvement of the Keeper through the Advisory Council on Historic Preservation (ACHP) for a determination of eligibility,

For purposes of Section 4(f), an historic site is significant only if it is on or eligible for the National Register, unless FHWA determines that the application of Section 4(f) is otherwise appropriate. If an historic site is determined not to be on or eligible for the National Register, but an official (such as the Mayor, President of the local historic society, etc.) formally provides information to indicate that the historic site is of local significance, FHWA may determine that it is appropriate to apply Section 4(f) in that case. In the event that Section 4(f) is found inapplicable, the FHWA Division Office should document the basis for not applying Section 4(f). Such documentation might include the reasons why the historic site was not eligible for the National Register.

Question B: Does Section 4(f) apply when there is an adverse effect determination under the regulations implementing Section 106 of the National Historic Preservation Act (NHPA) (36 C.F.R. 800.5)?

Answer B: FHWA's determination of adverse effect under 36 C.F.R. 800.5 (www.achp.gov/work106.html) does not mean that Section 4(f) automatically applies, nor should it be presumed that the lack of an adverse effect finding (no historic properties adversely affected) means that Section 4(f) will not apply. When a project permanently incorporates land of an historic site, with or without an adverse affect, Section 4(f) applies. However, if a project does not physically take (permanently incorporate) historic property but causes an adverse effect, one must assess the proximity impacts of the project in terms of the potential for "constructive use" (see also Question 1 B). This analysis must determine if the proximity impact(s) will substantially impair the features or attributes that contribute to the National Register eligibility of the historic site or district. If there is no substantial impairment, notwithstanding an adverse effect determination, there is no constructive use and Section 4(f) requirements do not apply. Substantial impairment should be determined in consultation with the SHPO and/or THPO and thoroughly documented in the project record. The determination of Section 4(f) applicability is ultimately FHWA's decision.

As an example of a situation in which there is a Section 106 adverse effect but no Section 4(f) use, consider a transportation enhancement project where an abandoned National Register listed bus station

will be rehabilitated. Rehabilitation for public use will require consistency with the American with Disabilities Act (ADA). The incorporation of ramps or an elevator will meet the definition of an adverse effect, however, there is no permanent incorporation of land into a transportation facility and all parties agree that the rehabilitation will not substantially impair the property. Therefore, Section 4(f) would not apply.

An example of a Section 4(f) use without a Section 106 adverse effect involves a project on existing alignment, which proposes minor improvements at an intersection. To widen the roadway sufficiently, a small amount of property from an adjacent Section 106 property will be acquired, but the significance of the Section 106 resource is such that the SHPO concurs in FHWA's determination of no adverse effect. However, the use of the property will permanently incorporate property of the historic site into a transportation facility and Section 4(f) will apply. This project situation may be evaluated using the *Nationwide Section 4(f) Evaluation and Approval for Federally-Aided Highway Projects with Minor Involvements with Historic Sites* (www.environment.fhwa.dot.gov/guidebook/vol2/doc15e.pdf), as long as the class of action is not an EIS.

Question C: How does Section 4(f) apply in historic districts on or eligible for National Register?

Answer C: Within a National Register (NR) listed or eligible historic district, Section 4(f) applies to the use of those properties that are considered contributing to the eligibility of the historic district, as well as any individually eligible property within the district. It must be noted generally, that properties within the bounds of an historic district are assumed to contribute, unless it is otherwise stated or they are determined not to be. For those properties that are not contributing elements of the district or individually significant, the property and the district as a whole must be carefully evaluated to determine whether or not it could be used without substantial impairment of the features or attributes that contribute to the NR eligibility of the historic district.

The proposed use of non-historic property within an historic district which results in an adverse effect under Section 106 of the NHPA will require further consideration to determine whether or not there may be a constructive use. If the use of a non-historic property or non-contributing element substantially impairs (see Question 2 B) the features or attributes that contribute to the NR eligibility of the historic district, then Section 4(f) would apply. In the absence of an adverse effect determination, Section 4(f) will not apply. Appropriate steps, including consultation with the SHPO and/or THPO, should be taken to establish and document that the property is not historic, that it does not contribute to the National Register eligibility of the historic district and its use would not substantially impair the historic district.

As an example, consider the situation where traffic signals are warranted in a National Register listed or eligible historic district. The locations of the mast arms and control box are severely limited because of the built-up nature of the district. Although no right-of-way will be acquired, it is consistent with the NHPA regulations that there will be an adverse effect on the historic district. However, it may be reasonably determined that no individually eligible property, contributing element, or the historic district as a whole will be substantially impaired; therefore Section 4(f) will not apply.

Question D: How should the boundaries of a property eligible for listing on the National Register be determined where a boundary has not been established?

Answer D: In this situation, FHWA makes the determination of an historic property's boundary under the regulations implementing Section 106 of the NHPA in consultation with the SHPO and/or the THPO. The identification of historic properties and the determination of boundaries should be undertaken with the assistance of qualified professionals during the very beginning stages of the NEPA process. This process requires the collection, evaluation and presentation of the information to document FHWA's determination of the property boundaries. The determination of eligibility, which would include boundaries of the site, rests with FHWA, but if SHPO, THPO, or other party disagrees with this determination it can

"appeal" FHWA's determination to the Keeper of the National Register in accordance with the provisions of the Section 106 process.

Selection of boundaries is a judgment based on the nature of the property's significance, integrity, setting and landscape features, functions and research value. Most boundary determinations will take into account the modern legal boundaries, historic boundaries (identified in tax maps, deeds, or plats), natural features, cultural features and the distribution of resources as determined by survey and testing for subsurface resources. Legal property boundaries often coincide with the proposed or eligible historic site boundaries, but not always and, therefore, should be individually reviewed for reasonableness. The type of property at issue, be it a historic building, structure, object, site or district and its location in either urban, suburban or rural areas, will require the consideration of various and differing factors. These factors are set out in the *National Park Service Bulletin Defining Boundaries for National Register Properties*. This Bulletin and other information can be found at the following website: www.cr.nps.gov/nr/publications/bulletins/boundaries.

Question E: How are National Historic Landmarks treated under Section 4(f)?

Answer E: Section 4(f) requirements related to the potential use of a National Historic Landmark (NHL) designated by the Secretary of Interior are essentially the same as they are for any historic property determined under the Section 106 process. Section 110(f) of the NHPA outlines the specific actions that an Agency must take when NHL may be directly and adversely affected by an undertaking. Agencies must, "to the maximum extent possible ... minimize harm" to the NHL affected by an undertaking. While not expressly stated in the Section 4(f) statutory language or regulations, the importance and significance of the NHL should be considered in the FHWA's Section 4(f) analysis.

4. Historic Bridges, Highways and Other Transportation Facilities

Question A: How does Section 4(f) apply to historic bridges and highways?

Answer A: The Section 4(f) statute places restrictions on the use of land from historic sites for highway improvements but makes no mention of historic bridges or highways, which are already serving as transportation facilities. The Congress clearly did not intend to restrict the rehabilitation, repair or improvement of these facilities. FHWA, therefore, determined that Section 4(f) would apply only when an historic bridge or highway is demolished, or if the historic quality for which the facility was determined to be eligible for the National Register is adversely affected by the proposed improvement. The determination of adverse effect under 36 CFR 800.5 is made by FHWA in consultation with the SHPO and/or THPO. Where FHWA determines that the facility will not be adversely affected the SHPO/THPO must concur with the determination or FHWA must seek further input from the ACHP.

Question B: Will Section 4(f) apply to the replacement of an historic bridge that is left in place?

Answer B: Section 4(f) does not apply to the replacement of an historic bridge on new location when the historic bridge is left in its original location if its historic value will be maintained, and the proximity impacts of the new bridge do not result in a substantial impairment of the historic bridge. To satisfy the first requirement, FHWA requires the establishment of a mechanism of continued maintenance to avoid the circumstance of harm to the bridge due to neglect.

Question C: How do the requirements of Section 4(f) apply to donations pursuant to 23 U.S.C. 144(o) to a State, locality, or responsible private entity?

Answer C: 23 U.S.C. 144(o) is a separate requirement related to historic bridges when demolition is proposed. 23 U.S.C. 144(o)(4) requires the State that proposes to demolish an historic bridge for a replacement project using Federal funds (i.e. Section 144 bridge funds) to first make the bridge available for donation to a State, locality or a responsible private entity. This process is commonly known as

“marketing the historic bridge”. The State, locality or responsible entity that accepts the donation must enter into an agreement to maintain the bridge and the features that give it its historic significance, and assume all future legal and financial responsibility for the bridge. Therefore, Section 4(f) will not apply to the bridges that are donated according to requirements of 23 U.S.C. 144(o) as the bridge is not used in the transportation project. The exception found in 23 C.F.R. 771.135(f) also applies, given the maintenance agreement that is required under 23 U.S.C. 144(o).

If the bridge marketing effort is unsuccessful and the bridge is to be demolished, the evaluation must include the finding that there is no feasible and prudent alternative to the use and the project includes all possible planning to minimize harm.

Note: *Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges* (www.environment.fhwa.dot.gov/guidebook/vol2/doc15j.pdf) may be used for projects that require the use of an historic bridge.

Question D: Does Section 4(f) apply to other historic transportation facilities?

Answer D: Yes, but in the case of restoration, rehabilitation or maintenance of historic transportation facilities (e.g. railroad stations and terminal buildings which are on or eligible for the National Register) Section 4(f) only applies when the facility will be adversely affected (36 C.F.R. 800.5) by the proposed improvement.

5. Archaeological Resources

Question A: When does Section 4(f) apply to archaeological sites?

Answer A: Section 4(f) applies to all archaeological sites that are on or eligible for inclusion on the National Register and that warrant preservation in place. This includes those sites discovered during construction. Section 4(f) does not apply if FHWA, after consultation with the SHPO and/or THPO, determines that the archaeological resource is important chiefly because of what can be learned by data recovery (even if it is agreed not to recover the resource) and has minimal value for preservation in place (23 CFR 771.135(g)).

Question B: How are archeological sites discovered during construction of a project handled?

Answer B: For sites discovered during construction, where preservation of the resource in place is warranted, the Section 4(f) process will be expedited. In such cases, the evaluation of feasible and prudent alternatives will take into account the level of investment already made. The review process, including the consultation with other agencies should be shortened, as appropriate. An October 19, 1980, *Memorandum of Understanding with the Heritage Conservation and Recreation Service* (now part of the National Park Service) provides emergency procedures for unanticipated cultural resources discovered during construction. The MOU is available in the FHWA Environmental Guidebook (www.environment.fhwa.dot.gov/guidebook/vol2/doc10j.pdf). 36 C.F.R. 800.13 addresses the process for considering post-review discoveries under the Section 106 process.

Question C: How should the Section 4(f) requirements be applied to archaeological districts?

Answer C: Section 4(f) requirements apply to archeological districts in the same way as historic districts, but only where preservation in place is warranted. Section 4(f) would not apply if after consultation with the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO), FHWA determines that the project would occupy only a part of the archaeological district which is considered a non-contributing element of that district or that the project occupies only a part of the district which is important chiefly because of what can be learned by data recovery and has minimal value for

preservation in place. As with an historic district, if FHWA determines the project will result in an adverse effect on an archaeological district, which is significant for preservation in place, then FHWA must consider whether or not the project impacts will result in a "substantial impairment" and a constructive use determination is warranted.

6. Public Multiple-Use Land Holdings

Question: Are multiple-use public land holdings (e.g., National Forests, State Forests, Bureau of Land Management lands, etc.) subject to the requirements of Section 4(f)?

Answer: Section 4(f) applies to historic properties (those on or eligible for the National Register of Historic Places) located on these multiple-use land holdings and only to those portions of the lands which are designated by statute or identified in the management plans of the administering agency as being primarily for park, recreation, or wildlife and waterfowl refuge purposes, and determined to be significant for such purposes. For example, within a large multiple-use resource, like a National Forest, there can be areas that qualify as 4(f) property (e.g. a campground, picnic area, etc.) while other areas of the property function primarily for purposes other than park, recreation or refuges. Coordination with the official having jurisdiction and examination of the management plan for the area are necessary to determine Section 4(f) applicability.

For public land holdings, which do not have management plans or existing management plans are out-of-date, Section 4(f) applies to those areas that are publicly owned and function primarily for 4(f) purposes. Section 4(f) does not apply to areas of multiple-use lands which function primarily for purposes other than park, recreation or refuges such as for those areas that are used for timber sales or mineral extraction in National Forests.

7. Late Designation of 4(f) Resources

Question: Are properties in the highway right-of-way that are designated (as park and recreation lands, wildlife and waterfowl refuges, or historic sites) late in the development of a proposed project subject to the requirements of Section 4(f)?

Answer: Except for archaeological resources (including those discovered during construction), a project may proceed without consideration under Section 4(f) if that land was purchased for transportation purposes prior to the designation or prior to a change in the determination of significance and if an adequate effort was made to identify properties protected by Section 4(f) prior to the acquisition. The adequacy of effort made to identify properties protected by Section 4(f) should consider the requirements and standards of adequacy that existed at the time of the search. Archaeological resources may be subject to the requirements of Section 4(f) in accordance with Question 5.

8. Wild and Scenic Rivers

Question A: Are Wild and Scenic Rivers (WSR) subject to Section 4(f)?

Answer A: A Wild and Scenic River (WSR) is defined as "a river and the adjacent area within the boundaries of a component of the National Wild and Scenic Rivers System (National System)", pursuant to Section 3(a) and 2(a)(ii) of the National Wild and Scenic Rivers Act (WSRA) (36 C.F.R. 297.3). Significant publicly owned public parks, recreation areas, or significant wildlife and waterfowl refuges and historic sites (on or eligible of the National Register of Historic Places) in a WSR corridor are subject to Section 4(f). Privately owned lands in a WSR corridor are not subject to Section 4(f), except for historic and archeological sites (see Question 5). Publicly owned lands not open to the general public (e.g., military bases and any other areas with similar restricted access) and whose primary purpose is other than 4(f) are not subject to Section 4(f).

Lands in WSR corridors managed for multiple purposes may or may not be subject to Section 4(f) requirements, depending on the manner in which they are administered by the managing agency (see also Question 6). WSRs are managed by four different Federal agencies, including the U.S. Forest Service, the National Park Service, the Fish and Wildlife Service and the Bureau of Land Management. Close examination of the management plan (as required by the WSRA) prior to any use of these lands for transportation purposes is necessary. Section 4(f) would apply to those portions of the land designated in a management plan for recreation or other 4(f) purposes as discussed above. Where the management plan does not identify specific functions, or where there is no plan, FHWA should consult further with the river-administering agency prior to making the Section 4(f) determination.

The WSRA sets forth those rivers in the United States, which are designated as part of the Wild and Scenic River System. Within this system there are wild, scenic and recreational designations. In determining whether Section 4(f) is applicable to these rivers, one must look at how the river is designated, how the river is being used and the management plan over that reach of the river. If the river is designated a recreational river under the Act or is a recreation resource under a management plan, then it would be a 4(f) resource. A single river can be classified as having separate wild, scenic and recreation areas along the entire river. The designation of a river under the WSRA does not in itself invoke Section 4(f) in the absence of 4(f) attributes and qualities. For example, if a river is included in the System and designated as "wild" but is not being used as or designated under a management plan as a park, recreation area, wildlife and waterfowl refuge and is not an historic site, then Section 4(f) would not apply.

Aspects of the FHWA program determined to be a water resources project are subject to Section 7 of the WSRA (16 U.S.C. 1271 et seq.) This requires the river-administering agency to make a determination as to whether there are "direct and adverse effects" to the values of a WSR or congressionally authorized study river. Although Section 7 of the WSRA generally results in more stringent control, Section 4(f) may also apply to bridges that cross a designated WSR.

Question B: Are potential rivers and adjoining lands under study (pursuant to Section 5(a) of the Wild and Scenic Rivers Act) 4(f) resources?

Answer B: No, unless they are significant publicly owned public parks, recreation areas, and refuges, or significant historic sites in a potential river corridor. However, such rivers are protected under Section 12(a)⁷ of the WSRA, which directs all Federal departments and agencies to protect river values in addition to meeting their agency mission. Section 12(a) further recognizes that particular attention should be given to "timber harvesting, road construction, and similar activities, which might be contrary to the purposes of this Act."

9. Fairgrounds

Question: Are publicly owned fairgrounds subject to the requirements of Section 4(f)?

Answer: Section 4(f) is not applicable to publicly owned fairgrounds that function primarily for commercial purposes (e.g. stock car races, annual fairs, etc.), rather than recreation. When fairgrounds are open to the public and function primarily for public recreation other than an annual fair, Section 4(f) only applies to those portions of land determined significant for recreational purposes.

⁷ "The Secretary of the Interior, the Secretary of Agriculture, and the head of any other Federal department or agency having jurisdiction over any lands which include, border upon, or are adjacent to, any river included within the National Wild and Scenic Rivers System or under consideration for such inclusion, in accordance with section 2(a)(ii), 3(a), or 5(a), shall take such action respecting management policies, regulations, contracts, plans, affecting such lands, following the date of enactment of this sentence, as may be necessary to protect such rivers in accordance with the purposes of this Act."

10. School Playgrounds

Question: Are publicly owned school playgrounds subject to the requirements of Section 4(f)?

Answer: While the primary purpose of public school playgrounds is for structured physical education classes and recreation for students, these properties may also serve significant public recreational purposes and as such, may be subject to Section 4(f) requirements. When a playground serves only school activities and functions, the playground is not considered subject to Section 4(f). However, when a public school playground is open to the public and serves either organized or substantial “walk-on” recreational purposes, it is subject to the requirements of Section 4(f) if the playground is determined to be significant for recreational purposes (see also Question 2 B). In determining the significance of the playground facilities, there may be more than one official having jurisdiction over the facility. A school official is considered to be the official having jurisdiction of the land during school activities. However, the school board may have authorized the city park and recreation department or a public organization to control the facilities after school hours. The actual function of the playground is the determining factor under these circumstances. Therefore, documentation should be obtained from the officials having jurisdiction over the facility stating whether or not the playground is of local significance for recreational purposes.

11. Golf Courses

Question A: Are public golf courses subject to Section 4(f), even when fees and reservations are required?

Answer A: The applicability of Section 4(f) to a golf course depends on the ownership of the golf course. There are generally three types of golf courses:

- 1) Publicly owned and open to the general public,
- 2) Privately owned and open to the general public and
- 3) Privately owned and for the use of members only.

Section 4(f) would apply only to those golf courses that are publicly owned, open to public and determined to be significant recreational areas (see also Question 2 B). The first type of golf course mentioned above includes those that are owned, operated and managed by a city, county or state for the primary purpose of public recreation. These golf courses meet the basic applicability requirements, as long as they are determined to be significant by the city, county or state official with jurisdiction and FHWA agrees with this determination.

Section 4(f) would not apply to the two types of privately owned and operated golf courses mentioned above, even if they are open to the general public.

The fact that greens-fees or reservations (tee times) are required by the facility does not alter the Section 4(f) applicability to the resource, as long as the standards of public ownership, public access and significance are met. See Question 12 for more information on entrance or user fees.

Question B: How are “military” golf courses treated under Section 4(f)?

Answer B: Military golf courses are a special type of recreational area. They are publicly owned (by the Federal Government) but are not typically open to the general public. Because the recreational use of these facilities is generally limited to military personnel and their families they are not considered to be public recreational areas and, therefore, Section 4(f) does not apply to them (see Question 2 C).

12. User or Entrance Fees

Question: Does the charging of an entry or user fee affect Section 4(f) eligibility?

Answer: Many eligible 4(f) properties require a fee to enter or use the facility such as State Parks, National Parks, publicly owned ski areas, historic sites and public golf courses. The assessment of a user fee is generally related to the operation and maintenance of the facility and does not in and of itself negate the property's status as a 4(f) resource. Therefore, it does not matter in the determination of Section 4(f) applicability whether or not a fee is charged, as long as the other criteria are satisfied.

Consider a public golf course as an example. As discussed in Question 11, greens-fees are usually if not always required, and these resources are considered 4(f) resources when they are open to the public and determined to be significant. The same rationale should be applied to other 4(f) resources and lands in which an entrance or user fee is required.

13. Bodies of Water

Question: How does the Section 4(f) apply to publicly owned lakes and rivers?

Answer: Lakes are sometimes subject to multiple, even conflicting, activities and do not readily fit into one category or another. When lakes function for park, recreation, or refuge purposes, Section 4(f) would only apply to those portions of water which function primarily for those purposes. Section 4(f) does not apply to areas which function primarily for other purposes. In general, rivers are not subject to the requirements of Section 4(f). Rivers in the National Wild and Scenic Rivers System are subject to the requirements of Section 4(f) in accordance with Questions 8 A and 8 B. Those portions of publicly owned rivers, which are designated as recreational trails are subject to the requirements of Section 4(f). Of course Section 4(f) would also apply to lakes and rivers or portions thereof which are contained within the boundaries of parks, recreational areas, refuges, and historic sites to which Section 4(f) otherwise applies.

14. Trails

Question A: The National Trails System Act permits the designation of scenic, historic and recreational trails. Are these trails or other designated scenic or recreational trails on publicly owned land subject to the requirements of Section 4(f)?

Answer A: Public Law 95-625 provides that, no land or site located along a designated national historic trail or along the Continental Divide National Scenic Trail shall be subject to the provisions of Section 4(f) of the Department of Transportation Act (49 U.S.C. 1653(f)) unless such land or site is deemed to be of historical significance under appropriate historical site criteria, such as those for the National Register of Historic Places. Only lands or sites adjacent to historic trails that are on or eligible for the National Register of Historic Places are subject to Section 4(f). Otherwise (pursuant to Public Law 95-625), national historic trails are exempt from Section 4(f).

Question B: Are trails on privately owned land, including land under public easement and designated as scenic or recreational trails subject to the requirements of Section 4(f)?

Answer B: Section 4(f) does not apply to trails on privately owned land. Section 4(f) could apply where a public easement that permits public access for recreational purposes exists. In any case, it is FHWA's policy that every reasonable effort should be made to maintain the continuity of existing and designated trails.

Question C: Are trails on highway rights-of-way, which are designated as scenic or recreational trails subject to the requirements of Section 4(f)?

Answer C: If the trail is simply described as occupying the rights-of-way of the highway and is not limited to any specific location within the right-of-way, a use of land would not occur provided that adjustments or

changes in the alignment of the highway or the trail would not substantially impair the continuity of the trail. In this regard, it would be helpful if all future designations including those made under the National Trails System Act describe the location of the trail only as generally in the right-of-way.

It should be noted that in Title 23, Section 109(m) precludes the approval of any project, which will result in the severance, or destruction of an existing major route for non-motorized transportation traffic unless such project provides a reasonable alternative route or such a route exists.

Question D: Does Section 4(f) apply to trails funded under the Recreational Trails Program (RTP)?

Answer D: No. The Recreational Trails Program (RTP)⁸ is exempt from the requirements of 23 U.S.C. 138 and 49 U.S.C. 303. This allows the USDOT/FHWA to approve RTP projects which are located on land within publicly owned parks or recreation areas without requiring a waiver or other Section 4(f) documentation (23 U.S.C. 206 (h)(2)). The exemption is limited to Section 4(f) and does not apply to other environmental requirements, such as the National Environmental Policy Act (NEPA) or the National Historic Preservation Act (NHPA). More information on the Recreational Trails Program is available at www.fhwa.dot.gov/environment/rectrails/index.htm.

15. Bikeways

Question: Do the requirements of Section 4(f) apply to bikeways?

Answer: If the publicly owned bikeway is primarily used for transportation and is an integral part of the local transportation system, the requirements of Section 4(f) would not apply, since it is not a recreational area. Section 4(f) would apply to publicly owned bikeways (or portions thereof) designated or functioning primarily for recreation, unless the official having jurisdiction determines it is not significant for such purpose. During early consultation with the official with jurisdiction it should be determined whether or not a management plan exists that addresses the primary purpose of the bikeway in question.

However, as with recreational trails, if the bikeway is simply described as occupying the highway rights-of-way and is not limited to any specific location within that right-of-way, a use of land would not occur and Section 4(f) would not apply, provided adjustments or changes in the alignment of the highway or bikeway would not substantially impair the continuity of the bikeway. Just as with trails, Title 23 Section 109(m) precludes the approval of any project, which will result in the severance or destruction of an existing major route for non-motorized transportation traffic, unless such project provides a reasonable alternative route or such a route exists.

16. Joint Development (Park with Highway Corridor)

Question: When a public park, recreation area, or wildlife and waterfowl refuge is established and an area within the 4(f) resource is reserved for highway use prior to, or at the same time the 4(f) resource was established, do the requirements of Section 4(f) apply?

Answer: No, the requirements of Section 4(f) do not apply to the subsequent use of the reserved area for its intended highway purpose. This is because the land used for the highway project was reserved from and, therefore, has never been part of the protected 4(f) area. Nor is there a constructive use (23 C.F.R. 771.135(p)(5)(v)) of the 4(f) resource, since it was jointly planned with the highway project. The specific governmental action that must be taken to reserve a highway corridor from the 4(f) resource is a question of state law and local law, but evidence that the reservation was contemporaneous with or prior to the establishment of the 4(f) resource is always required. Subsequent statements of intent to construct a highway project within the 4(f) resource are not sufficient. All measures which have been taken to

⁸In 1998, the Transportation Equity Act for the 21st Century (TEA-21) replaced the National Recreational Trails Funding Program created by the Intermodal Surface Transportation Efficiency Act (ISTEA) with the Recreational /Trails Program (RTP).

jointly develop the highway and the park should be completely documented in the project records. To provide flexibility for the future highway project, state and local transportation agencies are advised to reserve wide corridors.

17. Planned 4(f) Resources

Question: Do the requirements of Section 4(f) apply to publicly owned properties "planned" for park, recreation area, wildlife refuge, or waterfowl refuge purposes even though they are not presently functioning as such?

Answer: Section 4(f) applies when the land is one of the enumerated types of publicly owned lands and the public agency that owns the property has formally designated and determined it to be significant for park, recreation area, wildlife and waterfowl refuge purposes. Evidence of formal designation would be the inclusion of the publicly owned land, and its function as a 4(f) resource, into a city or county Master Plan. A mere expression of interest or desire is not sufficient. When privately held properties of these types are formally designated into a Master Plan, Section 4(f) is not applicable. The key is whether the planned facility is presently publicly owned, formally designated and significant. When this is the case, Section 4(f) would apply.

18. Temporary Recreational Occupancy or Uses of Highway Rights-of-way

Question: Does Section 4(f) apply to temporary recreational uses of land owned by a State Department of Transportation or other Applicant and designated for transportation purposes?

Answer: In situations where land which is owned by a State DOT or other Applicant and designated for future transportation purposes (including highway rights-of-way) is temporarily occupied or being used for either authorized or unauthorized recreational purposes such as for a playground or a trail (bike, snowmobile, hiking, etc.) on property purchased as right-of-way, Section 4(f) does not apply. For authorized temporary occupancy of highway rights-of-way for park or recreation, it is advisable to make clear in a limited occupancy permit, with a reversionary clause that no long-term right is created and the park or recreational activity is a temporary one pending completion of the highway or transportation project.

Note: In one recent proposed transportation project, lands designated for transportation purposes and utilized for recreational uses pursuant to a revocable agreement granting temporary use, were found by a court to be 4(f) resources, but this case had unusual facts. Nevertheless, it is important to recognize this decision, even though it is contrary to FHWA policy (see Stewart Park and Reserve Coalition v. Slater, 352 F.3d 545 (2nd Cir. 2003), Appendix A, Question 18).

19. Tunneling

Question: Is tunneling under a publicly owned public park, recreation area, wildlife or waterfowl refuge, or historic site subject to the requirements of Section 4(f)?

Answer: Section 4(f) would apply only if the tunneling:

- 1) Disturbs any archaeological sites on or eligible for the National Register of Historic Places which warrant preservation in place, or
- 2) Causes disruption which would permanently harm the purposes for which the park, recreation, wildlife or waterfowl refuge was established, or
- 3) Substantially impairs the historic values of the historic site.

20. Wildlife and Waterfowl Refuges

Question A: What is a wildlife or waterfowl refuge for purposes of Section 4(f)?

Answer A: The terms “wildlife refuge” and “waterfowl refuge” are not defined in the Section 4(f) law or in FHWA's regulations. However, in 1966, the same year Section 4(f) was passed; Congress also passed the National Wildlife Refuge System Act (NWRSA). The NWRSA defines these terms broadly focusing on the preservationist intent of the refuges. The FHWA has considered this in our implementation of Section 4(f) for refuges. For purposes of Section 4(f), a wildlife and waterfowl refuge is publicly owned land (including waters) where the major purpose of such land is the conservation, restoration, or management of endangered species, their habitat, and other wildlife and waterfowl resources. In determining the major purpose of the land, consideration must be given to the following: (1) the authority under which the land was acquired; (2) lands with special national or international designations; (3) the management plan for the land; and/or (4) whether the land has been officially designated by a Federal, State, or local agency having jurisdiction over the land, as an area for which its major purpose and function is the conservation restoration, or management of endangered species, their habitat or wildlife and waterfowl resources. Recreational activities, including hunting and fishing, are consistent with the broader species preservation.

Examples of properties that may function as wildlife or waterfowl refuges include: State or Federal wildlife management areas, a wildlife reserve, preserve or sanctuary, and waterfowl production areas, including wetlands and uplands that are set aside (in a form of public ownership) for refuge purposes. The FHWA must consider the ownership, significance and major purpose of these properties in determining if Section 4(f) should apply. In making these determinations FHWA should review the existing management plans and consult with the Federal, State or local officials having jurisdiction over the property. In some cases, these types of properties will actually be multiple-use public land holdings of the type discussed in Question 6, and should be treated accordingly.

Question B: Are “conservation easements” acquired by the United States on private lands considered Section 4(f) wildlife and waterfowl refuges?

Answer B: Easements (a form of property ownership, see Question 2 D) acquired by the United States are subject to Section 4(f) as a wildlife and waterfowl refuges when they are part of the National Wildlife Refuge System. Other lands may be subject to Section 4(f) when they meet the definition and criteria specified in Answer A, above. In all cases, FHWA must consider the ownership, significance, and major purpose of these types of properties in determining if Section 4(f) should apply.

21. Air Rights

Question: Do the requirements of Section 4(f) apply to bridging over a publicly owned public park, recreation area, wildlife or waterfowl refuge, or historic site?

Answer: Section 4(f) will apply if piers or other appurtenances are physically located in the park, recreation area, wildlife and waterfowl refuge, or significant historic property. Where the bridge will span the 4(f) resource entirely, the proximity impacts of the bridge on the 4(f) resource should be evaluated to determine if the placement of the bridge will result in a constructive use (see Question 1 B).

22. Non-Transportation Use of 4(f) Resources

Question: Does the expenditure of Title 23 funds for mitigation or non-transportation activities on a 4(f) resource trigger the requirements of Section 4(f)?

Answer: No. Section 4(f) only applies where land is permanently incorporated into a transportation facility and when the primary purpose of the activity on the 4(f) resource is for transportation. If activities are proposed within a 4(f) resource solely for the protection, preservation, or enhancement of the resource and the official with jurisdiction has been consulted and concurs with this finding (in writing) then the provisions of Section 4(f) do not apply.

For example, consider the construction or improvement of any type of recreational facility in a park or recreation area (see Question 24) or the construction of a permanent structural erosion control feature, such as a detention basin. Where these activities are for the enhancement or protection of the 4(f) resource, do not permanently incorporate land into a transportation facility, do not appreciably change the use of the property and the officials having jurisdiction agree, Section 4(f) would not apply.

Another example involves the enhancement, rehabilitation or creation of wetland within a park or other 4(f) resource as part of the mitigation for a transportation project's wetland impacts. Where this work is consistent with the function of the existing park and considered an enhancement of the 4(f) resource by the official having jurisdiction, then Section 4(f) would not apply. In this case the 4(f) land is not permanently incorporated into the transportation facility, even though it is a part of the project as mitigation.

If activities funded with Title 23 funds result in a substantial change in the purpose, function or change the ownership from a 4(f) resource to transportation, then Section 4(f) will apply.

23. Scenic Byways

Question: How does Section 4(f) apply to scenic byways?

Answer: The designation of a road as a scenic byway is not intended to create a park or recreation area within the meaning of 49 U.S.C. 303 or 23 U.S.C. 138. The improvement (reconstruction, rehabilitation, or relocation) of a publicly-owned scenic byway would not come under the purview of Section 4(f) unless the improvement was to otherwise use land from a protected resource.

24. Transportation Enhancement Projects

Question A: How is Section 4(f) applied to transportation enhancement activity projects?

Answer A: A transportation enhancement activity (TEA) is one of twelve specific types of activities set forth by statute at 23 U.S.C. 101(a)(35). TEAs often involve the enhancement of, or improvement to, land that qualifies as a Section 4(f) protected resource. For a 4(f) resource to be used by a TEA, two things must occur, (1) the TEA must involve land of an existing 4(f) resource; and (2) there must be a use of that 4(f) resource as defined by 23 C.F.R. 771.135(p). Therefore, if a TEA permanently incorporates 4(f) land into a transportation facility then there is a use and Section 4(f) will apply.

The following TEAs have the greatest potential for Section 4(f) use:

- Facilities for pedestrians and bicycles
- Acquisition of scenic easements and scenic or historic sites
- Scenic or historic highway programs including tourist and welcome centers
- Historic preservation
- Rehabilitation and operation of historic transportation buildings, structures, or facilities (including historic railroad facilities and canals)
- Preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian or bicycle trails)

Conversely, the TEAs below are less likely to be subject to Section 4(f):

- Safety and educational activities for pedestrians and bicyclists
- Landscaping or other scenic beautification
- Control and removal of outdoor advertising
- Archeological planning and research
- Environmental mitigation of highway runoff pollution, reduce vehicle-caused wildlife mortality, maintain habitat connectivity
- Establishment of transportation museums

In both categories above, the question of Section 4(f) use must be evaluated on a case-by-case basis.

To illustrate how Section 4(f) is applicable to a TEA, consider the following two scenarios involving a significant public park:

Scenario 1: A TEA project is proposed for the construction of a new pedestrian or bike facility within a public park. The purpose of the project is primarily to promote a mode of travel and requires a transfer of land from the officials with jurisdiction over the 4(f) resource to the State DOT or local transportation authority. Since this project would involve the “permanent incorporation of 4(f) land into a transportation facility” there is a use of 4(f) land and a Section 4(f) evaluation should be prepared. In this instance, *The Programmatic Section 4(f) Evaluation for Independent Bikeway or Walkway Construction Projects* (www.environment.fhwa.dot.gov/guidebook/vol2/doc15m.pdf) would likely apply, depending on the particular circumstances of the project.

Scenario 2: The purpose of a TEA project is to construct, rehabilitate, reconstruct or refurbish an already existing bike path or walkway within a public park. This project relates to surface transportation but the improvement is primarily intended to enhance the park. In this case there is no “permanent incorporation of 4(f) land into a transportation facility” and, therefore, no Section 4(f) use. A Section 4(f) evaluation does not need to be prepared.

Other TEA projects can involve existing transportation facilities such as highways, bridges, and buildings which are expected to have a useful life that is finite and therefore, continually require maintenance or rehabilitation. While 23 C.F.R. 771.135(f) may apply in certain instances, generally speaking, the rehabilitation of a highway, building or bridge relates to surface transportation but does not rise to the level of a Section 4(f) use (see also Question 4).

Archaeological planning and research projects that involve the potential use of a significant archeological property are covered by the provisions of 23 C.F.R. 771.135(g) (see Question 5). Other TEAs may be handled in accordance with this answer. In complex situations the FHWA Division Office should contact the Headquarters Office of Project Development and Environmental Review or the Office of the Chief Counsel for assistance.

Note: This answer supersedes the August 22, 1994; *Interim Guidance on Applying Section 4(f) On Transportation Enhancement Projects and National Recreational Trails*.

Question B: Is it possible for a TEA to create a 4(f) resource?

Answer B: To be eligible for transportation enhancement funding, a proposed activity must relate to surface transportation and not be solely for recreation or other purpose. Also, the development of parks, recreation areas, or wildlife and waterfowl refuges are not designated eligible TEAs. Thus, in most cases, the TEA by itself would not create a 4(f) resource, where one did not previously exist.

That being said, it is possible for transportation enhancement funds to enhance existing 4(f) resources, such as a bikeway or pedestrian facility that is constructed within a park. The use of TEA funds in this case would not alter the future Section 4(f) status of the park and may add Section 4(f) values that would

have to be considered in subsequent projects. See Question 22 for additional discussion of the use of transportation funds within a park or other 4(f) resource for non-transportation purposes.

For more information, see the *FHWA Final Guidance on Transportation Enhancement Activities*; December 17, 1999, and the TE Program Related Questions & Answers; August, 2002, found at the Transportation Enhancement Website (www.fhwa.dot.gov/environment/te/index.htm).

25. Museums, Aquariums and Zoos?

Question: Does Section 4(f) apply to museums, aquariums and zoos?

Answer: Publicly owned museums or aquariums will not normally be considered parks, recreational areas, or wildlife and waterfowl refuges and are, therefore, not subject to Section 4(f) unless they are significant historic properties.

Publicly owned zoos on the other hand, should be evaluated on a case-by-case basis to determine the major purpose of these resources and if they are significant park and/or recreational resources. To the extent that these resources are considered to be significant park or recreational areas, or are significant historic properties, they will be treated as 4(f) resources.

26. Tribal Lands and Indian Reservations

Question: How are lands owned by Federally Recognized Tribes, and/or Indian Reservations treated for the purposes of Section 4(f)?

Answer: Federally recognized Indian Tribes are considered sovereign nations, therefore, lands owned by them are not considered to be “publicly owned” within the meaning of Section 4(f), nor open to the general public, and Section 4(f) does not automatically apply. However, in situations where it is determined that land or resources owned by a Tribal Government or on Indian Reservation functions as a significant park, recreational area (which are open to the general public), a wildlife and waterfowl refuge, or is eligible for the National Register of Historic Places, Section 4(f) would apply.

27. Traditional Cultural Properties

Question: Are lands that are considered to be traditional cultural properties subject to the provisions of Section 4(f)?

Answer: A traditional cultural property or TCP is defined in the 1990 National Register Bulletin # 38 generally as land that may be eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that; (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. Land referred to as a TCP is not automatically considered historic property, or treated differently from other historic property. A TCP must also meet the National Register criteria as a site, structure, building, district, or object to be eligible for Section 4(f) protection.

For those TCPs related to an Indian tribe, the Tribal Historic Preservation Officer (THPO) or tribal resource administrator should be consulted in determining whether the TCP is on or eligible for the National Register. For other TCPs the State Historic Preservation Officer (SHPO) should be consulted.

28. Cemeteries

Question A: Does Section 4(f) apply to cemeteries?

Answer A: Cemeteries would only be considered 4(f) properties if they are significant historic resources, i.e., determined to be on or eligible for the National Register of Historic Places.

Question B: Does Section 4(f) apply to other lands that contain human remains?

Answer B: Lands that contain human remains, such as graveyards, family burial plots, or Native American burial sites and those sites that contain Native American grave goods associated with burials, are not in and of themselves considered to be 4(f) resources. However, these types of lands may also be historic properties included on or eligible for inclusion in the National Register. These sites should not automatically be considered only as archeological resources as many will have value beyond what can be learned by data recovery. If these sites are National Register listed or eligible and also warrant preservation in place, Section 4(f) applies (see Question 5). For more information on the subject of historic cemeteries see, National Register Bulletin #41, *Guidelines for Evaluating and Registering Cemeteries and Burial Places*; 1992.

When conducting the Section 4(f) determination for lands that may be Native American burial sites or sites with significance to a Federally Recognized Tribe, consultation with appropriate representatives from the Federally Recognized Tribes with interest in the site is essential.

29. Section 4(f) Evaluations in Tiered NEPA Documents

Question: How should Section 4(f) be handled in tiered NEPA documents?

Answer: This issue is addressed to some degree in 23 C.F.R. 771.135(o)(1). Because the project development process moves from a broad scale examination at the tier-one stage, to a more site specific evaluation in tier-two, does not relieve FHWA from its responsibility to consider feasible and prudent avoidance alternatives to the use of 4(f) resources at the tier-one stage. Where all alternatives in the second tier analysis use a 4(f) resource, it may be appropriate and necessary to reconsider the feasibility and prudence of an avoidance alternative that was eliminated during the tier-one evaluation phase.

30. Department of the Interior Handbook on Departmental Review of Section 4(f) Evaluations (2002)

Question: What is the official status of the February 2002, *Handbook on Departmental Reviews of Section 4(f) Evaluations*, issued by the Department of the Interior, Office of Environmental Policy and Compliance?

Answer: Section 4(f) legislation (23 U.S.C. 138 and 49 U.S.C. 303) identifies the Department of Interior, as well as the Departments of Agriculture and Housing and Urban Development as having a role in Section 4(f) matters. The U.S. Department of Transportation (DOT) is required to consult and cooperate with these Departments in Section 4(f) program and project related matters.

The purpose of the Handbook is to provide guidance to the National Park Service (NPS), U.S. Fish and Wildlife Service (F&WS) and other designated lead bureaus in the preparation of DOI comments on Section 4(f) evaluations prepared by the DOT, pursuant to the authority granted in Titles 23 and 49. The Handbook is an official DOI document and includes departmental opinion related to the applicability of Section 4(f) to lands for which they have jurisdiction and authority. FHWA values the DOI's opinions related to the resources under their jurisdiction, and while the Handbook provides resource information for FHWA to consider, it is not the final authority on Section 4(f) determinations.

Official FHWA policy on the applicability of Section 4(f) to lands that fall within the jurisdiction of the DOI is contained within 23 C.F.R. 771.135 and this *Policy Paper*. FHWA is not legally bound by the Handbook, or the comments provided by the DOI or lead bureaus, however, every attempt should be made to reach agreement during project consultation. In some situations one of the bureaus may be an official having jurisdiction. When unresolved conflicts arise during coordination with the NPS, F&WS or other bureaus related to the applicability of Section 4(f) to certain types of land or resources, it may be necessary for the Division Office to contact the Office of Project Development and Environmental Review for assistance.

APPENDIX A **Analysis of Case Law**

The following analysis provides brief legal notes and citations to some Section 4(f) cases that relate to the subject matter discussed in the question and answer section of the Section 4(f) Policy Paper. This section is provided for informational purposes and as background to the policy addressed in the question and answers. In some instances, case law does not address the specific example in the Policy Paper. Also, there are some examples that have had no case address the subject matter of the question. When you have specific legal questions or need legal advice about Section 4(f) applicability, please contact the Legal Staff of the Office of Chief Counsel within your geographic area. FHWA reserves the right to modify and update this appendix as case law becomes applicable.

1. Use of Resources

Question A: What constitutes a “use” of land from a publicly owned public park, recreation area, wildlife refuge, and waterfowl refuge or historic site?

Legal Note: A number of cases have discussed “use” and “constructive use” and only a few are mentioned here. Several courts have held that the term “use” is to be construed broadly, not limited to the concept of physical taking, but includes areas that are significantly, adversely affected by the project. Adler v. Lewis, 675 F.2d 1085, 1092 (9th Cir. 1982); Concerned Citizens Alliance v. Slater, 176 F.3d 686 (3rd Cir. 1999). In Concerned Citizens, it was undisputed that the preferred alignment would “use” an historic district by sending through the district, resulting in visual, traffic, and noise and vibration impacts. The issue in that case was whether the preferred alternative would impose the least harm on the historic district.

In Brooks v. Volpe, 460 F.2d 1193 (9th Cir. 1972), the Court held that construction of a segment of Interstate Highway I-90 which would encircle campground areas would result in a “use” due to the indirect impacts to the campground under Section 4(f) expanding the physical use concept to what would later be called constructive use and codified in FHWA's regulations at 23 C.F.R. 771.135(p).

Question B: How is “constructive use” defined and determined?

Legal Note: Significant adverse indirect impacts, now called "substantial impairment" in FHWA's regulations, can result in a constructive use. D.C. Fed'n of Civic Ass'ns v. Volpe, 459 F.2d 1231 (D.C. Cir. 1971). At the same time, not every change within park boundaries constitutes a “use” of Section 4(f) lands. Coalition on Sensible Transp., Inc. v. Dole, 826 F.2d 60 (D.C. Cir. 1987). No “use” occurs where an action will have only an insignificant effect on the existing use of protected lands. In Geer v. FHWA, 975 F. Supp. 47, 73 (D. Mass. 1997), the court upheld the FHWA's determination of no constructive use, which concluded that the noise and visual impacts were not significant given the existing urban context of the project and existing impacts under the no-build option.

In Davis v. Mineta, 302 F.3d 1104 (10th Cir. 2002), construction of a project that would substantially impair the aesthetic attributes associated with the Jordan River Parkway was subject to Section 4(f) due to the disruption of the natural setting and feeling of the Parkway. In that case, noise levels were expected to increase at least ten decibels in the parkway. In Conservation Soc'y of S. Vt. v. Sec'y of Transp., 443 F. Supp. 1320 (D. Vt. 1978), “close proximity” of the proposed highway project to the Lye Brook Wilderness area was deemed a “use” of publicly owned recreation land subject to Section 4(f).

The effects of noise can result in a constructive use. In Allison v. DOT, 908 F.2d 1024, 1028 (D.C. Cir. 1990), the court determined that the FAA erred in considering only the effect on humans using a Section 4(f) state park. However, the court ultimately found that there was no violation of Section 4(f) because the operation of the new airport would not result in a significant increase in the noise level over the level of the current facility. There was a similar result in Sierra Club v. United States Dep't of Transp., 753 F.2d 120 (D.C. Cir. 1985), in which the increase in cumulative noise from the new facility was found not to be significant.

More recently, in City of S. Pasadena v. Slater, 56 F. Supp. 2d 1106 (C.D. Cal. 1999), the plaintiffs argued that the 710 Freeway Project would constructively use historic sites by substantially impairing the aesthetic features or attributes of the sites. They argued that the proximity of the freeway to historic properties resulted in at least two forms of constructive use. First, to the extent that the overall setting of a property is an important contributing element to the historic value of the property, this attribute would be impaired. Second, they argued, the mere proximity of the freeway to the historic properties would result in additional impairments. The Defendant argued that setting was not a major aspect of the qualities that made these specific properties eligible for the National Register. The court found that this determination was simply a conclusion for which no analysis was offered. With regard to proximity, the project would come within 15 feet of an historic district. The court noted that other courts have found that there is a constructive use in situation where there is a greater distance between the project and the section 4(f) resource. (See, for example, Coalition Against Raised Expressways, Inc. v. Dole, 835 F.2d 803 (11th Cir 1988) (on-ramp within 43 feet of Section 4(f) structure is a constructive use); Stop H-3 Ass'n v. Coleman, 533 F.2d 434 (9th Cir. 1976) construction of six-lane controlled access highway passing within 100-200 feet of Section 4(f) resource is a constructive use). In City of S. Pasadena, the court found serious questions as to whether defendants abused their discretion in finding that the 710 Freeway Project would not result in any constructive uses of eligible historic resources.

Question C: When does temporary occupancy of a 4(f) resource result in a 4(f) use?

Legal Note: In Coalition On Sensible Transp. Inc. v. Dole, 642 F. Supp. 573, (D. D.C.1986) the project in Montgomery County, Maryland, proposed to widen 16 miles of Interstate 270. Among other violations, plaintiffs argued that the projects impacts to several parklands constituted a use under Section 4(f).

The Section 4(f) statement for this project examined 7 parks and conservation areas. In 4 of the 7 resources, temporary construction easements would be granted for grading and after construction was completed, would be regraded, revegetated and then returned for use as a parkland. The court found that, "the projects temporary impact upon parkland during the construction period does not amount to 'use' within the meaning of section 4(f)." 642 F. Supp. at 596.

Further, since the narrow strips of parkland were in close proximity to the existing highway, and the administrative record established that none of the land was being actively used by park authorities, the court determined that this project would not 'substantially impair the value' of parkland in this case. *Id.* The court also found that even if the project resulted in a Section 4(f) use, Section 4(f) would not have been violated.

(On appeal in Coalition on Sensible Transp. Inc. v. Dole, 826 F.2d 60 (D.C. Cir. 1987), the Court affirmed the lower court's decision for other reasons. The Appeals Court reasoned that since there were other physical uses of other Section 4(f) resources in the project area, the question of temporary occupancy amounting to a use was not necessary).

Practitioner's note: The district court case is useful as an example where the temporary occupancy of parkland by a temporary construction easement did not result in a use under Section 4(f).

2. Public Parks, Public Recreation Areas, and Wildlife and Waterfowl Refuges

Question A: When is publicly owned land considered to be a park, recreation area, or wildlife and waterfowl refuge and who makes this determination?

Legal Note: In Kickapoo Valley Stewardship Ass'n. v. U.S. Dept. of Transp., 37 Fed. Appx. 810 (7th Cir. 2002) (unpublished), the Court held that Section 4(f) only applies to those lands formally classified as parks, recreation areas, wildlife and waterfowl refuges, or historic sites. The Kickapoo Valley Reserve property was originally planned for an Army Corps of Engineers flood-control project. The dam project was cancelled and an Act of Congress transferred the property to the State of Wisconsin. The legislation specified that the land was to "be preserved in a natural state and developed only to the extent necessary to enhance outdoor recreational and educational opportunities." The Court found that this legislative

language restricting use was not sufficient to designate the Reserve as Section 4(f) land. The Court further found that it was not arbitrary and capricious for USDOT to decide not to consider the Reserve as Section 4(f) land based on the multiple uses of the Reserve, including significant portions being used for agriculture.

In Stewart Park & Reserve Coalition v. Slater, 352 F.3d 545 (2nd Cir. 2003), the Court held that Section 4(f) contains no requirement that the public parklands to which it applies must be permanently designated as such. The Court determined that Section 4(f) applied, even though the public lands to be used in the project were originally acquired for transportation purposes (airport expansion and access). Although the land was never permanently designated as parklands, it was available to the public for use as park and recreational area for almost 30 years. (See also Legal Note in 18 of this Appendix)

Question B: How should the significance of public parks, recreation areas, and waterfowl and wildlife refuges be determined?

Legal Note: Land that is used as a public park is presumed significant for Section 4(f) purposes unless explicitly determined otherwise by the appropriate federal or local officials. Arlington Coalition on Transp. v. Volpe, 458 F.2d 1323 (4th Cir. 1972). FHWA reviews the state determination of significance of a public park for reasonableness. Concerned Citizens on I-90 v. Sec. of Transp., 641 F.2d 17 (1st Cir. 1981); Geer v. FHWA, 975 F. Supp. 47, 64 (D. Mass. 1997).

8. Wild and Scenic Rivers

Question A: Are Wild and Scenic Rivers (WSR) subject to Section 4(f)?

Legal Note: In Hells Canyon Pres. Council v. Jacoby, 9 F.Supp.2d 1216 (D. Or. 1998), the court found that a consistency determination supported FHWA's CE. Although that case did not involve a Section 4(f) analysis with respect to the river, the court's reliance on the consistency determination in concluding that there would be no significant impact on the wild and scenic river values should apply equally to a Section 4(f) constructive use analysis.

Practitioner's Note: When projects may have some arguable constructive use of publicly owned waters or on publicly-owned lands administered for Section 4(f) values, it generally will be helpful to obtain a written consistency determination from the river manager. Such consistency determination may prevent a "constructive use" determination.

10. School Playgrounds

Question: Are publicly owned school playgrounds subject to the requirements of Section 4(f)?

Legal Note: In Piedmont Env'tl. Council v. U.S. Dept. of Transp., 159 F.Supp.2d 260 (W.D. Va. 2001), aff'd in relevant part, 58 Fed. Appx. 20 (4th Cir. 2003), the court found that the taking of some land of one school for a bypass constituted Section 4(f) property but that the agency was not arbitrary and capricious in concluding that there were no other feasible and prudent alternatives than taking the land. The court further found that "[b]ecause the defendants concluded that the recreational facilities affected by the noise and visual impacts of the bypass were not noise-sensitive and that differences in elevation and the existing wood buffer would screen the bypass from view, see id. at 35, the Secretary was within the scope of his authority and did not arbitrarily and capriciously conclude that no constructive use would occur."

Practitioner's Note: There is both an actual and a constructive use of school property that should be considered. When the project will take a portion or all of school property open for recreational activity, than Section 4(f) must be considered. However, when the project simply comes near such property, the visual and auditory impacts should be analyzed. If the school property is not noise sensitive, then auditory concerns will not translate into a constructive use. If the visual impact can be shielded by vegetation or elevation differences, then visual concerns may not translate into a constructive use.

However, a thorough study of the effects on the school property provides needed support for a conclusion that there is no constructive use.

15. Bikeways

Question: Do the requirements of Section 4(f) apply to bikeways?

Legal Note: In Laguna Greenbelt, Inc. v. U.S. Dept. of Transp., 42 F.3d 517 (9th Cir. 1994) the court found that an overpass over a bike trail, a widening of an existing bridge over a bike trail, and the relocation of a bike path within the designated right-of-way for the bike path did not constitute either actual or constructive use of the respective trails.

Calio v. Pa. Dep't of Transp. (No. 00-2163, 3d Circuit, October 10, 2001). This litigation involved a Pennsylvania Department of Transportation (PennDOT) proposal to develop a stretch of abandoned railroad track in suburban Philadelphia as a bicycle and pedestrian trail, using funds from the Congestion Mitigation and Air Quality Improvement Program (CMAQ). 23 U.S.C. 104(b)(2) 217. The proposed trail is a non-National Highway System project subject to an exemption agreement entered into by FHWA and PennDOT in 1992. See 23 U.S.C. 106(b)(2) (1991).

The case involved a single issue: would the trail be used principally for transportation, rather than recreation purposes as required for projects funded from the CMAQ program? The District Court upheld FHWA's determination that the trail project would be principally for transportation, saying it was supported by the administrative record and neither arbitrary nor capricious. The appellate court, in a three-page decision, agreed. Although the Third Circuit decision may not be cited as precedent, the District Court's decision has been published. See Calio v. Pa. Dept. of Transp., 101 F.Supp. 2d 325 (E.D. Pa. 2000).

Practitioner's Note: If the project can be constructed so as to preserve the trail, then generally there will not be a "use" of the trail. Thus, an overpass or even the relocation of the trail within the trail's existing right-of-way may avoid a "use" of the trail. Regarding the use of CMAQ funds, even if a bike path has recreational purposes, that does not mean it is not principally for transportation.

16. Joint Development (Park with Highway Corridor)

Question: When a public park, recreation area, or wildlife and waterfowl refuge is established and an area within the 4(f) resource is reserved for highway use prior to, or at the same time the 4(f) resource was established, do the requirements of Section 4(f) apply?

Legal Note: In Sierra Club v. Dole, 948 F.2d 568 (9th Cir. 1991) the 9th Circuit reversed the district court's 1987 ruling that the Secretary had failed to comply with Section 4(f) by ruling that a planned bypass road constructively used the McNee Ranch Park. In 1984, the McNee Ranch State Park was transferred to the California Department of Parks and Recreation. This transfer deliberately set aside part of the land that was to form the park, due to the CalTrans belief that this set aside land might be necessary for a future bypass of an area commonly know as "Devil's Slide" on California State Highway Route 1. The Devil's Slide was a 600-foot section of Route 1 that repeatedly was closed due to landslides.

In 1986, the Secretary approved a Final Environmental Impact Statement for the Martini Creek Alternative, but this FEIS did not include a Section 4(f) evaluation for the McNee Ranch Park.

In the 9th Circuit, USDOT claimed there was extensive cooperation between CalTrans and the park planners throughout the process of park acquisition and the road alignment. The court also examined the legislative history of Section 4(f) and found Congressional reports that stood for the proposition that Congress thought that the joint planning of roads and parks was desirable.

Additionally, the court stated that,

“[w]here a park and a road are jointly planned on land which previously had neither park or road...no consensus is being upset. The community is not changing its mind about the type of park and road it would have, but is making the determination in the first instance. It is difficult to see how the road would significantly and adversely affect the park.” (948 F.2d 575)

Further, the 9th Circuit held that a road does not “constructively use” a park if the road and park were jointly planned. The court also emphasized that this is only applicable when there is constructive not actual use of a parkland.

17. Planned 4(f) Resources

Question: Do the requirements of Section 4(f) apply to publicly owned properties “planned” for park, recreation area, wildlife refuge, or waterfowl refuge purposes even though they are not presently functioning as such?

Legal Note: In Nat’l Wildlife Fed’n v. Coleman, 529 F.2d 359 (5th Cir. 1976) plaintiffs contended that FHWA violated Section 4(f) by failing to prepare a Section 4(f) statement for a section of I-10 that planned to transect the habitat of the Mississippi Sandhill Crane, bisect the eastern portion of a proposed refuge for the crane, and traverse Section 16 land held by the State of Mississippi in trust for the Jackson County School District.

The court determined that for Section 4(f) to apply to the lands at issue in this case, they must meet the following two-part test. First, the land to be used by the project must be publicly owned and second, the land must be from one of the enumerated types of publicly owned lands. The court found that the Section 16 land, although publicly owned, was never designated or administered as a wildlife refuge or any other Section 4(f) purpose notwithstanding the fact that the land was used by the Sandhill Crane as a sanctuary. In addition, the court found Section 4(f) was not applicable to the proposed wildlife refuge, because at the time the right of way for the project was acquired, and during the time the plans were approved, estimates and specifications were given, construction awards were given, and when construction began, the land was not publicly owned. A subsequent transfer of the land to the Fish and Wildlife Service did not make Section 4(f) applicable after the fact.

In Davis v. Mineta, 302 F.2d 1104 (10th Cir. 2002) two parks were planned within the area of potential effect as part of a highway project within the cities of Draper, Sandy and South Jordan in Salt Lake County, Utah. Here, the Jordan River Parkway was owned by two private landowners and partially by the Utah Department of Natural Resources, Division of Parks and Recreation. This land was designated as parkland on the South Jordan City Parks and Recreation Master Plan. The other property at issue was the Willow Creek Park. This park was planned in the Draper City Master Plan to be parkland but was owned by a private landowner. The 10th Circuit found that Willow Creek did not qualify as a Section 4(f) property, due to its private ownership, as did that portion of the Jordan River Parkway not owned by the State of Utah. However, that part which was owned by the State of Utah did qualify as Section 4(f) property due to its public holding.

18. Temporary Recreational Occupancy or Uses of Highway Rights-of-Way

Question: Does Section 4(f) apply to temporary recreational uses of land owned by a State Department of Transportation or other Applicant and designated for transportation purposes?

Legal Note: In Collin County, Tex. v. Homeowners Ass’n For Values Essential to Neighborhoods (HAVEN) 716 F. Supp. 953 (N.D. Texas 1989) HAVEN contended that certain lands should have been viewed as Section 4(f) properties in the Section 4(f) evaluation in the Final Environmental Impact Statement. In this case, the properties at issue were acquired by Dallas County from a private party in 1973 for use as highway right-of-way. Under an agreement between the City of Carrollton and Dallas County, the right-of-way was being used for recreation. Plaintiffs countered that Section 4(f) is inapplicable to temporary uses of highway rights-of-way for recreational activities.

The court concluded that FHWA did not err when the Section 4(f) evaluation determined that these properties were not Section 4(f) resources. Reasoning,

“The properties in this case were acquired from a private owner by Dallas County for right-of-way purposes; they are being used temporarily as a park. Simply because they have an interim use does not change their character: they were purchased as rights-of-way and they will be used as rights-of-way.” 716 F. Supp. at 972

A recent decision, known as the Stewart Airport Case, undercuts the position that land acquired for transportation use cannot become a Section 4(f) resource by permissive interim use. Stewart Park and Reserve Coalition Inc. v. Slater, 352 F.3d 545 (2nd Cir. 2003).

The case involves approximately 1200 acres of some approximately 8600 acres of land acquired for airport use. The proposed use of the 1200 acres was for construction for airport access and highway improvements. The land at issue was never designated as a parkland, but was managed by the state as such, until its use was required for airport and transportation purposes. The airport land was initially an Air Force base and was transferred to the state for use as a commercial airport. The state acquired the adjacent approximate 8600 acres in the 70's for use as airport expansion land and uses consistent with airport use, as per FAA regulations. These lands also included buffer lands. At issue was whether Section 4(f) applied to these adjacent lands.

The state entered into a revocable agreement with the New York State Department of Environmental Conservation to manage the land until needed for airport use. The terms of the formal revocable agreement stated that the agreement could be terminated upon 60 days notice of the land becoming necessary for airport use. The land was managed and used for recreational purposes during the entire agreement period, until the time it became necessary for transportation purposes.

The court held that 30 years of uninterrupted contiguous use of public recreational uses of this land, regardless of the revocable agreement and that fact the lands were originally acquired for transportation purposes, nonetheless, constituted Section 4(f) protected land. Further, the statutory language does not condition protection of land on being permanently designated as such. Additionally, 30 years of use entitled the land in question to Section 4(f) protection as the uninterrupted period could not be characterized as interim.

21. Air Rights

Question: Do the requirements of Section 4(f) apply to bridging over a publicly owned park, recreation area, wildlife refuge, waterfowl refuge, or historic site?

Legal Note: In Citizens for the Scenic Severn River Bridge Inc. v. Skinner, 802 F. Supp 1325 (D. Md. 1991) citizens and opponents of a bridge construction project sought to enjoin state and federal officials from proceeding with construction of a bridge across the Severn River in Anne Arundel County, Maryland. Among other contentions, plaintiffs argued that use of the Severn River was not adequately considered in the Final Section 4(f) statement. However, in the Section 4(f) statement defendants concluded there would be a use of the river, which the court found to be a Section 4(f) resource. The use entailed placement of piers and pilings in the river, possible runoff and removal of the existing bridge. Further, the statement determined that any of the proposed alternatives would have used the river.

Coalition Against A Raised Expressway Inc. v. Dole, 835 F.2d 803 (11th Cir. 1988) examined the impacts of an elevated expressway on three Section 4(f) resources in the downtown area of Mobile, Alabama. At issue were a park, a railroad terminal and the city hall. Defendants argued that in light of the location of these properties in the downtown area, the impacts from the expressway would not be substantial so as to amount to a use of these properties. However, the court reasoned that,

“In addition to the noise and air pollution, the raised highway would impact on the protected sites by impairing the view. The highway would cut off the city hall's view of the river and the docks.

Conversely, it would reduce the view from the river of the city hall's architecture. For the park and the railroad terminal, the highway would replace the view of the downtown with the sight of the seventeen-foot concrete pillars holding up the freeway. In addition, the dirt and debris from an elevated freeway would lessen the beauty of the architecture itself.

While the elimination of the view, the increase in noise and air pollution, and the close location of the highway may not individually constitute a use; cumulatively they significantly impair the utility of the properties." 835 F.2d at 812

The court found that the elevated expressway constructively used these Section 4(f) resources.

22. Non-Transportation Use of 4(f) Resources

Question: Does the expenditure of Title 23 funds for mitigation or non-transportation activities on a 4(f) resource trigger the requirements of Section 4(f)?

In National Trust for Historic Preservation v. Dole, 828 F.2d 776 (D.C. Cir. 1987), the court found that installing suicide prevention barriers on an historic bridge was not a *transportation program or project* and therefore Section 4(f) was not triggered. The court looked at the purpose of the project and found that since it was not a project to facilitate transportation - - the movement of vehicles, Section 4(f) did not apply.

Miscellaneous Section 4(f) Cases With Important Information

For general guidance on the issue of whether or not an avoidance alternative is imprudent and, therefore, may be rejected, relevant case law is below:

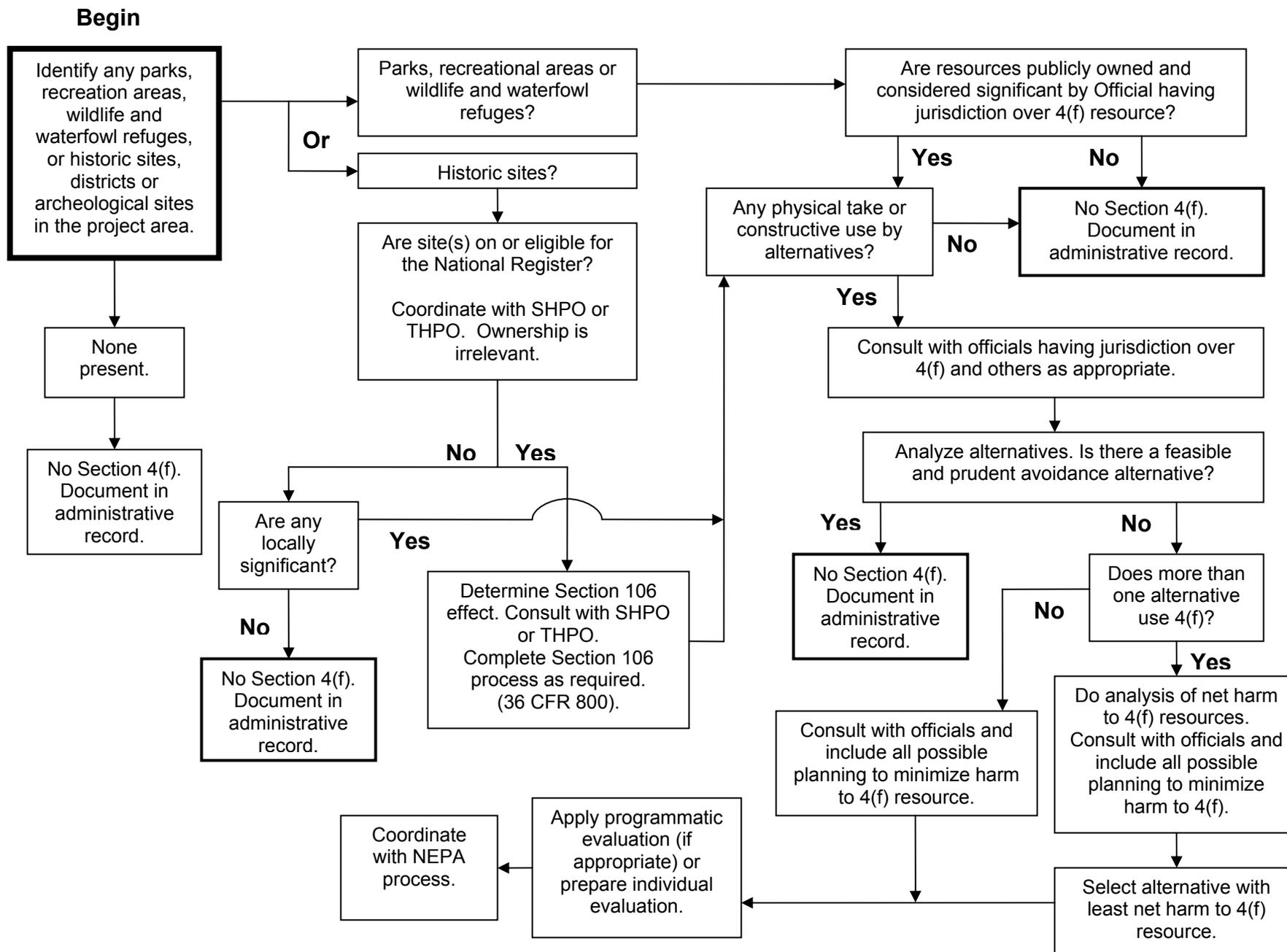
The Fifth, Ninth and Eleventh Circuit Courts of Appeals have employed a stricter standard in determining whether an alternative is imprudent than other Circuits. See, Louisiana Environmental Soviet v. Coleman, 537 F.2d 79 (5th Cir 1976); Stop H-3 Association v. Brinegar, 533 F.2d 434 (9th Cir. 1976); Druid Hills v. FHWA, 772 F.2d 700 (11th Cir. 1985).

Courts in the Fourth, Seventh and Tenth Circuits have interpreted the requirements less stringently. In these jurisdictions, a balancing test for determining whether an alternative is imprudent has been developed. Hickory Neighborhood Defense League v. Skinner, 910 F.2d 159, 163 (4th Cir. 1990); Eagle Foundation, Inc. v. Dole, 813 F.2d 798, 804 (7th Cir. 1987); Committee to Preserve Boomer Lake Park v. USDOT, 4 F.3d 1543, 1550 (10th Cir. 1993). In these jurisdictions the courts allow the Secretary to weigh the cumulative impacts of the avoidance alternative against the cumulative impacts of the non-avoidance alternative to reach a decision. The impacts to be compared in this type of analysis include other impacts in addition to the impacts on the Section 4(f) resource. The extent of harm that would be caused to the Section 4(f) resource if is not avoided would be taken into consideration under this test.

In the other Federal Circuits the case law is less clear. See Monroe County Council v. Adams, 566 F.2d 419 (2nd Cir. 1977) (employed a balancing test without stating it was doing so). The Eighth and the Third Circuits have recently adopted a more flexible standard for "prudent" but only for the limited purpose of determining whether an alternative that minimizes harm can be rejected as "imprudent." See, Bridgeton v. Slater, 212 F.3d 448 (8th Cir. 1999)(court refused to employ a rigid "least harm" test in an airport expansion case as this would conflict with Congressional mandate to facilitate airport expansion); Concerned Citizens Alliance v. Slater, 176 F.3d 686 (3rd Cir. 1999)(decision found that standard for "prudent and feasible" was not quite as high when applied to alternatives that minimized harm and granted the Secretary "slightly greater leeway" in eliminating options that minimized harm as imprudent).

When addressing the question of which standards apply in your state or district you should consult with the Office of the Chief Counsel's Legal Staff.

APPENDIX B
Section 4(f) Evaluation Diagram



Summary of Changes in the 2005 FHWA Section 4(f) Policy Paper

Revision Process Timeline and Overview

- **January to March 2004** - All FHWA Division Offices; the Office of Chief Counsel; the Headquarters Office of Planning, Environment and Realty and the Resource Center Environmental TST were given the opportunity to submit new questions, comments and identify areas of the 1987/1989 Policy Paper that needed clarification and revision.
- **March 2004** - Comments were organized for consideration and possible inclusion in the revised paper. Questions and responses from the Re: NEPA (<http://nepa.fhwa.dot.gov>) Section 4(f) discussion group were also reviewed to assist in determining subject areas to be addressed in the revision.
- **April to October 2004** - Revision of the Section 4(f) Policy Paper was undertaken by Lamar Smith, Office of Project Development and Environmental Review (HEPE), and Lance Hanf and Rima Lewis, the Office of the Chief Counsel (HCC) in San Francisco.
- **October 8, 2004** - The Draft Section 4(f) Policy Paper was circulated to FHWA Division Offices, Office of Chief Counsel, Headquarters Office of Environment, Planning and Realty, the Department of Interior (DOI), the Department of Housing and Urban Development (HUD), the Department of Agriculture, and the US DOT Office of the Secretary of Transportation (OST) (and in turn, other modal administrations) for review and comment.
- **November to February 2005** - Comments on the draft were collected by the Office of Project Development and Environmental Review. The comments were reviewed and addressed as submitted and revisions were made the Policy Paper as appropriate. In December, 2004 FHWA met with the Department of Interior to address their comments.
- **February 2005** - Final review and revisions.
- **March 2005** - 2005 Section 4(f) Policy Paper issued on March 2, 2005 (dated March 1, 2005)

The 2005 Policy Paper

The paper is organized into 3 main sections: **Introduction**, **Section 4(f) Evaluation**, and **Section 4(f) Applicability**. It also includes two new appendices: **Appendix A, Analysis of Case Law**, and **Appendix B, Section 4(f) Evaluation Diagram**.

Hyperlinks are added throughout the paper where websites are referenced for ease of use. Previous FHWA memorandums have been incorporated and rescinded.

- **Introduction.** This section considerably revises the former “Section 4(f) Background”. It provides a comprehensive overview of the history of Section 4(f) and emphasizes important key policy and procedural points.
- **Section 4(f) Evaluation.** This section expands the 1987/1989 discussion of the alternatives analysis process and “feasible and prudent” standard. It also provides an organized approach to the Section 4(f) process and includes an expanded discussion of the application of existing nationwide programmatic Section 4(f) evaluations.
- **Section 4(f) Applicability (Questions and Answers).** Since this section is the heart of the Policy Paper, material and substantive changes were made to address frequent Section 4(f) situations and issues and to provide clarity thereto. The 1987/1989 Policy Paper covered 22 subject areas with 34 questions and answers, whereas the 2005 paper covers 30 subject areas with 53 question and answers. Of the questions and answers in the 1987/1989 Policy Paper, all but 4 have been updated and changed. Former subject area 20 was eliminated due to a law being repealed and former subject areas 22 and 18 were reformatted into questions and answers 1C and 20C, respectively. Many of the former subject areas have new numbers and the majority of new subject areas have been added to the end of the question and answer section.
- **Appendices.** Appendix A includes an analysis of applicable case law and is provided for information. Appendix B presents a comprehensive diagram of the Section 4(f) evaluation process.

Outline of Changes to the Question and Answers

The following annotated Table of Contents from the 2005 Policy Paper illustrates the changes that were made and the differences between the 1987/1989 Section 4(f) Policy Paper and the updated 2005 FHWA Section 4(f) Policy Paper.

- 1) Use of Resources (subject area modified)
 - A. Use (answer modified)
 - B. Constructive Use (question and answer modified)
 - C. Temporary Occupancy (formerly 22 with modifications to question and answer)
- 2) Public Parks, Public Recreation and Wildlife and Waterfowl Refuges (subject area modified)
 - A. Publicly Owned Park, Recreation Area or Wildlife and Waterfowl Refuge (question and answer modified)
 - B. Significant Park, Recreation Are, or Wildlife and Waterfowl Refuge (question and answer modified)

- C. Public Access (question and answer modified)
 - D. Easements and Lease Agreements (question and answer modified)
- 3) Historic Site
- A. Section 4(f) Significance (question and answer modified)
 - B. Section 106 Adverse Effect and Section 4(f) Use (formerly 3C with question and answer modified)
 - C. Historic Districts (formerly 3B with question and answer modified)
 - D. Historic Property Boundary (new question and answer)
 - E. National Historic Landmarks (new question and answer)
- 4) Historic Bridges, Highways and Other Transportation Facilities (subject area modified)
- A. Historic Bridges and Highways (question and answer modified)
 - B. Historic Bridge Replacement (new question and answer)
 - C. Donations of Historic Bridges (question and answer modified)
 - D. Other Transportation Facilities (new question and answer)
- 5) Archeological Resources
- A. General Applicability (answer modified)
 - B. Sites Discovered During Construction (new question and answer)
 - C. Archeological Districts (formerly 5B with answer modified)
- 6) Public Multiple-Use Land Holdings (answer slightly modified)
- 7) Late Designation of 4(f) Resources (subject area and question and answer modified)
- 8) Wild and Scenic Rivers
- A. Designated Wild and Scenic Rivers (formerly 8B with question and answer substantially modified)
 - B. Potential Rivers and Adjoining Lands Under Study (formerly 8A with question and answer modified)
- 9) Fairgrounds (No changes)
- 10) School Playgrounds (answer slightly modified)
- 11) Golf Courses (new subject area)
- A. Public Golf Courses (new question and answer)
 - B. Military Golf Courses (new question and answer)

- 12) User or Entrance Fees (new subject area and question and answer)
- 13) Bodies of Water (formerly 11, answer slightly modified)
- 14) Trails (formerly 12)
 - A. National Trails System Act (answer modified and includes former 12D)
 - B. Trails on Private Land (answer slightly modified)
 - C. Trails on Highway Rights-of-Way (answer modified)
 - D. Recreational Trails Program (new question and answer)
- 15) Bikeways (formerly 13, answer modified)
- 16) Joint Development (Park with Highway Corridor) (formerly 14 question and answer modified)
- 17) Planned Facilities (formerly 15, answer modified)
- 18) Temporary Recreational Occupancy or Uses of Highway Rights-of-Way (formerly 16, subject area modified, question and answer modified)
- 19) Tunneling (formerly 17 and no changes)
- 20) Wildlife and Waterfowl Refuges (new subject area)
 - A. 4(f) Wildlife and Waterfowl Refuges (new question and answer)
 - B. Conservation Easements (new question and answer)
 - C. Wildlife or Waterfowl Areas (formerly subject area 18 with question and answer modified)
- 21) Air Rights (formerly 19, answer slightly modified)
- 22) Non-Transportation Use of 4(f) Resources (new subject area and new question and answer)
- 23) Scenic Byways (formerly 21 and no changes)
- 24) Transportation Enhancement Projects (new subject area)
 - A. General Applicability (new question and answer)
 - B. Creation of Future 4(f) Resources (new question and answer)
- 25) Museums, Aquariums and Zoos (new subject area and question and answer)
- 26) Tribal Lands and Indian Reservations (new subject area and question and answer)

- 27) Traditional Cultural Properties (new subject area question and answer)
- 28) Cemeteries (new subject area)
 - A. General Applicability (new question and answer)
 - B. Other Lands with Human Remains (new question and answer)
- 29) 4(f) Evaluations in Tiered NEPA Documents (new subject area and question and answer)
- 30) Department of the Interior Handbook on Departmental Review of Section 4(f) Evaluations (2002) (new subject area and question and answer)

Side by Side Comparison

1989 Policy Paper

- 1. Use of Land
 - A. What is "Use"
 - B. Substantially Impair (Constructive Use)
- 2. Public Parks, Recreation Areas, Waterfowl and Wildlife Refuges
 - A. Major Function
 - B. Significance
 - C. Not Open to Entire Public
 - D. "Public Ownership"
- 3. Historic Sites
 - A. Significance
 - B. Historic Districts
 - C. Adverse Effect versus Section 4(f)

2005 Policy Paper

- 1. Use of Resources
 - A. Use
 - B. Constructive Use
 - C. Temporary Occupancy of Resources
- 2. Public Parks, Public Recreation Areas and Wildlife and Waterfowl Refuges
 - A. Publicly Owned Park, Recreation Area or Wildlife and Waterfowl Refuges
 - B. Significant Park, Recreation Area, or Wildlife and Waterfowl Refuge
 - C. Public Access
 - D. Easements and Lease Agreements
- 3. Historic Sites
 - A. Section 4(f) Significance
 - B. Section 106 Adverse Effect and Section 4(f) Use
 - C. Historic Districts
 - D. Historic Property Boundary
 - E. National Historic Landmark

- | | |
|---|---|
| <ul style="list-style-type: none"> 4. Historic Bridges and Highways <ul style="list-style-type: none"> A. Applicability B. Replacement of Historic Bridges (pursuant to Section 144)
 5. Archeological Resources <ul style="list-style-type: none"> A. Individual Site B. Archeological Districts
 6. Public Multiple-Use Land Holdings
 7. Late Designation
 8. Wild and Scenic Rivers <ul style="list-style-type: none"> A. Study Rivers B. Designated Rivers
 9. Fairgrounds
 10. School Playgrounds
 11. Bodies of Water

 12. Trails <ul style="list-style-type: none"> A. Scenic and Recreation Trails on Public Land B. Scenic and Recreation Trails on Private Land C. Trails on Highway Rights-of Way D. Historic Trails
 13. Bikeways | <ul style="list-style-type: none"> 4. Historic Bridges, Highways and Other Transportation Facilities <ul style="list-style-type: none"> A. Historic Bridges and Highways B. Historic Bridge Replacement C. Donations of Historic Bridge D. Other Historic Transportation Facilities
 5. Archeological Resources <ul style="list-style-type: none"> A. General Applicability B. Sites Discovered During Construction C. Archeological Districts
 6. Public Multiple-Use Land Holdings
 7. Late Designation of 4(f) Resources
 8. Wild and Scenic Rivers <ul style="list-style-type: none"> A. Designated Wild and Scenic Rivers B. Rivers Under Study
 9. Fairgrounds
 10. School Playgrounds
 11. Golf Courses <ul style="list-style-type: none"> A. Public Golf Courses B. Military Golf Courses
 12. User or Entrance Fees

 13. Bodies of Water |
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|---|---|
| 14. Joint Development (Park with Highway Corridor) | 14. Trails <ul style="list-style-type: none"> A. National Trails System Act B. Trails on Private Land C. Trails on Highway Rights-of-Way D. Recreational Trails Program |
| 15. "Planned" Facilities | 15. Bikeways |
| 16. Temporary Occupancy of Highway Rights-of-Way | 16. Joint Development (Park with Highway Corridor) |
| 17. Tunneling | 17. Planned 4(f) Resources |
| 18. Wildlife Management Areas | 18. Temporary Recreational Occupancy or Uses of Highway Rights-of- Way |
| 19. Air Rights | 19. Tunneling |
| 20. Access Ramps (in accord with Section 147) | 20. Wildlife and Waterfowl Refuges <ul style="list-style-type: none"> A. 4(f) Wildlife and Waterfowl Refuges B. Conservation Easements C. Wildlife or Waterfowl Areas |
| 21. Scenic Byways (June 7, 1989) | 21. Air Rights |
| 22. Temporary Construction Easements (June 7, 1989) | 22. Non-Transportation Use of 4(f) Resources |
| | 23. Scenic Byways |
| | 24. Transportation Enhancement Projects <ul style="list-style-type: none"> A. General Applicability B. Creation of Future 4(f) Resources |
| | 25. Museums, Aquariums and Zoos |
| | 26. Tribal Lands and Indian Reservations |
| | 27. Traditional Cultural Properties |

28. Cemeteries
 - A. General Applicability
 - B. Other Lands with Human Remains
29. Section 4(f) Evaluations in Tiered NEPA Documents
30. Department of the Interior Handbook on Departmental Review of Section 4(f) Evaluations (2002)

Division, APP-600, 800 Independence Avenue, SW., Washington, DC 20591. Federal Aviation Administration, Western-Pacific Region, Airports Division, Room 3012, 15000 Aviation Boulevard, Hawthorne, California 90261.

Mike Covalt, Airport Manager, City of Flagstaff, Flagstaff Pulliam Airport, 6200 South Pulliam Drive, Flagstaff, Arizona 86001.

Questions may be directed to the individual named above under the heading **FOR FURTHER INFORMATION CONTACT**.

Issued in Hawthorne, California, on April 7, 2005.

Mia Paredes Ratcliff,

Acting Manager, Airports Division, AWP-600, Western-Pacific Region.

[FR Doc. 05-7828 Filed 4-19-05; 8:45 am]

BILLING CODE 4910-13-M

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

[Summary Notice No. PE-2005-23]

Petitions for Exemption; Summary of Petitions Received

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of petitions for exemption received and of dispositions of prior petitions.

SUMMARY: Pursuant to FAA's rulemaking provisions governing the application, processing, and disposition of petitions for exemption part 11 of Title 14, Code of Federal Regulations (14 CFR), this notice contains a summary of certain petitions seeking relief from specified requirements of 14 CFR, dispositions of certain petitions previously received, and corrections. The purpose of this notice is to improve the public's awareness of, and participation in, this aspect of FAA's regulatory activities. Neither publication of this notice nor the inclusion or omission of information in the summary is intended to affect the legal status of any petition or its final disposition.

DATES: Comments on petitions received must identify the petition docket number involved and must be received on or before May 5, 2005.

ADDRESSES: You may submit comments (identified by DOT DMS Docket Number FAA-200X-XXXXX) by any of the following methods:

- Web Site: <http://dms.dot.gov>. Follow the instructions for submitting comments on the DOT electronic docket site.

- Fax: 1-202-493-2251.
- Mail: Docket Management Facility; U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL-401, Washington, DC 20590-001.
- Hand Delivery: Room PL-401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the online instructions for submitting comments.

Docket: For access to the docket to read background documents or comments received, go to <http://dms.dot.gov> at any time or to Room PL-401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Tim Adams (202) 267-8033, Sandy Buchanan-Sumter (202) 267-7271, Office of Rulemaking (ARM-1), Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591.

This notice is published pursuant to 14 CFR 11.85 and 11.91.

Issued in Washington, DC, on April 12, 2005.

Anthony F. Fazio,

Director, Office of Rulemaking.

Petitions for Exemption

Docket No.: FAA-2004-19468.

Petitioner: Flight Level Aviation, Inc.

Section of 14 CFR Affected: 14 CFR 61.56(i)(1).

Description of Relief Sought: To allow Flight Level Aviation, Inc., to use a flight simulator or flight training device that is not used in accordance with an approved course conducted by a training center certificated under part 142 of this chapter.

[FR Doc. 05-7825 Filed 4-19-05; 8:45 am]

BILLING CODE 4910-13-P

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

[FHWA Docket No. FHWA-2002-13290]

Final Nationwide Programmatic Section 4(f) Evaluation and Determination for Federal-Aid Transportation Projects That Have a Net Benefit to a Section 4(f) Property

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Notice.

SUMMARY: The FHWA is issuing this approved final nationwide programmatic Section 4(f) evaluation (programmatic evaluation) for use in certain Federal (Federal-aid or Federal Lands Highway) transportation improvement projects where the use of publicly owned property from a Section 4(f) park, recreation area, or wildlife and waterfowl refuge or property from a historic site results in a net benefit to the Section 4(f) property. The application of this programmatic evaluation is intended to promote environmental stewardship by encouraging the development of measures that enhance Section 4(f) properties and to streamline the Section 4(f) process by reducing the time it takes to prepare, review and circulate a draft and final individual Section 4(f) Evaluation (individual evaluation) that documents compliance with Section 4(f) requirements. This programmatic evaluation provides a procedural option for demonstrating compliance with the statutory requirements of Section 4(f) and is an addition to the existing nationwide programmatic evaluations, all of which remain in effect. This programmatic evaluation can be applied to specific project situations that fit the criteria contained in the *Applicability* section. To fully realize the streamlining benefits of this programmatic evaluation, the FHWA and the Applicant (defined later) are encouraged to initiate coordination with the official(s) with jurisdiction (defined later) over a Section 4(f) property as early as possible and practicable to facilitate the assessment of benefits and harm to a Section 4(f) property.

EFFECTIVE DATE: April 20, 2005.

FOR FURTHER INFORMATION CONTACT: Mr. Lamar S. Smith, Office of Project Development and Environmental Review, HEPE, (202) 366-8994 and Ms. Diane Mobley, Office of the Chief Counsel, HCC-30, (202) 366-1366. FHWA office hours are from 7:45 a.m. to 4:15 p.m. e.t., Monday through Friday, except Federal holidays. The offices are located at 400 Seventh Street, SW., Washington, DC 20590.

SUPPLEMENTARY INFORMATION:

Electronic Access

An electronic copy of this notice may be downloaded using a computer, modem, and suitable communications software from the Government Printing Office's Electronic Bulletin Board Service at (202) 512-1661. Internet users may reach the Office of the Federal Register's home page at <http://www.archives.gov> and the Government Printing Office's Web site at <http://www.gpo.gov>

www.access.gpo.gov. An electronic version of the programmatic evaluation may be downloaded at the FHWA Web site: <http://www.environment.fhwa.dot.gov/guidebook/gbwatsnew.htm>.

Contents of Preamble

- Background on the Nationwide Section 4(f) Evaluation and Determination.

- Description of Action.
- Why Issue a New Nationwide Section 4(f) Evaluation?

- Actions Taken to Date.
- Comments and Responses on the Draft Nationwide Section 4(f) Evaluation and Determination.

- Examples.

Background on the Nationwide Section 4(f) Evaluation and Determination

The FTA initially anticipated participating in this proposed programmatic evaluation as reflected in the draft Nationwide Section 4(f) Evaluation and Proposed Determination for Federal-Aid Transportation Projects That Have a Net Benefit to a Section 4(f) Property published at 67 FR 77551, on December 18, 2002. The FTA currently utilizes no programmatic evaluation and relies on individual evaluations to satisfy the requirements of Section 4(f) for transit projects that use Section 4(f) properties. Upon further transit program and policy review, the FTA has elected not to participate in this programmatic evaluation and will continue to perform individual Section 4(f) evaluations in all cases.

Proposed federally funded highway projects that would use property from significant publicly owned public parks, recreation areas, or wildlife and waterfowl refuges or from significant historic sites are subject to Section 4(f) of the U.S. Department of Transportation Act of 1966 (Public Law 89-670, 80 Stat. 931, October 15, 1966), a provision now codified in title 49, United States Code, Section 303. Section 4(f) prohibits such use unless the FHWA determines that: (1) There is no feasible and prudent avoidance alternative; and (2) that the project includes all possible planning to minimize harm to the Section 4(f) property. These efforts are normally documented in an individual evaluation or one of four existing nationwide programmatic evaluations. For some FHWA projects, it may be possible to utilize one or more programmatic evaluations that were developed for specific circumstances.¹

¹ Final Nationwide Section 4(f) Evaluation and Approval for Federally-Aided Highway Projects

Court decisions, particularly in the 1970s, resulted in strict interpretations of Section 4(f) requirements. Many of these early decisions resulted from large projects that impacted Section 4(f) properties during the peak of Interstate highway construction and expansion. In recent years, however, some courts have provided a more flexible interpretation, responding to the reduction in the severity of impacts and a transportation program that is currently focused more on system preservation and modernization than on expansion.

Programmatic evaluations reduce the processing time and effort necessary to document the analysis and illustrate that the Section 4(f) requirements have been met. Each of the programmatic evaluations contains specific and limiting applicability criteria and findings. For projects that do not meet the specified applicability criteria, the FHWA must prepare and circulate for comment, a draft individual evaluation, which is subject to internal legal sufficiency review prior to approval and circulation of a final individual Section 4(f) evaluation.

Description of Action

This programmatic evaluation facilitates compliance with Section 4(f) requirements for those situations in which there is agreement among the FHWA, the Applicant and the official(s) with jurisdiction over the Section 4(f) property that the transportation use of Section 4(f) property, the measures to minimize harm and the mitigation incorporated into the project will result in a net benefit to the Section 4(f) property. If an agreement on net benefit cannot be reached among the FHWA, the Applicant and the official(s) with jurisdiction over the Section 4(f) property, then this programmatic evaluation cannot be used. This programmatic evaluation may be used, when applicable, for a project of any

With Minor Involvements With Public Parks, Recreational Lands, and Wildlife and Waterfowl Refuges, Issued December 23, 1986, Published in **Federal Register**, August 19, 1987, and can be found at 52 FR 31111.

Final Nationwide Section 4(f) Evaluation and Approval for Federally-Aided Highway Projects With Minor Involvements With Historic Sites, Issued December 23, 1986, Published in **Federal Register**, August 19, 1987, and can be found at 52 FR 31118. Department of Transportation, Federal Highway Administration—Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges, Issued July 5, 1983, Published in **Federal Register**, August 22, 1983, and can be found at 48 FR 38135.

Negative Declaration/Section 4(f) Statement for Independent Bikeway or Walkway Construction Projects, FHWA Memorandum, May 23, 1977, and can be found at <http://www.environment.fhwa.dot.gov/projdev/4fbikeways.htm>.

class of action as defined in 23 CFR 771.115 of the FHWA Environmental Impact and Related Procedures (National Environmental Policy Act (NEPA) regulations).

Why Issue a New Nationwide Programmatic Section 4(f) Evaluation?

Individual evaluations are approved after extensive internal review and interagency coordination. The internal process consists of a review of both a draft and final evaluation by the FHWA Division Office and, in some cases, the FHWA Headquarters Office. In addition, each final individual evaluation undergoes a separate review by the FHWA Office of Chief Counsel to ensure legal sufficiency. Interagency coordination is undertaken on all individual evaluations with the official(s) with jurisdiction over the Section 4(f) property and with the DOI. A draft individual Section 4(f) evaluation is provided for coordination and comment for a minimum of 45 days and a final individual Section 4(f) evaluation is prepared to support the FHWA Section 4(f) determination. In addition, the U.S. Departments of Agriculture (USDA) and Housing and Urban Development (HUD) are consulted on those projects involving a Section 4(f) property for which they have program responsibilities.

The process associated with individual evaluation documentation, review and consultation is time consuming. The process is appropriate for projects that have the potential to substantially impair, through use, the activities, features or attributes that qualify the property for Section 4(f) protection. For other projects, where the use of Section 4(f) property is minor and/or does not result in a substantial impairment of specific qualities that make a property eligible for Section 4(f) protection, the project is still subject to the same thorough and time-consuming process of evaluation, unless it qualifies for a simplified review under one of the existing programmatic evaluations. This programmatic evaluation is intended to address those projects where there is agreement among the FHWA, the Applicant and the official(s) with jurisdiction that, (1) a use of property does not result in a substantial impairment; (2) the project includes all possible planning to minimize harm, including mitigation; and (3) that the cumulative result is an overall improvement and enhancement of the Section 4(f) property.

An understanding of the intent of this programmatic evaluation, applicability requirements and the meaning of net benefit is a prerequisite to agreement.

Where conflict arises in reaching agreement with the official(s) with jurisdiction, the FHWA should assess the nature of the disagreement to determine whether it is procedural or substantive (related to the applicability criteria of the actual project action) before deciding not to use this programmatic evaluation. If substantive disagreement persists, then this programmatic evaluation cannot be used.

As established in this programmatic evaluation, the Administration will review the specific facts of a project, compare them to the applicability requirements of the programmatic evaluation and determine if it is applicable. When applicable, appropriate supporting documentation will be placed in the project file and/or referenced in the appropriate environmental document. Since this programmatic evaluation was reviewed and determined to be legally sufficient according to the requirements of 23 CFR 771.135(k), the utilization of this programmatic evaluation on specific projects will not require legal sufficiency review under 23 CFR 771.135(k). Similarly, interagency coordination is streamlined, as described in this programmatic evaluation, by consulting only with the official(s) with jurisdiction, and not with DOI, USDA, or HUD, except when those agencies have an official responsibility related to the property or where conversion of the 4(f) property to highway use is encumbered such that, specific subsequent agency action will be required (e.g., lands acquired with Land and Water Conservation Fund Act (LWCF) assistance, 16 U.S.C. 460l(8)(f)(3)). It is estimated that these streamlining steps will reduce processing and approval time for certain projects by 3 to 6 months. Of equal importance is the extent of internal review and interagency coordination, which will be commensurate with the severity of impacts and the potential for enhancement of the Section 4(f) property.

Actions Taken to Date

The draft Nationwide Section 4(f) Evaluation and Proposed Determination for Federal-Aid Transportation Projects That Have a Net Benefit to a Section 4(f) Property was published on December 18, 2002, at 67 FR 77551, requesting public and agency comment (FHWA Docket No. FHWA-2002-13290). The proposed programmatic evaluation was provided specifically to the DOI, the USDA, HUD and the Advisory Council on Historic Preservation (ACHP).

After careful analysis of all comments received, the FHWA has decided to finalize and approve this programmatic evaluation. Minor changes have been made in this final programmatic evaluation to add clarity and incorporate suggested improvements from insightful comments. This decision is based upon the belief that the programmatic evaluation will assure full compliance with the statute while enhancing Section 4(f) properties and reducing duplicative administrative processes for eligible projects. The decision is consistent with congressional streamlining initiatives.

Comments and Responses on the Draft Nationwide Programmatic Section 4(f) Evaluation

The following discussion is a summary of comments received on the draft programmatic evaluation. Responses are provided on how the FHWA considered and addressed the concerns and/or issues raised.

Comments were received from 18 entities, including Federal agencies, two national transportation organizations, one national environmental organization, eight State transportation agencies, one transit agency, two State resource agencies, and two private consulting firms. Commenters included the Department of the Interior (DOI), and the National Park Service (NPS), the American Highway Users Alliance (AHUA), the American Association of State Highway and Transportation Officials (AASHTO), the Sierra Club, the State of California Department of Transportation (CALTRANS), the Maryland State Highway Administration (MDSHA), the Pennsylvania Department of Transportation (PennDOT), the New York State Department of Transportation (NYSDOT), the Missouri Department of Transportation (MODOT), the Texas Department of Transportation (TXDOT), the Wisconsin Department of Transportation (WIDOT), the Washington State Department of Transportation (WSDOT), the Central Puget Sound Regional Transit Authority (Sound Transit), the State of Alabama Historical Commission (AHC), the Wyoming Game and Fish Department (WGF) through its Office of Federal Land Policy, Transportation Environmental Management Inc. (TEM) and the HR Green Company (HR Green). In addition, the FTA provided comments and recommendations for consideration prior to its decision not to be a participant in the programmatic evaluation.

Many comments were general in nature and are summarized and

addressed collectively under the following general comment headings: General Comments, Net Benefit, Official(s) with Jurisdiction, and Section 106 Integration. Many comments included recommendations related to a specific section of the programmatic evaluation which are addressed in the section-by-section analysis.

A number of the specific comments received, focused on the overall reform of Section 4(f) and suggested that this programmatic evaluation does not do enough to reform and streamline existing Section 4(f) requirements. All comments and recommendations have been read and considered by the FHWA. These concerns are beyond the scope of this effort and have not been addressed in this document.

General Comments

Comments received demonstrated a need for additional definition of terms used in the final programmatic evaluation. Definitions were added for: "Administration", "Applicant", "net-benefit" and "officials with jurisdiction."

"Administration" refers to the Federal Highway Administration, FHWA Division Administrator or Division Engineer.

"Applicant" refers to the State Highway Agency or State Department of Transportation, or local governmental agency acting through the State Highway Agency or State Department of Transportation.

A "net benefit" is achieved when the transportation use, the measures to minimize harm and the mitigation incorporated into the project results in an overall enhancement of the Section 4(f) property when compared to both the future do-nothing or avoidance alternatives and the present condition of the Section 4(f) property taking into consideration the activities, features and attributes that qualify the property for Section 4(f) protection. A project does not achieve a "net benefit" if it will result in a substantial diminishment of specific functions or values that made the property eligible for Section 4(f) protection.

"Official(s) with jurisdiction" over Section 4(f) property (typically) include: for a park, the Federal, State or local park authorities or agencies that own and/or manage the park; for a refuge, the Federal, State or local wildlife or waterfowl refuge owners and managers; and for historic sites, the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO), whichever has jurisdiction under Section 106 of the National Historic Preservation Act (16 U.S.C. 470f).

Many commenters expressed overall support for the programmatic evaluation. They generally recognized and noted the potential benefits of the programmatic evaluation in streamlining the procedural requirements of Section 4(f), such as reducing paperwork and internal review, while at the same time, encouraging enhancement of Section 4(f) properties and promoting environmental stewardship.

The guiding principle regarding the use of the programmatic evaluation is that there must be a "net benefit" to the Section 4(f) property. The ability of the FHWA, the Applicant and the official(s) with jurisdiction to reach agreement with respect to the impacts, measures to minimize harm, mitigation and that a net benefit will result is inherent in the decision of whether or not the programmatic evaluation is applicable. "Negotiations" in this regard, should be no more complicated or require skills other than those required for normal project development and Section 4(f) consultations related to impacts, measures to minimize harm and mitigation.

A situation where the necessary agreement or determination of applicability is substantially difficult to achieve or make may be an indication that an individual Section 4(f) evaluation is appropriate in that case. On the other hand, this situation may be an indication that one or more of the participants lack understanding of the intent of the programmatic evaluation or the individual applicability requirements. As stated above, an understanding of the intent of the applicability and net benefit requirements is a prerequisite to agreement. Where conflict arises in coordinating agreement with the officials with jurisdiction, the FHWA should assess the nature of the disagreement to see if it is procedural or substantive before deciding not to use this programmatic evaluation.

The FHWA is committed to providing additional guidance, if needed, on a case-by-case basis to ensure that misunderstanding about the intent of the programmatic evaluation is not an impediment to its use.

Although only a few comments received can be characterized as negative or in general opposition to this programmatic evaluation, many commenters requested clarification and/or refinement of the language used.

The Sierra Club generally objected to the programmatic evaluation because in its view, it contradicts judicial interpretations of Section 4(f), derails the regulatory safeguards and

circumvents the 4(f) mandate that special effort be taken to preserve the natural beauty of the countryside, public park and recreation lands, wildlife and waterfowl refuges, and historic sites. The Sierra Club also suggested that FHWA has provided no evidence that the new programmatic evaluation will result in any tangible benefits to areas currently protected under Section 4(f) and the streamlining approach may severely reduce the number of protected natural areas and historic sites.

This programmatic evaluation is not a waiver or relaxation of any of the Section 4(f) standards or judicial interpretations of the legislative requirements. All existing Section 4(f) legislative provisions remain intact. In addition, the use of the programmatic evaluation will allow an increase in environmental stewardship opportunities resulting in greater protection and enhancement of Section 4(f) protected properties.

The requirement for a documented agreement of the resulting net benefit to a Section 4(f) property will safeguard the preservation provisions of Section 4(f) law by ensuring that there will be an enhancement of the functions and values that originally qualified the property for Section 4(f) protection. There is no less protection afforded by this programmatic evaluation than with an individual evaluation and its application will allow a more efficient process of the regulatory requirements.

The DOI was neutral regarding the advantages of the programmatic evaluation and recommended that FHWA expand on and clarify what "net benefits" to a Section 4(f) property means, especially with regard to resources under its jurisdiction. The DOI also noted that that without further clarification the programmatic may not satisfy the statutory mandate to consult with DOI on Section 4(f) issues. In response to this and other similar comments, we have clarified the definition of "net benefit" in the final programmatic.

The PennDOT commented that the programmatic would provide some time savings in processes but that it would be limited. The NYSDOT and the TEM offered similar comments regarding limited benefit, suggesting that the procedure for utilizing a programmatic evaluation is the same as that required for an individual evaluation.

The intent of this programmatic evaluation is to address administrative burden when it is in the interest of all parties involved to take an action where a use of Section 4(f) property will result in an enhancement of that property.

There may be a limited history of experience with this programmatic evaluation; however, there are many examples of "missed opportunities" to benefit or enhance an existing property where a transportation use was imminent.

This programmatic evaluation constitutes an approved evaluation for which the FHWA need only to demonstrate compliance with the criteria contained in the programmatic evaluation. The independent review by the DOI and the USDA or HUD official(s) of the draft and final individual Section 4(f) evaluations and the legal sufficiency review by the FHWA necessary for an individual evaluation are not required for this or other programmatic evaluations. In many instances the time necessary to conduct these regulatory internal reviews for individual Section 4(f) evaluations are not apparent to the parties not directly involved in the evaluation process. Procedurally, the time savings may be limited to 3 to 6 months in normal project development; however, the overall benefit is enough to encourage its use and will result in efforts that enhance Section 4(f) properties while avoiding some procedural steps.

The Sierra Club commented that the proposed changes do not "streamline" the Section 4(f) procedural requirements. As an example, the Sierra Club noted that the programmatic evaluation cannot be utilized if a feasible and prudent alternative exists and when a project has no prudent and feasible alternative, the agency with jurisdiction must agree to mitigation measures to ensure the proposed action results in a net benefit. The Sierra Club further opined that under this scenario, the programmatic evaluation expands FHWA's discretion and the review process, without full consideration of benefits or losses to Section 4(f) areas.

As stated above, the programmatic evaluation does not waive any of the existing Section 4(f) requirements including the determination that there are no feasible and prudent avoidance alternatives to the Section 4(f) use of the property, and that the project includes all possible measures to minimize harm to the Section 4(f) property. The savings that are being sought through use of the programmatic evaluation come from eliminating internal reviews within the FHWA and the case-by-case coordination with the DOI and other Federal agencies currently required for individual evaluations. Coordination, consultation and agreement with the officials with jurisdiction are essential components of compliance.

There is an important distinction to be made in understanding the programmatic evaluation and how the agreement of net benefit is reached, documented, and approved by the Administration. Comments received from the Sierra Club and others appear to have interpreted the FHWA as the "official with jurisdiction." This is not the case. For clarification, the definition of "official(s) with jurisdiction" was added to the final programmatic evaluation. The Sierra Club's concerns regarding the expansion of agency discretion are unfounded, given that the FHWA must reach an agreement with the official(s) with jurisdiction over the Section 4(f) property in order for the programmatic evaluation to apply. If anything, the role of the officials with jurisdiction is enhanced due to their required participation and agreement on achieving a net benefit.

The MDSHA and the AHC commented that the official(s) with jurisdiction over Section 4(f) property may be the SHPO or THPO and recommended changes to *Applicability*, Item Number 5 to denote that official(s) with jurisdiction may include the SHPO or THPO.

The definition of "officials with jurisdiction" has been clarified as to the role of the SHPO or THPO as the official in the case of historic properties. As previously noted, there may be instances where a Section 4(f) property has more than one official with jurisdiction.

The Sierra Club expressed concern that without a coherent set of criteria to measure the impact of the project on the Section 4(f) area itself, the proposed changes alter the FHWA's role in parkland and historic site preservation by placing undue weight on external factors.

The role of the FHWA throughout the history of Section 4(f) has been to protect and preserve specific defined properties. That role or responsibility does not change with this programmatic evaluation; indeed, protection of Section 4(f) properties is enhanced, by providing an incentive to improve the property and a less cumbersome mechanism when agreement on net benefit can be reached.

The FHWA retains the responsibility for determining the applicability of Section 4(f) and of this programmatic evaluation, which is dependent on agreement of net benefit. The FHWA will give deference to the official(s) with jurisdiction to assist in determining whether the project will "substantially diminish" the function or values for which Section 4(f) was found to be applicable to the property, and all

parties involved must reach agreement as to whether a proposed project will result in a "net benefit" to the property. If agreement is not reached, this programmatic evaluation will not apply.

The programmatic evaluation also does not include impact criteria as part of the applicability standards. This was done intentionally to allow the official(s) with jurisdiction, the FHWA and the Applicant flexibility in determining the measures appropriate to each individual property necessary to generate a net benefit. Deference is given to officials with jurisdiction, who have special expertise in the property, to determine positive outcomes where there will be a use of the property by a transportation project.

Through the review of all the comments, it was noted that some questions or confusion might be attributable to the inconsistent use of the terms Section 4(f) "land", "property" and "resource" throughout Section 4(f) regulations, guidance, documents and even the statute itself. For this final programmatic evaluation, the term "property" has been used as consistently as possible, when not quoted from or directly related to the language of an existing document.

Net Benefit

Several commenters asked for further clarification on what constitutes a "net benefit" and who makes that determination.

The DOI suggested that the term "net benefits" is subjective and could potentially lead to counterproductive proposals. DOI recommended that the definition of "net benefit" to Section 4(f) property be expanded and clarified.

Both the ACH and the MDSHA questioned how and by whom the determination of "net benefit" would be made. Several commenters also recommended that criteria be developed to ensure that people with knowledge about the property have key roles in the determination of net benefit.

There is a wide range of what will constitute a net benefit, which will vary depending on the property and the project situation. In other words, net benefit determination is property and project specific, rather than generally subjective, and the development of criteria would serve to restrict the ability to develop mutually agreeable net benefits. For this reason the FHWA, the Applicant and the official(s) with jurisdiction must work collaboratively to define and agree upon what is reasonable and required to achieve a net benefit to a particular Section 4(f) property, on a case-by-case basis. Each of the participants plays an important

role in this joint determination to ensure that individual resource experts will be involved. Net benefit is a joint decision, but it is only one of the prerequisites to application of this programmatic evaluation. Consistent with the responsibilities and authorities provided by Section 4(f) itself, the FHWA will determine whether the proposed action satisfies the applicability criteria for the use of this programmatic evaluation.

The AASHTO recognized one major difference in this programmatic evaluation compared to the existing programmatic evaluations related to historic properties considered under the National Historic Preservation Act. In some cases, this programmatic evaluation could apply where a Section 106 "adverse effect" finding has been made. The AASHTO, however, expressed some concern that it would apply only if the project had a net benefit on each individual historic property affected by the project and recommended that the programmatic evaluation allow the net "benefit" finding to be made for the project as whole rather than each individual property affected by a project. Similarly the NYSDOT recommended revising the net benefit finding to apply to the project as a whole, as a change more likely to promote environmental stewardship.

As noted earlier, this programmatic evaluation does not allow for the waiver or relaxation of existing Section 4(f) standards or the judicial interpretation of the legislative requirements. As such, each Section 4(f) protected property must continue to be considered individually as is currently required for any project or Section 4(f) evaluation. Generally speaking, impacts and benefits to individual Section 4(f) properties must be considered when applying the Applicability criteria. An individual Section 4(f) property, such as an historic district or park complex, might have multiple components. The net benefit must be achieved for an individual Section 4(f) property and for the functions and values that qualified that property for Section 4(f) protection. Although a historic district may experience a net benefit and be appropriately covered by this programmatic evaluation, each property within the historic district that is individually eligible for the National Register and is used by the project must be considered separately under this programmatic evaluation, if it applies, or in an individual Section 4(f) evaluation.

There can be impacts to the functions and values of the Section 4(f) property,

but these impacts cannot reach a level of “substantial diminishment” as determined by the FHWA. This determination will be made in consultation with the official(s) with jurisdiction. For instance, there may be general agreement among the FHWA, the Applicant and the official(s) with jurisdiction that an overall enhancement to a Section 4(f) property is achievable. However, if the official with jurisdiction believes that the functions and values that made the property eligible for Section 4(f) protection will be substantially diminished upon completion of the project, then the FHWA must find that the programmatic evaluation is not applicable and that the protected property requires the preparation of an individual Section 4(f) evaluation.

The AASHTO recommended that the net benefit finding take into account the likely future condition of the historic property if the transportation project is not implemented, *e.g.*, the potential for demolition of the historic property by a private landowner.

The revised definition of net benefit included in the final programmatic evaluation addresses this comment, in part. This determination relies on a comparison of Section 4(f) functions and values of the property without the transportation project and use to determine net benefit.

The WIDOT commented that agreements on what constitutes “net benefit” could be difficult to reach among the stakeholders involved.

The WIDOT recognized the potential difficulties that may occur when working out the details sufficiently enough that all officials with jurisdiction are satisfied that a net benefit will result. Because the range of what constitutes a net benefit will vary from property to property, by the official(s) with jurisdiction, and by the policies of both the FHWA and the Applicant, creative measures used to achieve net benefits on a project level should be developed and shared with the larger environmental and transportation community in the form of “Best Practices.” The flexibility inherent within the language of the programmatic evaluation provides official(s) with jurisdiction an opportunity and incentive to participate in efforts that maintain and achieve benefits to Section 4(f) properties under their protection. The Applicant and the FHWA are encouraged to communicate the beneficial qualities of the programmatic evaluation with the official(s) with jurisdiction in order to maximize its potential benefit to the Section 4(f) property.

Several commenters noted that the use of the term “net benefit” is inconsistent throughout the programmatic evaluation. It was unclear whether there merely needs to be a net benefit, or does the project have to preserve, rehabilitate, enhance, and have a net benefit. It was further noted that in some situations, it would be difficult to argue that the project does all four even though it may have an overall net benefit.

From these comments and others, the FHWA recognizes the need to clarify the term “net benefit.” Therefore, as noted above, the definition of net benefit has been modified and simplified for consistency in the final programmatic evaluation. This definition clarifies that the resulting Section 4(f) functions and values of the property are “better,” overall, than if the project did not use the Section 4(f) property. The “net benefit” determination may be based on a number of approaches to mitigate and minimize harm as long as there is an overall enhancement or betterment from the future do-nothing or avoidance condition.

As previously discussed, further instruction has been provided in this programmatic evaluation on how the net benefit is determined and by whom it is determined.

The NPS expressed concern with the definition of “net benefit” and objected to the inclusion of the “substantial diminishment” requirement without providing standards for measuring what is or is not substantial.

The subjectivity of individual values and functions of a significant Section 4(f) property demonstrate the variability of impacts, mitigation, and net benefits, thus, providing guidance or strict criteria on this determination may be viewed as overly prescriptive. There is similar subjectivity and context in determining “substantial diminishment.” For these reasons, it is important to consider the insight of the official(s) with jurisdiction when it comes to deciding “net benefit” and/or “substantial diminishment” and the officials with jurisdiction are in the best position to assist in these determinations. Therefore, some deference should be given to the officials with jurisdiction when determining if the project will “substantially diminish” the activities, features or attributes that qualify the property for Section 4(f) protection. And this determination is essential to deciding if there is a “net benefit.” If agreement on net benefit cannot be reached, this programmatic evaluation will not apply to the property.

Officials With Jurisdiction

Addressing park, recreational, wildlife and waterfowl resources and cultural, historic, and tribal properties within a single nationwide programmatic evaluation has created some confusion when discussing coordination with appropriate individuals or official(s) with jurisdiction. Several comments were received that reflect a general concern about the definition and intended role of the official(s) with jurisdiction.

For example, the AHC asked that the programmatic evaluation clarify who has official jurisdiction over Section 4(f) property and whether it must take the SHPO’s advice into consideration.

A substantial effort has been made to clarify language in the final programmatic evaluation. Consistent with existing Section 4(f) regulations and guidance, whichever of the SHPO and/or THPO has responsibility under the Section 106 regulations is considered the official with jurisdiction over an historic property. The FHWA must seek and consider the opinion of the SHPO when determining effect under the Section 106 regulations and would likewise, under Section 4(f), seek the opinion of the SHPO as an official with jurisdiction when determining whether a net benefit will result from the Section 4(f) use of an historic site. In an example of an historic park owned by a municipality that was purchased with funding from the Land and Water Conservation Funds Act, the officials with jurisdiction would be the municipal parks department and the SHPO. All officials with jurisdiction must agree with a net benefit determination to a Section 4(f) property for this programmatic evaluation to apply. Coordination with the NPS would also be required in this case, relative to its responsibilities under the LWCFA, to assist in determining appropriate and acceptable mitigation for the project’s Section 4(f) use.

Section 106 Integration

Several commenters expressed a desire to improve the integration of Section 4(f) requirements with those of the Section 106 process. The NYSDOT commented that the programmatic evaluation would do little or nothing to streamline the Section 4(f) process with respect to an historic property. The TEM recommended that the programmatic evaluation “adopt” the conclusion of the Section 106 process such that, if a project has been found to have no effect, no adverse effect, or results in a MOU that addresses adverse effects, it should

be exempt from Section 4(f) requirements on that basis.

The current laws and regulations continue to apply. The FHWA has, to the extent consistent with both laws, combined the common elements of the two processes for this programmatic evaluation. Much of the coordination required, the assessment of impacts, and mitigation is basically the same whether intended to comply with NEPA, Section 106 or Section 4(f). An integrated approach that satisfies multiple requirements is consistent with existing FHWA policy to use the NEPA process as the "umbrella" under which all environmental and related laws and regulations are addressed. It is within the unique requirements of Section 4(f) that this programmatic evaluation will provide relief in the preparation of a single evaluation rather than a draft and a final, the elimination of certain internal FHWA reviews, and the elimination of project-by-project review by the DOI and the USDA, and the HUD, all of which are now required for an individual Section 4(f) evaluation.

Section-by-Section Analysis

Revisions were made to several sections of the programmatic evaluation based upon either suggestions or comments received. The substantive changes not discussed above are considered in this Section-by-Section Analysis.

Preamble

In response to comments, the Preamble has been revised to improve its consistency with the main body of the programmatic evaluation and to respond to the comments received.

Examples

Several comments were received on the examples provided in the draft to illustrate application and implementation of the programmatic evaluation. These examples have been rewritten to provide further clarity on the use of the programmatic evaluation.

The TXDOT commented on the example of a renovated historic railroad station with the opinion that such renovation, if completed in compliance with the Secretary of Interior's Standards and Guidelines, should result in a "no adverse effect" determination, and thus, no 4(f) analysis would be required.

In specific instances, where the purpose of a project was to improve an existing transportation facility, the observation of the TXDOT would be correct (as provided in 23 CFR 771.135(f)). However, for situations not covered by 23 CFR 771.135(f), the

FHWA's determination of "no adverse effect," as defined by the regulations implementing the NHPA, and its subsequent concurrence by the SHPO, would not necessarily eliminate the need for a Section 4(f) evaluation. The programmatic evaluation provides additional flexibility in addressing adverse impacts and Section 106 "adverse effects" to historic property, where, notwithstanding these impacts, there results an overall enhancement of the Section 4(f) property. In the example cited above, if the Applicant or the FHWA developed plans to renovate the historic railroad station in such a way that the functions and values of the station were enhanced yet the design still did not meet the Secretary of Interior's Standards and Guidelines (e.g., due to changes necessary to comply with the Americans with Disabilities Act), the project might still qualify for this programmatic evaluation. The example has been rewritten for clarity.

The MDSHA commented on the example where a Section 106 adverse effect determination was rendered; that it was not clear how the programmatic evaluation could be applied as the official with jurisdiction would be contradicting itself by agreeing that the action had a beneficial effect.

This result would depend upon the enhancement and mitigation provided and, in the end, how the officials with jurisdiction view the results of that mitigation and enhancement. The FHWA may determine that a project has an adverse effect as defined in the Section 106 regulation on a particular function or value of a Section 4(f) property, but for the programmatic evaluation to apply there cannot be a "substantial diminishment" of the activities, features, and attributes that qualify the property for Section 4(f) protection. Not every adverse effect rises to the level of substantial diminishment. For instance, the removal or moving of one contributing component of a historic district may result in an improvement to the access or continuity of the overall property. An example would be the creation of a pedestrian promenade within the historic district that recreates a lost element of the district and improves its economic vitality. Additionally, the Section 106 process does not consider the future do-nothing alternative, yet within this programmatic evaluation the future do-nothing is considered when determining net benefit. Therefore, the SHPO, without conflict, may concur with an adverse effect determination under Section 106, but may agree that the proposed project has a net benefit and

will not result in substantial diminishment of the property under this programmatic evaluation.

When the FHWA utilizes this programmatic evaluation, documentation should be requested from the official(s) with jurisdiction that a net benefit will result from implementation of the project and that there is no substantial diminishment of protected activities, features or attributes of the protected property. This agreement may be incorporated into the Section 106 Agreement or other correspondence related to the Section 106 consultation process where the Section 4(f) protected property is historic, however, it should be clear that the Section 4(f) related request is separate and distinct from Section 106 consultation. If a historic property also meets other Section 4(f) criteria (i.e., historic park) and there are multiple officials with jurisdiction, they also have a role in determining net benefit.

In response to the comments received concerning needed guidance and in recognition of the need to further clarify the intended use of this programmatic evaluation, the examples from the draft were rewritten and new examples were added.

Introduction

Referring to the last sentence of the Introduction, the NPS commented that the listing of these few programs in the proposed programmatic evaluation might lead to the incorrect interpretation that the list is all-inclusive rather than a sampling.

Not to mislead any intending user of the programmatic evaluation, the partial listing has been removed and the portion of the all-inclusive discussion stating, "any other applicable Federal environmental requirements" was retained.

Applicability

The WIDOT commented that the proposed programmatic evaluation is limited in its scope and will apply only to a small subset of projects.

Initially, utilization of the programmatic evaluation may be limited, but over time it is anticipated that it will have increased use as Applicants, the official(s) with jurisdiction, and the FHWA learn how to incorporate actions beneficial to Section 4(f) properties into transportation projects and realize the reduction in regulatory and internal review times that will result from the application of this programmatic evaluation.

The TXDOT and others requested clarification of language found in

Applicability, Item Numbers 4 and 5, which contain discussions of the roles of "all parties" and "other appropriate parties." It was suggested that this be clarified to avoid the appearance of subjectively defining these categories on a case-by-case basis and recommend referencing Section 106 language for "consulting parties."

The concern expressed in this comment is recognized and the recommendation has been adopted in part. The language has been reworded to eliminate "other appropriate parties." This change respects the distinction between Section 4(f) and 36 CFR part 800.

The NPS commented that the success of existing "minor involvement" programmatic Section 4(f) evaluations has been due to the following factors, (1) they are restricted to improvements on essentially the existing alignment, (2) the maximum acreage limitations are defined, and (3) they do not apply to projects for which an EIS is prepared.

The essence of this programmatic evaluation is distinct from the existing "minor uses" programmatic evaluations in that its application is dependent on a resulting positive outcome instead of a minor use. For this reason its application is appropriate and allowable in conjunction with both existing and new alignments. The maximum-acreage-allowable criterion was specified in the programmatic evaluation for minor uses of parks, recreation areas and wildlife and waterfowl refuges to assist in defining minor use in spatial terms. The amount of property used is not an appropriate factor in determining the net benefit and may inappropriately limit application of this evaluation in some cases. Therefore, the application of this programmatic will remain the same so as not to reduce its potential effectiveness and application.

Since this programmatic evaluation can provide the impetus necessary to develop creative measures of avoidance, minimization, and enhancement for impacts to protected Section 4(f) properties, it is appropriate for use with all environmental class of actions, including EISs, in which the applicability criteria is satisfied.

The NPS and DOI noted that the programmatic evaluation does not clearly define the role of agencies holding a contractual or real estate interest in the subject property.

We do not believe it is necessary to specify a criterion that singles out the NPS or any other agency in determining applicability of the programmatic evaluation. Such an encumbrance would not be affected by FHWA's Section 4(f) determination. Where the

NPS or another agency has the "last word", under another statute, that responsibility remains intact. A sentence was added to the final programmatic evaluation requiring coordination with the appropriate agency, where such encumbrances exist, to clarify the process.

For Section 4(f) properties, other than privately owned historic resources, the FHWA and the Applicant shall pursue with due diligence, during early stages of project development, determination of whether or not the property in question received a LWCFA grant. If the Applicant or the FHWA have concerns about whether a park area might have received a LWCF grant they should contact one of the National Park Service field offices or State Agency, as listed in the "Contact List" on the following Web site: <http://www.nps.gov/ncrc/programs/lwcf/protect.html>.

Administrators have databases of grant-assisted sites that will help them to determine whether Fund protections apply; also some States have their own grant programs that afford similar protection. Additional information and addresses for National Park Service Offices and State Liaison Officers for the Land and Water Conservation Fund can be found at the following Web site: <http://www.nps.gov/ncrc/programs/lwcf/protect.html>.

The NEPA documentation, project file or Section 4(f) documentation shall include evidence of the determination.

The DOI suggested that "National Historic Landmarks" should be explicitly identified as National Register eligible property and that additional stipulations to address situations that involve National Natural Landmarks be added.

Since there is no distinction between National Historic Landmarks and other National Register eligible properties where Section 4(f) is concerned, the draft language is retained. Also, the programmatic evaluation would apply to those National Natural Landmarks that met the statutory definition of a Section 4(f) protected property.

The NPS also expressed concern that the FHWA will have the "sole responsibility" for determining whether a public park area will receive a net benefit. The programmatic evaluation requires the FHWA to reach agreement with the officials with jurisdiction; therefore, FHWA will never have the "sole responsibility" for determining net benefit.

As stated above, the language in the final programmatic evaluation addresses the concerns of the NPS. If agreement is not reached among the FHWA, the Applicant and official(s) with

jurisdiction, then the programmatic evaluation cannot be used. If, for example, the NPS requires full replacement of federally encumbered property pursuant to LWCFA, then that obligation will continue to require at least full replacement of the impacted land as determined under that statute whether or not there is a net benefit finding. This holds true for any necessary provision, whether Federal or State, that relates to the impacts of a Section 4(f) property. This is why early consultation and input from all appropriate official(s) with jurisdiction is necessary and required.

The MDSHA commented on an apparent discrepancy between one of the examples and the *Applicability* section. The MDSHA notes that the *Applicability* section states that the programmatic evaluation may be applied if, among other things, the project does not require the demolition or major alteration of the characteristics that qualify the property for the NRHP. Yet the example of the reconstructed, deteriorated historic feature was deemed appropriate, even given the adverse effect determination.

Changes have been made to the *Applicability* section to address this concern. Additionally, the example has been rewritten for clarity. There is no discrepancy as the example is for a reconstruction of a contributing element, which the SHPO, as the official with jurisdiction, deems to be a net benefit to the property when compared to the do-nothing alternative, which leaves the wall in a deteriorated condition. Even though the FHWA could determine and the SHPO concur that the removal and reconstruction of the wall would be an adverse effect under Section 106, the SHPO or THPO could find that the project results in an overall benefit. The programmatic evaluation allows for impacts of some of the functions and/or values of the property as long as there is a collective improvement and there is no substantial diminishment to those functions and values that originally qualified the property for protection.

Relating this back to the example at hand, even though the wall is considered an important function or value in determining Section 106 significance of the historic property, the reconstruction of the wall is neither considered a substantial diminishment nor a major alteration but rather an improvement over its existing condition, the anticipated condition of the future no-build and the condition of the historic site itself, thereby qualifying as a net benefit.

The MDSHA commented on *Applicability*, Item Number 4, and identified a perceived duplication of Section 106 and Section 4(f) efforts. The MDSHA asked whether an adverse effect on an historic property is obviated by a net benefit to the resource such that, there will not be a need for a Section 106 MOA. The CALTRANS added that the SHPO's or THPO's written determination of no adverse effect under Section 106 should suffice as evidence of written agreement under *Applicability*, Item Number 5 to eliminate the need for additional efforts on the part of the SHPO or THPO.

Where required by 36 CFR part 800, an MOA or Programmatic Agreement would be a prerequisite for Section 4(f) approval under this programmatic evaluation similar to the Final Nationwide Section 4(f) Evaluation and Approval for Federally-Aided Highway Projects with Minor Involvements with Historic Sites and the Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges. The conditions and measures to achieve a net benefit may be established in the MOA. However, the MOA, or any additional or separate documentation, must clearly record that agreement has been reached among the officials with jurisdiction, the FHWA and the Applicant and all appropriate documentation must be retained for the project record consistent with NEPA project documentation retention practices and policies.

In summation, any written agreement developed as part of the Section 106 process can suffice for the *Applicability* criteria of this programmatic evaluation if such agreements (typically MOAs) include an agreement by the officials with jurisdiction that the project results in a net benefit to a protected Section 4(f) property. However, all the officials with jurisdiction may not want to be party to a Section 106 agreement and other Section 106 parties not necessarily the "officials with jurisdiction."

Regarding *Applicability*, Item Number 4, the AHC commented that "such measures" are "vague and weak" and recommended that this be a stronger, more specific statement.

The language in *Applicability*, Item Number 4 is consistent with existing programmatic evaluations and is retained with minor editorial changes in the final version. The language allows for flexibility that makes the programmatic evaluation as viable a procedural option as possible while being as responsive to the expert opinions of the official(s) with jurisdiction and the varied qualities of the properties they manage.

The NYSDOT commented on the "substantial diminishment" requirement related to determining "net benefit" in the *Applicability* section. It suggested that the requirement is contrary to the concept of "net benefit", weakens the concept and narrows the opportunity to effectively benefit the resource.

Programmatic evaluations by their nature are limited to projects that meet a specific set of facts and applicability requirements. A project that will result in a substantial diminishment of any of the functions or values that originally qualified the property for Section 4(f) protection should be evaluated using an individual evaluation. The wording of this programmatic evaluation is designed to ensure that a net benefit is achieved without substantial diminishment of the functions or values (features or attributes) that make the property eligible for Section 4(f) protection. Still, there is flexibility in determining what function or values are keys to the properties' eligibility for protection and what constitutes a substantial diminishment of those functions and values.

Alternatives

The AHC commented that it is difficult to discern how the programmatic evaluation helps the FHWA when it comes to its avoidance alternatives analysis and the PennDOT recognized that the programmatic evaluation limits the alternatives that must be analyzed and documented.

The PennDOT is correct; the avoidance alternatives that must be considered are all-inclusive. This approach is consistent with the existing programmatic evaluations.

The DOI suggested that the "Do Nothing Alternative" be replaced with the term "No Action Alternative," in accordance with NEPA guidance.

To avoid confusion, the term "Do Nothing Alternative" will be retained, as it is consistent with the other programmatic evaluations.

The PennDOT recommended that the "qualitative importance or value" of each Section 4(f) resource should be considered in determining whether or not an avoidance alternative is feasible and prudent. It further recommended that for historic properties, the condition and ownership should be considered as well.

The programmatic addresses those situations where the transportation use results in an overall enhancement of the property as agreed to by the official(s) with jurisdiction, the FHWA and the Applicant. The ability to benefit the property must be factored into the

feasible and prudent determination. The consideration of the avoidance alternative comes from the Section 4(f) statutory requirements, which have not changed. The Section 4(f) legislation addresses historic properties regardless of ownership of the property.

Findings

The DOI recommended revising the first sentence to indicate that to apply the programmatic evaluation to a project, the required no-action and avoidance alternatives must be found not feasible and prudent through a written determination.

The wording has been changed to reflect the comment.

The DOI suggested inserting the phrase "jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat," before the phrase "substantial damage to wetlands". The suggested language has been incorporated.

The NYSDOT commented on the proposed language, "An accumulation of these kinds of problems must be of extraordinary magnitude when compared to the proposed use of the Section 4(f) land to determine that (the avoidance) alternative is not feasible and prudent." It was suggested that this approach would seem more valid in the context of a full 4(f) evaluation where there is a net negative effect to a historic property, than in a programmatic evaluation context where the "net" effect is positive.

This language is consistent with existing Section 4(f) implementation policy and has been incorporated in essence. The first condition of Section 4(f) use is the determination that no feasible and prudent avoidance alternatives exist. The programmatic evaluation must include this determination in order to facilitate compliance with the statute and regulations. This programmatic evaluation identifies the variables that must be considered when making the determination of feasible and prudent. Application of this programmatic evaluation is optional and an individual evaluation may be prepared at the discretion of the Administration in those cases where it is appropriate.

The AHC asked about how the evidence of no feasible and prudent alternative will be collected and distributed.

Appropriate evidence that no feasible and prudent alternative to the use of Section 4(f) property exists must be a part of the FHWA's administrative record for the project. This supporting

information and determination will be documented in the appropriate NEPA document or project record consistent with current Section 4(f) policy, guidance and the requirements of this programmatic evaluation.

The AHC also asked about what would constitute a "substantial increase in cost" and suggested that we include an approximate figure or at least a percentage.

The FHWA, in consultation with the Applicant, will determine what is considered a substantial increase. The language is identical to that used in previous programmatic evaluations.

The AHC commented that Findings 2(e) seem to be intended to play one resource improvement against another's adverse effect.

The statement found in Findings 2(e) is not intended to play one property against another. The purpose of the statement is to give appropriate consideration and weight to the beneficial measures of the project when determining whether an alternative is prudent and feasible.

In regard to item number 2(e), the NPS questioned whether "a missed opportunity" to benefit a Section 4(f) property has any relevance in determining whether or not an alternative is feasible and prudent.

Section 4(f) established a two-fold emphasis for the Secretary of Transportation: to protect and to enhance significant resources identified for special consideration. To date, programmatic evaluations have focused on projects with minor impacts to these protected properties. This programmatic evaluation is designed to allow the FHWA, the Applicant and official(s) with jurisdiction over the Section 4(f) properties, to look for opportunities where transportation actions can enhance Section 4(f) properties, even where there is a use of some property. Because a net benefit on a property can only be determined when all parties agree, the programmatic evaluation will only be used when it is deemed appropriate and in the best interests of the protected property. To ensure that 2(e) is not abused or equated to a low bar, we included language to clarify that for a project to qualify for 2(e) there must be a substantial missed opportunity to benefit a Section 4(f) property.

Mitigation and Measures To Minimize Harm

Several commenters indicated a confusion regarding the wording of this section and offered suggestions. The principal reason is the combination of "Measures to Minimize Harm" and

"Mitigation Measures." When put together, commenters read it as "Measures to Minimize Harm and Measures to Minimize Mitigation". Obviously this is not the intent; however, to rectify this misunderstanding the language has been changed to read: "Mitigation and Measures to Minimize Harm." Although, measures to minimize harm are considered mitigation, this language is consistent with the Section 4(f) statute.

Coordination

The NPS recommended that the programmatic evaluation require that all projects be coordinated with the appropriate DOI bureaus.

As noted earlier, for those projects where an agency or bureau of DOI is an official with jurisdiction, or where the LWCFCA applies, coordination will be necessary as a procedure in meeting the applicability requirements and approval of this programmatic evaluation.

Another comment questioned the statement regarding the need for the FHWA to coordinate with the United States Coast Guard (USCG) before applying the programmatic evaluation to projects requiring a Section 9 Bridge permit.

When the proposed programmatic evaluation was issued, the USCG was still a part of the USDOT and therefore it had Section 4(f) responsibilities. Since that time, the USCG has been relocated to the U.S. Department of Homeland Security, eliminating its Section 4(f) responsibility. However, the USCG still has responsibility related to issuance of Section 9 Bridge permits. Wording has been changed to remove coordination with the USCG relative to Section 4(f) compliance.

The WIDOT noted that the constructive consultation of transportation officials, the officials with jurisdiction and resource agency staff is encouraged.

Consultation is not only encouraged, it is required. For this programmatic evaluation to be successful, good coordination and consultation are imperative.

Public Involvement

There were no substantive comments regarding this section and no changes have been made.

Approval Procedure

The AHC asked, relative to the last sentence of Item Number 6, if the Advisory Council on Historic Preservation agreed to review all programmatic evaluations.

The last sentence in Item Number 6 of the *Approval Procedures* in the draft programmatic should have been a separate paragraph. The purpose of the statement in the draft was to indicate that the ACHP and other agencies had been given the opportunity to review and comment on the draft. Furthermore, the FHWA consulted with the ACHP, the DOI and the NPS prior to finalizing the programmatic evaluation. To avoid confusion, this statement has been removed from the final programmatic evaluation.

Examples of Intended Use

One example of a net benefit to a historic property would be the reconstruction of a deteriorated or lost historic feature (such as a rock wall or auxiliary building) where mitigation related to Section 106 consultation includes the reconstruction of the feature in a slightly different location because of the design requirements of a needed improvement to the adjacent transportation facility. Consultation pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. 470f) would likely result in an "adverse effect" determination. However, the SHPO, the FHWA, and the Applicant all agree that the reconstruction would enhance those qualities for which the property was determined eligible, even with the removal and replacement of the historically associated feature. In this case, the existing FHWA Final Nationwide Section 4(f) Evaluation and Approval for Federally-Aided Highway Projects with Minor Involvements with Historic Sites would not be applicable, but if SHPO, as the official with jurisdiction, agrees that the impacts do not reach a level of substantial diminishment, the FHWA may determine that this programmatic evaluation would be applicable if the evaluation finds that the use of the property is prudent.

A second example involves a partial or even total relocation of a Section 4(f) property (such as a community park) to a location within the community that would have a greater value and use to that community. In this case, the existing nationwide minor use programmatic could not be used because the take of land would exceed the limitation included in it and would impair the use of the remaining Section 4(f) land. Again, this programmatic evaluation would be applicable if the officials with jurisdiction agree that the partial (or total) relocation would be a net benefit to the park and that the relocation does not result in the substantial diminishment of the activities, feature or attributes for which

the park is protected under Section 4(f). For instance, this programmatic evaluation can apply where the officials with jurisdiction identify a net benefit due to existing inadequate or unsafe access conditions to a park which presently minimizes the use of the park and the partial relocation can provide safe access; or in a situation where a park has minimal public use due to changes in adjacent land use and where the officials with jurisdiction agree that the total relocation will be of greater park or recreational value to the community.

A final example is the rehabilitation of an historic railroad station to maintain its major historic elements and to permit its continued use as a historic transportation facility. In some cases, such rehabilitation, even with considerable sensitivity to the historic character of the resource, cannot be accomplished without a Section 106 adverse effect determination, and neither the regulatory provision at 23 CFR 771.135(f) related to historic transportation facilities nor the historic site programmatic could be used. The adverse effect may be caused, for example, by modifications to provide access for the disabled or by interior reconfiguration to provide retail space to keep the station economically viable as a transportation facility. The SHPO, as the official with jurisdiction, may concur with the FHWA determination of "adverse effect," but may also recognize the net benefits of the restoration of the station and the assurance of its continued use may greatly outweigh the adverse effect, *i.e.*, not substantially diminish the qualities for which the property was determined eligible.

There will be situations when this programmatic evaluation would not apply. For example, the owner of an individually eligible historic building has abandoned the building so that it is likely to continue to deteriorate. The transportation agency proposes to demolish the building for a transportation improvement, and agrees to record the building in accordance with the standards set by the Historic American Building Survey (HABS) prior to its demolition. In the project design year (20 years hence) without the project, the building may be effectively demolished through neglect. In the design year of the project, the building will be demolished but a record of the building will be made. Although having the record of the demolished building is an improvement over not having such a record, it is not a net benefit to the resource, as the resource will no longer exist. Therefore, this programmatic evaluation would not apply because it

requires that there be a resource to which a net benefit would result. In this case, an individual Section 4(f) evaluation would be needed. On the other hand, if the same abandoned historic building (contributing component) lies within a large commercial historic district, where the officials with jurisdiction (*i.e.*, the SHPO) concur with an "adverse effect" determination pursuant to Section 106 consultation, but determine that the removal of the building with appropriate mitigation will have a net benefit to the historic district as the use of the resource (historic district) by the transportation project will improve access or parking which will likely improve the economic viability of the majority of the historic district, thus determining that the use will not rise to the level of "substantial diminishment" of the qualities of the resource. In such a situation, this programmatic evaluation might be applied.

The FHWA recognizes and appreciates the effort of all parties who provided comments for consideration in the development and finalization of this programmatic evaluation.

Authority: 49 U.S.C. 303; 23 U.S.C. 138; 49 CFR 1.48.

Issued on: April 13, 2005.

Mary E. Peters,

Federal Highway Administrator.

The text of the FHWA Programmatic Section 4(f) Evaluation and Approval for Transportation Projects That Have a Net Benefit to a Section 4(f) Property is as follows:

U.S. Department of Transportation
Federal Highway Administration
(FHWA)
FINAL

Programmatic Section 4(f) Evaluation and Approval for Transportation Projects That Have a Net Benefit to a Section 4(f) Property

This nationwide programmatic Section 4(f) evaluation (programmatic evaluation) has been prepared for certain federally assisted transportation improvement projects on existing or new alignments that will use property of a Section 4(f) park, recreation area, wildlife or waterfowl refuge, or historic property, which in the view of the Administration and official(s) with jurisdiction over the Section 4(f) property, the use of the Section 4(f) property will result in a net benefit to the Section 4(f) property. Definitions: "Administration" refers to the Federal Highway Division Administrator or Division Engineer (as appropriate).

"Applicant" refers to a State Highway Agency or State Department of

Transportation, local governmental agency acting through the State Highway Agency or State Department of Transportation.

A "net benefit" is achieved when the transportation use, the measures to minimize harm and the mitigation incorporated into the project results in an overall enhancement of the Section 4(f) property when compared to both the future do-nothing or avoidance alternatives and the present condition of the Section 4(f) property, considering the activities, features and attributes that qualify the property for Section 4(f) protection. A project does not achieve a "net benefit" if it will result in a substantial diminishment of the function or value that made the property eligible for Section 4(f) protection.

"Official(s) with jurisdiction" over Section 4(f) property (typically) include: for a park, the Federal, State or local park authorities or agencies that own and/or manage the park; for a refuge, the Federal, State or local wildlife or waterfowl refuge owners and managers; and for historic sites, the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO), whichever has jurisdiction under Section 106 of the National Historic Preservation Act (16 U.S.C. 470f).

Applicability

The Administration is responsible for review of each transportation project for which this programmatic evaluation is contemplated to determine that it meets the criteria and procedures of this programmatic evaluation. The information and determination will be included in the applicable National Environmental Policy Act (NEPA) documentation and administrative record. This programmatic evaluation will not change any existing procedures for NEPA compliance, public involvement, or any other applicable Federal environmental requirement.

This programmatic evaluation satisfies the requirements of Section 4(f) for projects meeting the applicability criteria listed below. An individual Section 4(f) evaluation will not need to be prepared for such projects:

1. The proposed transportation project uses a Section 4(f) park, recreation area, wildlife or waterfowl refuge, or historic site.
2. The proposed project includes all appropriate measures to minimize harm and subsequent mitigation necessary to preserve and enhance those features and values of the property that originally qualified the property for Section 4(f) protection.
3. For historic properties, the project does not require the major alteration of

the characteristics that qualify the property for the National Register of Historic Places (NRHP) such that the property would no longer retain sufficient integrity to be considered eligible for listing. For archeological properties, the project does not require the disturbance or removal of the archaeological resources that have been determined important for preservation in-place rather than for the information that can be obtained through data recovery. The determination of a major alteration or the importance to preserve in-place will be based on consultation consistent with 36 CFR part 800.

4. For historic properties, consistent with 36 CFR part 800, there must be agreement reached amongst the SHPO and/or THPO, as appropriate, the FHWA and the Applicant on measures to minimize harm when there is a use of Section 4(f) property. Such measures must be incorporated into the project.

5. The official(s) with jurisdiction over the Section 4(f) property agree in writing with the assessment of the impacts; the proposed measures to minimize harm; and the mitigation necessary to preserve, rehabilitate and enhance those features and values of the Section 4(f) property; and that such measures will result in a net benefit to the Section 4(f) property.

6. The Administration determines that the project facts match those set forth in the Applicability, Alternatives, Findings, Mitigation and Measures to Minimize Harm, Coordination, and Public Involvement sections of this programmatic evaluation.

This programmatic evaluation can be applied to any project regardless of class of action under NEPA.

Alternatives

To demonstrate that there are no feasible and prudent alternatives to the use of Section 4(f) property, the programmatic evaluation analysis must address alternatives that avoid the Section 4(f) property. The following alternatives avoid the use of the Section 4(f) property:

1. Do nothing.
2. Improve the transportation facility in a manner that addresses the project's purpose and need without a use of the Section 4(f) property.
3. Build the transportation facility at a location that does not require use of the Section 4(f) property.

This list is intended to be all-inclusive. The programmatic evaluation does not apply if a feasible and prudent alternative is identified that is not discussed in this document. The project record must clearly demonstrate that each of the above alternatives was fully

evaluated before the Administration can conclude that the programmatic evaluation can be applied to the project.

Findings

For this programmatic evaluation to be utilized on a project there must be a finding, given the present condition of the Section 4(f) property, that the do-nothing and avoidance alternatives described in the Alternatives section above are not feasible and prudent. The findings (1, 2, and 3. below) must be supported by the circumstances, studies, consultations, and other relevant information and included in the administrative record for the project. This supporting information and determination will be documented in the appropriate NEPA document and/or project record consistent with current Section 4(f) policy and guidance.

To support the finding, adverse factors associated with the no-build and avoidance alternatives, such as environmental impacts, safety and geometric problems, decreased transportation service, increased costs, and any other factors may be considered collectively. One or an accumulation of these kinds of factors must be of extraordinary magnitude when compared to the proposed use of the Section 4(f) property to determine that an alternative is not feasible and prudent. The net impact of the do-nothing or build alternatives must also consider the function and value of the Section 4(f) property before and after project implementation as well as the physical and/or functional relationship of the Section 4(f) property to the surrounding area or community.

1. Do-Nothing Alternative.

The Do-Nothing Alternative is not feasible and prudent because it would neither address nor correct the transportation need cited as the NEPA purpose and need, which necessitated the proposed project.

2. Improve the transportation facility in a manner that addresses purpose and need without use of the Section 4(f) property.

It is not feasible and prudent to avoid Section 4(f) property by using engineering design or transportation system management techniques, such as minor location shifts, changes in engineering design standards, use of retaining walls and/or other structures and traffic diversions or other traffic management measures if implementing such measures would result in any of the following:

- (a) Substantial adverse community impacts to adjacent homes, businesses or other improved properties; or

(b) Substantially increased transportation facility or structure cost; or

- (c) Unique engineering, traffic, maintenance or safety problems; or
- (d) Substantial adverse social, economic or environmental impacts; or
- (e) A substantial missed opportunity to benefit a Section 4(f) property; or
- (f) Identified transportation needs not being met; and

(g) Impacts, costs or problems would be truly unusual, unique or of extraordinary magnitude when compared with the proposed use of Section 4(f) property after taking into account measures to minimize harm and mitigate for adverse uses, and enhance the functions and value of the Section 4(f) property.

Flexibility in the use of applicable design standards is encouraged during the analysis of these feasible and prudent alternatives.

3. Build a new facility at a new location without a use of the Section 4(f) property.

It is not feasible and prudent to avoid Section 4(f) property by constructing at a new location if:

- (a) The new location would not address or correct the problems cited as the NEPA purpose and need, which necessitated the proposed project; or
- (b) The new location would result in substantial adverse social, economic or environmental impacts (including such impacts as extensive severing of productive farmlands, displacement of a substantial number of families or businesses, serious disruption of community cohesion, jeopardize the continued existence of any endangered or threatened species or resulting in the destruction or adverse modification of their designated critical habitat, substantial damage to wetlands or other sensitive natural areas, or greater impacts to other Section 4(f) properties); or

(c) The new location would substantially increase costs or cause substantial engineering difficulties (such as an inability to achieve minimum design standards or to meet the requirements of various permitting agencies such as those involved with navigation, pollution, or the environment); and

- (d) Such problems, impacts, costs, or difficulties would be truly unusual or unique or of extraordinary magnitude when compared with the proposed use of the Section 4(f) property after taking into account proposed measures to minimize harm, mitigation for adverse use, and the enhancement of the Section 4(f) property's functions and value.

Flexibility in the use of applicable design standards is encouraged during the analysis of feasible and prudent alternatives.

Mitigation and Measures To Minimize Harm

This programmatic evaluation and approval may be used only for projects where the Administration, in accordance with this evaluation, ensures that the proposed action includes all possible planning to minimize harm, includes appropriate mitigation measures, and that the official(s) with jurisdiction agree in writing.

Coordination

In early stages of project development, each project will require coordination with the Federal, State, and/or local agency official(s) with jurisdiction over the Section 4(f) property. For non-Federal Section 4(f) properties, *i.e.*, State or local properties, the official(s) with jurisdiction will be asked to identify any Federal encumbrances. When encumbrances exist, coordination will be required with the Federal agency responsible for such encumbrances.

Copies of the final written report required under this programmatic evaluation shall be offered to the official(s) with jurisdiction over the Section 4(f) property, to other interested parties as part of the normal NEPA project documentation distribution practices and policies or upon request.

Public Involvement

The project shall include public involvement activities that are consistent with the specific requirements of 23 CFR 771.111, Early coordination, public involvement and project development. For a project where one or more public meetings or hearings are held, information on the proposed use of the Section 4(f) property shall be communicated at the public meeting(s) or hearing(s).

Approval Procedure

This programmatic evaluation approval applies only after the Administration has:

1. Determined that the project meets the applicability criteria set forth in *Applicability* section;
2. Determined that all of the alternatives set forth in the *Findings* section have been fully evaluated;
3. Determined that the findings in the programmatic evaluation (which conclude that the alternative recommended is the only feasible and prudent alternative) result in a clear net benefit to the Section 4(f) property;

4. Determined that the project complies with the *Mitigation and Measures to Minimize Harm* section of this document;

5. Determined that the coordination and public involvement efforts required by this programmatic evaluation have been successfully completed and necessary written agreements have been obtained; and

6. Documented the information that clearly identifies the basis for the above determinations and assurances.

[FR Doc. 05-7812 Filed 4-19-05; 8:45 am]

BILLING CODE 4910-22-P

DEPARTMENT OF TRANSPORTATION

Federal Motor Carrier Safety Administration

[Docket No. FMCSA-2005-20930 (PDA-31(F))]

Application by American Trucking Associations, Inc. for a Preemption Determination as to District of Columbia Requirements for Highway Routing of Certain Hazardous Materials

AGENCY: Federal Motor Carrier Safety Administration (FMCSA), United States Department of Transportation (DOT).

ACTION: Public notice and invitation to comment.

SUMMARY: FMCSA invites interested parties to submit comments on an application by The American Trucking Associations, Inc. for an administrative determination as to whether Federal hazardous materials transportation law preempts highway routing requirements of the District of Columbia in restricting transportation of certain hazardous materials.

DATES: Comments received on or before June 6, 2005, and rebuttal comments received on or before July 19, 2005, will be considered before an administrative ruling is issued. Rebuttal comments may discuss only those issues raised by comments received during the initial comment period and may not discuss new issues.

ADDRESSES: You may submit comments, identified by DOT DMS Docket Number FMCSA-2005-20930, by any of the following methods:

- Federal eRulemaking Portal: <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Agency Web site: <http://dms.dot.gov>. Follow the instructions for submitting comments on the DOT electronic docket site.
- Fax: 1-202-493-2251.

• *Mail:* Docket Management Facility; U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL-401, Washington, DC 20590-0001. Please submit three copies of written comments.

• *Hand Delivery:* Submit three copies of written comments to Room PL-401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Instructions: Comments must refer to Docket Number FMCSA-2005-20930. All comments received will be posted without change to <http://dms.dot.gov>, including any personal information provided. For detailed instructions on submitting comments, see the "Public Participation" heading of the **SUPPLEMENTARY INFORMATION** section of this document. For a summary of DOT's Privacy Act Statement or information on how to obtain a complete copy of DOT's Privacy Act Statement please see the "Privacy Act" heading of the **SUPPLEMENTARY INFORMATION** section.

Docket: For access to the docket to read the application or comments received, go to <http://dms.dot.gov> at any time or to Room PL-401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 am and 5 pm, Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Mr. William Quade, Chief, Hazardous Materials Division (MC-ECH), (202) 366-2172; Federal Motor Carrier Safety Administration, U.S. Department of Transportation, 400 Seventh Street, SW., Washington, DC 20590-0001. Office hours are from 7:45 a.m. to 4:15 p.m., e.t., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:

Public Participation

A copy of each comment must also be sent to Richard Moskowitz, Assistant General Counsel, American Trucking Associations, 2200 Mill Road, Alexandria, VA 22314. Certification of sending a copy to Mr. Moskowitz must accompany your comments. (The following format is suggested: "I certify copies of this comment have been sent to Mr. Moskowitz at the address specified in the **Federal Register**.")

The DMS is available 24 hours each day, 365 days each year. You can get electronic submission and retrieval help and guidelines under the "help" section of the DMS Web site. If you want us to notify you of receiving your comments, please include a self-addressed, stamped envelope or postcard or print the acknowledgement page displaying after receipt of on-line comments.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: 2005-05
SUBJECT: PREVAILING WAGE ACT
ISSUED DATE: August 31, 2005
EFFECTIVE DATE: August 10, 2005

This memorandum supersedes Chapter 12 Section 2.01(e) of the Bureau of Local Roads and Streets Manual dated July 2005.

On August 10, 2005, Public Act 94-0515 amended the Prevailing Wage Act by requiring the contractor and each subcontractor participating on public works projects to submit monthly a certified payroll to the public body in charge of the project. Certified payrolls have long been required on Federal-aid projects; however, certified payrolls are now required on all state and locally funded projects as well.

For projects on the state lettings or any federal-aid project, BDE Special Provision 80155 "Payrolls and Payroll Records" should be inserted into all contracts. Contractors and subcontractors should use the Bureau of Small Business Enterprises form SBE 48 or approved facsimile for submitting the certified payroll.

For local let projects using only state and local funds, LR Special Provision 107-3 "Wages of Employees on Public Works" should be inserted into all contracts. Contractors and subcontractors should submit the certification in a format approved by the local authority. The local authority is required to keep the certification records submitted for a period of not less than three years. Furthermore, these records, except an employee's address, telephone number, and social security number, shall be made available in accordance with the Freedom of Information Act.

A handwritten signature in cursive script that reads "Charles J. Dingersoll".

Engineer of Local Roads and Streets

KB

Attachments

HARD COPIES UNCONTROLLED

AN ACT concerning employment.

**Be it enacted by the People of the State of Illinois,
represented in the General Assembly:**

Section 5. The Prevailing Wage Act is amended by changing Section 5 as follows:

(820 ILCS 130/5) (from Ch. 48, par. 39s-5)

Sec. 5. Certified payroll.

(a) While participating on public works, the ~~The contractor and each subcontractor or the officer of the public body in charge of the project shall:~~

(1) make and keep, for a period of not less than 3 years, true and accurate records of all laborers, mechanics, and other workers employed by them on the project; the records shall include each worker's ~~the name, address, telephone number when available, social security number, classification or classifications, and occupation of all laborers, workers and mechanics employed by them, in connection with said public work. The records shall also show the actual hourly wages paid in each pay period, to each employee and the number of hours worked each day, and in each work week by each employee. While participating on public works, each contractor's payroll records shall include the starting and ending times of work each day; and for each employee~~

(2) submit monthly, in person, by mail, or electronically a certified payroll to the public body in charge of the project. The certified payroll shall consist of a complete copy of the records identified in paragraph (1) of this subsection (a). The certified payroll shall be accompanied by a statement signed by the contractor or subcontractor which avers that: (i) such records are true and accurate; (ii) the hourly rate paid to each worker is

not less than the general prevailing rate of hourly wages required by this Act; and (iii) the contractor or subcontractor is aware that filing a certified payroll that he or she knows to be false is a Class B misdemeanor. A general contractor is not prohibited from relying on the certification of a lower tier subcontractor, provided the general contractor does not knowingly rely upon a subcontractor's false certification. Any contractor or subcontractor subject to this Act who fails to submit a certified payroll or knowingly files a false certified payroll is in violation of this Act and guilty of a Class B misdemeanor. The public body in charge of the project shall keep the records submitted in accordance with this paragraph (2) of subsection (a) for a period of not less than 3 years. The records submitted in accordance with this paragraph (2) of subsection (a) shall be considered public records, except an employee's address, telephone number, and social security number, and made available in accordance with the Freedom of Information Act. The public body shall accept any reasonable submissions by the contractor that meet the requirements of this Section.

(b) Upon 2 business days' notice, the contractor and each subcontractor shall make available for inspection the records identified in paragraph (1) of subsection (a) of this Section. ~~The record shall be open at all reasonable hours to the inspection of the public body in charge of the project awarding the contract,~~ its officers and agents, and to the Director of Labor and his deputies and agents. Upon 2 business days' notice, the contractor and each subcontractor shall make such records available at all reasonable hours at a location within this State.

~~Any contractor or subcontractor that maintains its principal place of business outside of this State shall make the required records or accurate copies of those records available within this State at all reasonable hours for inspection.~~

Public Act 094-0515

HB0188 Enrolled

LRB094 05673 RLC 35722 b

(Source: P.A. 92-783, eff. 8-6-02; 93-38, eff. 6-1-04.)

Section 99. Effective date. This Act takes effect upon becoming law.

State of Illinois
Department of Transportation
Bureau of Local Roads and Streets

SPECIAL PROVISION
FOR
WAGES OF EMPLOYEES ON PUBLIC WORKS

Effective: August 10, 2005

Replace Check Sheet LRS 12 of the Recurring Special Provisions with the following:

“ All wages paid by the Contractor and each subcontractor shall be in compliance with The Prevailing Wage Act (820 ILCS 130), as amended, except where a prevailing wage violates a federal law, order, or ruling, the rate conforming to the federal law, order, or ruling shall govern. The Contractor shall be responsible to notify each subcontractor of the wage rates set forth in this contract and any revisions thereto. If the Department of Labor revises the wage rates, the revised rate as provided by the public body shall apply to this contract and the Contractor will not be allowed additional compensation on account of said revisions.

The Contractor and each subcontractor shall make and keep, for a period of not less than 3 years, records of all laborers, mechanics, and other workers employed by them on the project; the records shall include each worker's name, address, telephone number when available, social security number, classification or classifications, the hourly wages paid in each period, the number of hours worked each day, and the starting and ending times of work each day.

The Contractor and each subcontractor shall submit monthly, in person, by mail, or electronically a certified payroll to the public body in charge of the project. The certified payroll shall consist of a complete copy of the records. The certified payroll shall be accompanied by a statement signed by the contractor or subcontractor which avers that:

- (i) such records are true and accurate;
- (ii) the hourly rate paid to each worker is not less than the general prevailing rate of hourly wages required; and
- (iii) the contractor or subcontractor is aware that filing a certified payroll that he or she knows to be false is a Class B misdemeanor.

Upon 2 business days' notice, the contractor and each subcontractor shall make available for inspection the records to the public body in charge of the project, its officers and agents, and to the Director of Labor and his deputies and agents at all reasonable hours at a location within this State. The Contractor and each subcontractor shall permit his/her employees to be interviewed on the job, during working hours, by compliance investigators of the Department or the Department of Labor.”



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: 2005-06
SUBJECT: COMPETITIVE BIDDING THRESHOLD
ISSUED DATE: August 31, 2005
EFFECTIVE DATE: August 2, 2005

This memorandum supersedes Chapter 12 Section 1.02(a) and 1.02(c) of the Bureau of Local Roads and Streets Manual dated July 2005.

On August 2, 2005, Public Act 94-0435 amended the Township Code, the Illinois Municipal Code, and the Illinois Highway Code by increasing the competitive bidding threshold for townships and municipalities from \$10,000 to \$20,000. The counties' bidding threshold was already \$20,000. Therefore, all local agencies must use a competitive bid process if the estimated cost exceeds \$20,000.

Charles J. Dingersoll

Engineer of Local Roads and Streets

KB/kb

Attachments

AN ACT concerning libraries.

**Be it enacted by the People of the State of Illinois,
represented in the General Assembly:**

Section 3. The Township Code is amended by changing Section 85-30 as follows:

(60 ILCS 1/85-30)

Sec. 85-30. Purchases; bids. Any purchase by a township ~~having fewer than 10,000 inhabitants and located in a county with a population under 3,000,000~~ for services, materials, equipment, or supplies in excess of \$20,000 ~~\$10,000~~ (other than professional services) ~~and any purchase by a township in a county with a population of 3,000,000 or more, or by a township having 10,000 or more inhabitants and located in a county with a population of less than 3,000,000, for services, materials, equipment, or supplies in excess of \$10,000 (other than professional services)~~ shall be contracted for in one of the following ways:

(1) By a contract let to the lowest responsible bidder after advertising for bids at least once (i) in a newspaper published within the township, or (ii) if no newspaper is published within the township, then in one published within the county, or (iii) if no newspaper is published within the county, then in a newspaper having general circulation within the township.

(2) By a contract let without advertising for bids in the case of an emergency if authorized by the township board.

This Section does not apply to contracts by a township with the federal government.

(Source: P.A. 92-627, eff. 7-11-02.)

Section 4. The Illinois Municipal Code is amended by

changing Sections 4-5-11 and 8-9-1 as follows:

(65 ILCS 5/4-5-11) (from Ch. 24, par. 4-5-11)

Sec. 4-5-11. Except as otherwise provided, all contracts, of whatever character, pertaining to public improvement, or to the maintenance of the public property of a municipality involving an outlay of \$10,000 ~~\$1,500~~ or more, shall be based upon specifications to be approved by the council. Any work or other public improvement which is not to be paid for in whole or in part by special assessment or special taxation, when the expense thereof will exceed \$20,000 ~~\$10,000~~, shall be constructed as follows:

(1) By a contract let to the lowest responsible bidder after advertising for bids, in the manner prescribed by ordinance, except that any such contract may be entered into by the proper officers without advertising for bids, if authorized by a vote of 4 of the 5 council members elected; or

(2) In the following manner, if authorized by a vote of 4 of the 5 council members elected: the commissioner of public works or other proper officers to be designated by ordinance, shall superintend and cause to be carried out the construction of the work or other public improvement and shall employ exclusively for the performance of all manual labor thereon, laborers and artisans whom the city or village shall pay by the day or hour, but all material of the value of \$20,000 ~~\$10,000~~ and upward used in the construction of the work or other public improvement, shall be purchased by contract let to the lowest responsible bidder in the manner to be prescribed by ordinance.

Nothing contained in this section shall apply to any contract by a municipality with the United States of America or any agency thereof.

(Source: P.A. 86-576.)

(65 ILCS 5/8-9-1) (from Ch. 24, par. 8-9-1)

Sec. 8-9-1. In municipalities of less than 500,000 except as otherwise provided in Articles 4 and 5 any work or other

public improvement which is not to be paid for in whole or in part by special assessment or special taxation, when the expense thereof will exceed \$20,000 ~~\$10,000~~, shall be constructed either (1) by a contract let to the lowest responsible bidder after advertising for bids, in the manner prescribed by ordinance, except that any such contract may be entered into by the proper officers without advertising for bids, if authorized by a vote of two-thirds of all the aldermen or trustees then holding office; or (2) in the following manner, if authorized by a vote of two-thirds of all the aldermen or trustees then holding office, to-wit: the commissioner of public works or other proper officers to be designated by ordinance, shall superintend and cause to be carried out the construction of the work or other public improvement and shall employ exclusively for the performance of all manual labor thereon, laborers and artisans whom the municipality shall pay by the day or hour; and all material of the value of \$20,000 ~~\$10,000~~ and upward used in the construction of the work or other public improvement, shall be purchased by contract let to the lowest responsible bidder in the manner to be prescribed by ordinance. However, nothing contained in this section shall apply to any contract by a city, village or incorporated town with the federal government or any agency thereof.

In every city which has adopted Division 1 of Article 10, every such laborer or artisan shall be certified by the civil service commission to the commissioner of public works or other proper officers, in accordance with the requirement of that division.

In municipalities of 500,000 or more population the letting of contracts for work or other public improvements of the character described in this section shall be governed by the provisions of Division 10 of this Article 8.

(Source: P.A. 86-576.)

Section 5. The Illinois Local Library Act is amended by

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changing Section 5-5 as follows:

(75 ILCS 5/5-5) (from Ch. 81, par. 5-5)

Sec. 5-5. When the directors determine to commence the construction of the building or the remodeling, repairing or improving of an existing library building or the erection of an addition thereto, the purchase of the necessary equipment for such library, or the acquisition of library materials such as books, periodicals, recordings and electronic data storage and retrieval facilities in connection with either the purchase or construction of a new library building or the expansion of an existing library building, they may then revise the plan therefor or adopt a new plan and provide estimates of the costs thereof, and shall, when the cost is in excess of \$20,000 ~~\$10,000~~, advertise for bids for the construction of the building, or the remodeling, repairing or improving of an existing library building or the erection of an addition thereto, or the purchase of the necessary equipment for such library, or the acquisition of library materials such as books, periodicals, recordings and electronic data storage and retrieval facilities in connection with either the purchase or construction of a new library building or the expansion of an existing library building, and shall let the contract or contracts for the same, when the cost is in excess of \$20,000 ~~\$10,000~~, to the lowest responsible bidder or bidders and may require from such bidders, such security for the performance of the bids as the board shall determine. The directors may let the contract or contracts to one or more bidders, as they shall determine.

(Source: P.A. 86-405.)

Section 10. The Public Library District Act of 1991 is amended by changing Section 40-45 as follows:

(75 ILCS 16/40-45)

Sec. 40-45. Bids for construction, improvements, or

equipment purchases.

(a) When the trustees determine to commence constructing the building, purchasing a site or a building, remodeling, repairing, or improving an existing library building, erecting an addition to an existing library building, or purchasing the necessary equipment for the library, they may then revise the plan or adopt a new plan and provide estimates of the costs of the revised or new plan.

(b) The board shall, when the cost is in excess of \$20,000 ~~\$10,000~~, advertise for bids for constructing the building, remodeling, repairing, or improving of an existing library building, erecting an addition to an existing library building, or purchasing the necessary equipment for the library and shall let the contract or contracts for the project, when the cost is in excess of \$20,000 ~~\$10,000~~, to the lowest responsible bidder or bidders. The board shall require from the bidders security for the performance of the bids determined by the board pursuant to law. The trustees may let the contract or contracts to one or more bidders as they determine.

(Source: P.A. 87-1277.)

Section 15. The Illinois Highway Code is amended by changing Section 6-201.7 as follows:

(605 ILCS 5/6-201.7) (from Ch. 121, par. 6-201.7)

Sec. 6-201.7. Construct, maintain and repair and be responsible for the construction, maintenance and repair of roads within the district, let contracts, employ labor and purchase material and machinery therefor, subject to the limitations provided in this Code. Contracts, labor, machinery, disposal, and incidental expenses related to special services under Section 6-201.21 of this Code constitute maintenance, for purposes of this Section.

Except for professional services, when the cost of construction, materials, supplies, new machinery or equipment exceeds \$20,000 ~~\$10,000~~, the contract for such construction,

materials, supplies, machinery or equipment shall be let to the lowest responsible bidder after advertising for bids at least once, and at least 10 days prior to the time set for the opening of such bids, in a newspaper published within the township or road district, or, if no newspaper is published within the township or road district then in one published within the county, or, if no newspaper is published within the county then in a newspaper having general circulation within the township or road district, but, in case of an emergency, such contract may be let without advertising for bids. For purposes of this Section "new machinery or equipment" shall be defined as that which has been previously untitled or that which shows fewer than 200 hours on its operating clock and that is accompanied by a new equipment manufacturer's warranty. (Source: P.A. 92-268, eff. 1-1-02; 93-109, eff. 7-8-03; 93-164, eff. 7-10-03; 93-610, eff. 11-18-03; revised 12-4-03.)

Section 99. Effective date. This Act takes effect upon becoming law.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: 2005-07

SUBJECT: NBIS RULES CHANGES - QUALIFICATIONS FOR
BRIDGE INSPECTION PERSONNEL

ISSUED DATE: October 31, 2005

EFFECTIVE DATE: January 13, 2005

This memorandum supersedes Chapter 6 Section 6-3.02 of the Bureau of Local Roads and Streets Manual dated April 2005. This information will be included in future updates of the BLRS Manual.

On January 13, 2005, new rules became effective for the National Bridge Inspection Standards (NBIS), as provided in Title 23, Code of Federal Regulations, Part 650, Subpart C, dated December 14, 2004 and are located at the Federal Highway Administration (FHWA) website at <http://www.fhwa.dot.gov/bridge/nbis.htm>. The Bureau of Bridges & Structures (BBS) has worked with the FHWA to resolve issues regarding interpretation of the new rules, particularly those involving the qualifications for bridge inspection personnel. In addition, the FHWA has provided Questions & Answers (Q&A) regarding the new NBIS rules on the above website; review of the Q&A is recommended. The Department has developed the information, guidelines and procedures contained in this memorandum, and incorporated into Section 6-3.02 of the Bureau of Local Roads and Streets (BLRS) Manual, for implementation of the new NBIS rules. Please note that for the purposes of the NBIS and this procedure memorandum, licensing as a Structural Engineer in Illinois is accepted in Illinois in lieu of licensing as a Professional Engineer for satisfying NBIS qualification requirements.

PROGRAM MANAGER

Under the new NBIS rules, all state departments of transportation must designate an individual to function as the state "Program Manager" to provide overall leadership for the bridge inspection program. For the Illinois Department of Transportation (IDOT), the FHWA has concurred that the Engineer of Structural Services of the BBS is qualified to function as the state Program Manager (PM). The state PM can delegate program manager responsibilities to qualified individuals as needed to ensure compliance with the NBIS rules. In accordance with this authority to delegate program manager responsibilities, the IDOT BBS Unit Chief of Local Bridges will function under the state PM as the Local Bridge PM to oversee bridge inspections and the reporting of inspection and inventory data for local agency structures.

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All local agencies (LAs) having responsibility for a structure in the NBIS must designate a PM to ensure compliance with the NBIS and to provide guidance and management of their bridge inventory. If a LA does not have an employee who is qualified, they may hire a consultant to serve as their PM. If IDOT District personnel perform the NBIS inspections for a LA, the District or Region Bridge Maintenance Engineer (BME) will serve as the LA's PM. The BME should ensure the qualifications and provide oversight of the inspection for such structures in the District/Region.

PROGRAM MANAGER QUALIFICATIONS

Per NBIS Section 650.309 "Qualifications of personnel" a Program Manager must, at a minimum:

1. Be a registered professional engineer, or have ten years bridge inspection experience; and
2. Successfully complete a FHWA approved comprehensive bridge inspection training course.

Persons assuming the position of PM for an agency subsequent to the effective date of the present NBIS rules, January 13, 2005, must meet the above requirements.

Prior to January 13, 2005, the NBIS rules stated that the "individual in charge" of an agency's bridge safety inspection program was qualified to do so based solely on their licensing as a Professional Engineer. The intent of the new rules is to provide a uniform interpretation of the NBIS and to ensure that a PM has sufficient training and experience to oversee the bridge safety inspections conducted to satisfy NBIS requirements. Persons who were functioning as the "individual in charge" for an agency may continue to perform in the capacity of a PM for that agency when the following conditions are met:

1. Prior to January 13, 2005, the person was a licensed Professional Engineer functioning as an "individual in charge" with responsibility for the collection of bridge inventory data, the performance of bridge inspections and the reporting of inspection information to satisfy NBIS requirements for a designated agency.
2. The person certifies that they are knowledgeable of the requirements of the NBIS and the responsibilities of a PM for ensuring compliance.
3. The person certifies that they are familiar with the Department's "Illinois Highway Information System – Structure Information and Procedure (SIP) Manual", which provides the policies and procedures established by the Department for complying with the regulatory requirements of the NBIS.

Although not mandatory at this time, all licensed Professional Engineers who were functioning as an agency's PM prior to January 13, 2005, but have not had formal training, such as that provided by the 10-day National Highway Institute (NHI) course titled Safety Inspection of In-Service Bridges, are strongly encouraged to attend the 3-day NHI course titled Bridge Inspection Refresher Training, which is a condensed version of the 10-day course.

To comply with the present NBIS rules, the Department must establish a database to track approval of PM qualifications. To assist the Department in

documenting the qualifications and experience of local agency PMs, we have attached form, *PROGRAM MANAGER QUALIFICATIONS*; this form shall be completed and returned to the BBS, Attn: Local Bridge Engineer. Please provide to the BBS by December 31, 2005 a completed form for any person proposed to serve as a local agency PM.

TEAM LEADER

One of the primary concerns with the new rules is the effect they have on the ability of local agencies to provide qualified personnel to function as a bridge inspection Team Leader (TL). The FHWA website provides information at <http://www.fhwa.dot.gov/bridge/nbis/index.htm> in the answer to Q&A question "Q309-3" that permits local agencies to field bridge inspection TLs essentially as in the past. The guidelines provided by this procedure memorandum are consistent with the FHWA's interpretation of the new NBIS rules for evaluating TL qualifications.

TEAM LEADER QUALIFICATIONS

The qualifications of a potential TL will be first reviewed by the local agency PM who has oversight responsibility for the local agency structures. All candidates should be familiar with the requirements of the NBIS and IDOT's Structure Information and Procedure (SIP) Manual. If the local agency PM deems an individual's qualifications acceptable for functioning as a Team Leader, the local agency PM must forward the documentation of the individual's licensing, training, and experience to the Local Bridge PM, who will review for concurrence. For consultants serving as a local agency TL, the submittal should be made directly to the Local Bridge PM. To assist the Department in documenting the qualifications and experience of local agency TLs, we have attached form, *TEAM LEADER QUALIFICATIONS*; this form shall be completed and returned to the BBS, Attn: Local Bridge Engineer.

Please provide a completed form to the BBS by December 31, 2005 for all personnel that the local agency PM has determined to be qualified to act as a TL for future inspections.

The new NBIS rules provide the following requirements for evaluating engineers and for technical personnel qualifications to function as a TL:

Program Manager: An individual who is approved by the state PM to function as a local agency PM is qualified to function as a Team Leader.

Professional Engineer: An individual who is licensed in Illinois as a Professional Engineer, and has successfully completed a FHWA approved comprehensive bridge inspection training course, is qualified to function as a Team Leader. Unless otherwise approved by the state PM, a comprehensive bridge inspection training course is considered to be the 10 days of training that has been routinely provided by IDOT through a course offered by the NHI. Based on evidence of professional licensing and successful completion of the 10-day training, a Professional Engineer can be accepted by the state PM to function as a TL.

Engineering Personnel: For the purpose of this procedure memorandum, Engineering Personnel are considered to be graduates of an engineering program, approved by the Accreditation Board of Engineering and

Technology, who have passed the “Fundamentals of Engineering” exam (Engineer In Training exam), but are not yet licensed as Professional Engineers. To be considered for assignment as a TL, Engineering Personnel must have successfully completed a FHWA approved bridge inspection training course. Based on the guidelines provided by the FHWA, Engineering Personnel can function as Team Leaders after the PMs have evaluated their training and experience, and determined that they are qualified. The criteria used for the evaluation of experience is the same as that provided below for Technical Personnel, except the individual is required to have a total of two years of bridge related experience accumulated over the course of their career, rather than five years, and 12 months of bridge inspection experience, rather than 30 months.

Technical Personnel: For the purpose of this memorandum, Technical Personnel are considered to be individuals functioning within the local agency as 1) “Engineering Technicians” or, 2) “Civil Engineers” who are not licensed professional engineers and have not passed the “Fundamentals of Engineering” exam (Engineer In Training exam). Technical Personnel must have successfully completed a FHWA approved bridge inspection training course to function as a Team Leader. Based on the guidelines provided by the FHWA, Technical Personnel can function as Team Leaders after the Program Managers have evaluated their training and experience and determined that they are qualified based on one of the following:

Criteria #1: An individual having accumulated at least five years of bridge related experience over the course of their career through the performance of NBIS bridge safety inspections, bridge design, bridge maintenance, or bridge construction activities, with more than 30 months of the accumulated bridge related experience obtained through the performance of NBIS bridge safety inspections, is qualified to function as a Team Leader. Technical Personnel meeting these requirements have the “desired minimum bridge inspection experience level” preferred by the FHWA for acceptance as Team Leader, and in-depth evaluation of the individual’s experience by the Program Manager to verify qualifications is not required. However, the performance of the Team Leader is subject to review by the Program Manager to ensure the quality of inspections, and assignments must be consistent with the experience of the individual.

Criteria #2: An individual having accumulated at least five years of bridge related experience over the course of their career through the performance of NBIS bridge safety inspections, bridge design, bridge maintenance, or bridge construction activities, with more than 30 months of the accumulated bridge related experience obtained through the performance of various bridge inspections activities, is qualified to function as a Team Leader, if the Program Manager has evaluated and approved the potential Team Leader’s overall experience as acceptable. A portion of the individual’s bridge inspection experience must have been acquired through the performance of NBIS bridge safety inspections with the remainder of the individual’s bridge inspection experience derived from inspections associated with bridge design, bridge construction inspections, and bridge maintenance inspections. When evaluating an individual’s experience, the Program Manager must, at a minimum, consider the factors listed under “Evaluation of Experience Criteria” provided in this memorandum.

Criteria #3: An individual having less than five years of bridge related experience accumulated over the course of their career through the performance of NBIS bridge safety inspections, bridge design, bridge maintenance, or bridge construction activities, with a portion of their accumulated bridge related experience obtained through the performance of NBIS bridge safety inspections, is qualified to function as a Team Leader only if both the state Program Manager and the FHWA concur that the individual's experience is acceptable. This criterion should only apply to special situations involving highly qualified individuals performing NBIS bridge safety inspections that require specialized knowledge or training on unusual or complex bridges.

Note that in all cases, a portion of the experience accumulated by Technical Personnel must have been derived from the performance of NBIS safety inspections in order to be considered qualified to function as a Team Leader.

Evaluation of Experience Criteria: When evaluating the experience of Technical Personnel to function as a Team Leader, the FHWA has indicated that the Program Manager must consider the following:

1. The relevance of the individual's actual experience (i.e., has the experience that was not acquired directly through the performance of NBIS safety inspections enabled the individual to develop the skills needed to properly lead a bridge safety inspection team?).
2. The individual's exposure to the problems or deficiencies common in the types of bridges being inspected by the individual.
3. The complexity of the structures being inspected in comparison to the knowledge and skills that the individual has gained through their experience.
4. The individual's understanding of specific data collection needs and requirements.
5. The individual's demonstrated ability, through a formal certification program, to lead bridge safety inspections.
6. The level of oversight and supervision under which the individual will function as Team Leader.

Item number "5" of the "Evaluation of Experience Criteria", refers to a "formal certification program". In order to track the experience level of bridge inspectors, to document the evaluation and approval of experience to function as a Program Manager or as a Team Leader and to establish categories of certification for various bridge types, the BBS will develop a database to track and document bridge inspection experience, as well as the certification process to be followed by Program Managers. The BBS will notify applicants of the determination of their application, and coordinate the development of the database and certification process with the local agencies, through the Bureau of Local Roads and Streets.

NHI CLASS SCHEDULE

To assist the local agencies and consultants in achieving the required NBIS training, the following is the schedule for the NBIS inspection course dates currently scheduled in Illinois for next year:

3 Day - Bridge Inspection Refresher Training.

January 10 – 12, 2006 in Springfield

Fracture Critical.

February 21 – 24, 2006 in Springfield

Note: This class is not required, but is recommended, for individuals performing Fracture Critical Inspections.

10 Day - Safety Inspection of In-Service Bridges (2 classes).

February 27 – March 10, 2006 in Springfield

March 20 – 31, 2006 in Schaumburg

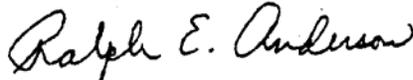
The contact at IDOT for enrollment is Brad Risinger; he may be contacted at:

Brad Risinger, Technical Training Manager
Training and Educational Development
phone: (217)782-3708; e-mail: risingerbd@dot.il.gov

We encourage interested parties to enroll as soon as possible, as space will be limited. Additional class locations in other states may be found at the following site: <http://www.nhi.fhwa.dot.gov/schedule.asp>.

If you have any questions regarding this memorandum, please contact Mr. Jayme Schiff at 217/785-8748 or schiffjf@dot.il.gov.

Very truly yours,



Ralph E. Anderson, P.E., S.E.
Engineer of Bridges and Structures



Charles J. Ingersoll, P.E.
Engineer of Local Roads and Streets

JFS/

cc FHWA, Illinois Division/Attn: Dan Brydl
Illinois Department of Natural Resources/Attn: Dale W. Brockamp
Illinois State Toll Highway Authority
Township Officials of Illinois/Attn: Bryan Smith
Township Highway Commissioners of Illinois/Attn: Dale Schultz

Attachments

PROGRAM MANAGER QUALIFICATIONS

The National Bridge Inspection Standards (NBIS) defines Program Manager as "the individual in charge of the program, that has been assigned or delegated the duties and responsibilities for bridge inspection, reporting and inventory. The program manager provides overall leadership and is available to inspection team leaders to provide guidance". The person designated on this form is being presented for concurrence by the State Program Manager to function as the Program Manager for the designated organizational unit.

Name: _____ Date: _____

Present Position Classification/Title: _____

Supervising operations for compliance with NBIS requirements in (check one of the following):

- IDOT (Region No. _____ District No. _____)
 County (name of county _____)
 Municipality (name of municipality _____)
 other (explanation _____)

List Profession Licenses held in Illinois (provide license type and license no.)

Documentation of Comprehensive Bridge Inspection Training

Training provided Through: _____

Course Title: _____

Course Number (if applicable): _____

Hours of Instruction: _____

Location of Training (city & state): _____

Date of Training: _____

Persons who are licensed as a professional or structural engineer in Illinois and have successfully completed a comprehensive bridge inspection course approved by the Federal Highway Administration are not required to complete the remainder of this form, except for signature and contact information. Persons who have not successfully completed a comprehensive bridge inspection training course, or who are not licensed as a professional or structural engineer in Illinois, must provide the following information regarding experience:

Prior Experience as a Program Manager

Prior to January 13, 2005, the effective date of the current rules for the National Bridge Inspection Standards, had you been functioning as a Program Manager for a governmental unit: _____ YES _____ NO

If Yes, list the governmental organizations for which you served as Program Manager and the length of time served in that capacity prior to January 13, 2005:

Organization _____ Months of Service _____

Organization _____ Months of Service _____

Organization _____ Months of Service _____

Bridge Inspection Related Experience

Performance of NBIS Safety Inspections ----- _____ Months

Inspections Associated with Bridge Construction ----- Months

Inspections to Determine Maintenance Needs ----- Months

Field Inspections Associated with Bridge Design ----- Months

Other Bridge Related Inspection Experience (show types):

----- Months

Comments _____

General Bridge Related Experience (not inspection related)

Bridge Construction Activities ----- Months

Bridge Maintenance Activities ----- Months

Bridge Design Activities ----- Months

Other Bridge Related Activities (show types):

----- Months

Comments _____

Other Engineering/Technical Experience

List activities that are not directly bridge related, but can be considered as beneficial in developing the skills required for a Team Leader:

1) ----- Months

2) ----- Months

3) ----- Months

Comments _____

Contact Information

If you are a consulting engineer requesting concurrence to function as a Program Manager for the purpose of overseeing the inspections for bridges in Illinois that are subject to the requirements of the National Bridge Inspection Standards, contact information must be provided:

Name:

Company Name:

Business Address: _____

State _____ Zip Code _____

Business Phone(s): _____

Business Fax: _____

Signatures

Candidate for Program Manager _____ Date _____
(signature)

Concurrence by State Program Manager _____ Date _____
(signature)

TEAM LEADER QUALIFICATIONS

Inspector Name: _____ Present Position Classification: _____

List Professional Licenses held in Illinois (provide license type and license no.)

Comprehensive Bridge Inspection Training

Training provided Through: _____

Course Title: _____

Course Number (if applicable): _____

Hours of Instruction: _____

Location of Training (city & state): _____

Date of Training: _____

Bridge Inspection Related Experience

Performance of NBIS Safety Inspections ----- _____ Months

Inspections Associated with Bridge Construction ----- _____ Months

Inspections to Determine Maintenance Needs ----- _____ Months

Field Inspections Associated with Bridge Design ----- _____ Months

Other Bridge Related Inspection Experience (show types):

_____ ----- _____ Months

Comments _____

General Bridge Related Experience (not inspection related)

Bridge Construction Activities ----- _____ Months

Bridge Maintenance Activities ----- _____ Months

Bridge Design Activities ----- _____ Months

Other Bridge Related Activities (show types):

_____ ----- _____ Months

Comments _____

Other Engineering/Technical Experience

List activities that are not directly bridge related, but can be considered as beneficial in developing the skills required for a Team Leader (use attachment if necessary):

1) _____ ----- _____ Months

2) _____ ----- _____ Months

3) _____ ----- _____ Months

Comments _____

Recommended by Region or LA Program Manager _____ Date _____
(signature)

Concurrence by State Program Manager _____ Date _____
(signature)



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: 2005-08
SUBJECT: HOT MIX ASPHALT OVERLAY POLICY
ISSUED DATE: December 16, 2005
EFFECTIVE DATE: December 31, 2005

This memorandum replaces Section 37-8 of the Bureau of Local Roads and Streets Manual.

When the Bureau of Local Roads & Streets Manual was issued in April 2005, the manual did not provide local agencies with a hot mix asphalt (HMA) overlay design procedure. Therefore, local agencies still had to use the overlay design procedures contained in the Federal-Aid Procedures for Local Highway Improvements or the Administrative Policies Manual. These manual allowed the "Modified AASHTO" design procedure. This procedure assigns coefficients to the various pavement layers to determine the pavement thickness for a projected traffic volume. These coefficients have not been reviewed since the department switched to a policy overlay procedure in the mid 1980's.

The new local HMA overlay policy is separated into two types: Functional and Structural. Functional overlays are used to improve the ride, address safety, or prolong the life of the pavement. Local agencies are not required to perform an overlay design procedure for functional overlays; however, minimum lift thicknesses and required overlay thicknesses must be met. Structural overlays are used to improve the load carrying capacity of a pavement and a pavement design must be performed.

The modified AASHTO design procedure is still allowed for HMA overlays; however, the coefficients may not equate to modern materials and construction processes. Therefore, local agencies may want to use alternative design procedures; however, the District Bureau of Local Roads must approve the final design procedure and thickness.

Please contact Kevin Burke of the Bureau of Local Roads & Streets at (217) 785-5048 or BurkeK@dot.il.gov with any questions.

Charles J. Dingersoll

Engineer of Local Roads and Streets

KB/kb

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: 2005-09
SUBJECT: DISADVANTAGED BUSINESS ENTERPRISE
PAYMENT REPORTING
ISSUED DATE: December 21, 2005
EFFECTIVE DATE: December 31, 2005

This memorandum revises Sections 5-6 and 24-2 of the Bureau of Local Roads and Streets Manual.

The Bureau of Local Roads and Streets has been asked to report actual DBE accomplishments to FHWA. The bureau will begin identifying the actual amount paid to each consultant/contractor associated with all federally funded engineering and locally let construction projects.

Completion of a new form will be required for all federally funded engineering and locally let construction projects which are initiated after January 1, 2006. The new form BLR 05613 for engineering and the new form BC 2115 for local lettings must be included. Form SBE 2115 will continue to be a required form for local lettings.

These forms will need to be completed by the prime consultant/contractor and submitted to the respective district office upon completion of the project. Form BLR 05613 should then be forwarded to the central bureau along with the final invoice. Central bureau staff will then enter the data into the Agreement Status Database. District personnel should process the BC 2115 and the SBE 2115 in the same manner as they have processed SBE 2115 in the past.

Attached are copies of BLR 05613, BC 2115, and SBE 2115. BC 2115 can be found under "Doing Business" on the IDOT webpage and will be available as a web form only. New references to these forms are included in the above-noted sections of the BLRS Manual.

A handwritten signature in cursive script that reads "Charles J. Dingersoll".

Engineer of Local Roads and Streets

MJL/mjl

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Prime Contractor

Name: _____

Address: _____

City, State, Zip: _____ 00000-0000

Phone Number: _____

TIN Number: _____

Project Information

Contract Number: _____

Section Number: _____

County: _____

This form is to verify the amount paid to the Subcontractor on the above captioned contract. Under penalty of law for perjury or falsification, the undersigned certifies that work was executed by the Subcontractor for the amount listed below.

<u>Subcontractor's Name</u>	<u>TIN Number</u>	<u>Actual Payment from Prime</u>
		\$0.00
Total \$ for Work Completed		\$0.00

Signature and Title

Date

The Department of Transportation is requesting disclosure of information that is necessary to accomplish the statutory requirements as outlined under state (CFR 49.26.11) and federal law. Disclosure of this information is REQUIRED.



Subcontractor

Name _____
Address _____
Telephone _____

Prime Contractor

Name _____
Address _____
Telephone _____

Subject

Contract number _____
Amount originally committed _____
Section _____
County _____

This agreement is to verify the work completed and the amount paid to the DBE Subcontractor on the above captioned contract. Under penalty of law for perjury or falsification, the undersigned certifies that the work reported herein was executed by the DBE, that the DBE actually performed, managed and supervised the work and that the work reported herein conforms to the work reported in the approved Utilization Plan together with any amendments approved by the Department.

Pay Item No.	Description	Quantity	Unit of Measure	Unit Price	Total
Total \$ Amount for Work Completed					

Partial Pay Item(s)

For any of the above items which are partial pay items, specifically describe the work and subcontract dollar amount.

Back Charges (if any; provide support documentation:)

Bond charge by prime _____

Equipment rental from prime _____

Material used paid by prime _____

Other (explain and provide documentation) _____

Payment Received _____

Balance Due (if any) _____

Retainage due pending final payment _____

Signature and title of DBE Subcontractor

Date

Signature and title of Prime Contractor

Date

Note: Submittal of this agreement shall be deemed as concurring with the payment amount specified above.

The Department of Transportation is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under the state and federal law. Disclosure of this information is **REQUIRED**. Failure to provide any information will result in the contract not being awarded. This form has been approved by the State Forms Management Center.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: 2005-10
SUBJECT: AMENDMENT TO FEDERAL-AID AGREEMENT
ISSUED DATE: December 21, 2005
EFFECTIVE DATE: December 31, 2005

This memorandum revises Section 5-3 of the Bureau of Local Roads and Streets Manual.

The bureau has created a new form BLR 05311 Local Agency Amendment for Federal Participation for cases where the original division of cost requires modification. All requirements of Chapter 5 "Joint Agreements", 5-3.01(c) and 5-3.01(d) should be addressed.

Utilization of this form will allow amending federal joint funding agreements to become uniform and accelerate the approval process. With the implementation of this new form we hope to eliminate past confusion with the amendment process.

Attached you will find a copy of the new BLR 05311. You will also find reference to this addition in the on-line BLRS Manual in the above-noted section of the manual.

A handwritten signature in cursive script that reads "Charles J. Dingersoll".

Engineer of Local Roads and Streets

MJL/mjl

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Illinois Department of Transportation

**Local Agency Amendment #
for Federal Participation**

Local Agency	State Contract	Day Labor	Local Contract	RR Force Account
Section	Fund Type	ITEP Number		

Construction		Engineering		Right-of-Way	
Job Number	Project Number	Job Number	Project Number	Job Number	Project Number

This Amendment is made and entered into between the above local agency hereinafter referred to as the "LA" and the state of Illinois, acting by and through its Department of Transportation, hereinafter referred to as "STATE".

BE IT MUTUALLY AGREED that all remaining provisions of the original agreement not altered by this amendment shall remain in full force and effect and the amendment shall be binding upon and inure to the benefit of the parties hereto, their successors and assigns.

Amended Division of Cost

Type of Work	FHWA	%	STATE	%	LA	%	Total
Participating Construction	()	()	()	
Non-Participating Construction	()	()	()	
Preliminary Engineering	()	()	()	
Construction Engineering	()	()	()	
Right of Way	()	()	()	
Railroads	()	()	()	
Utilities	()	()	()	
TOTAL	\$ _____		\$ _____		\$ _____		\$ _____

NOTE: The costs shown in the Division of Cost table are approximate and subject to change. The final LA share is dependent on the final Federal and State participation. The actual costs will be used in the final division of cost for billing and reimbursement.

If funding is not a percentage of the total, place an asterisk in the space provided for the percentage and explain above.

The Federal share of construction engineering may not exceed 15% of the Federal share of the final construction cost.

APPROVED

Name _____

Title _____
County Board Chairperson/Mayor/Village President/etc.

Signature _____

Date _____

TIN Number _____

APPROVED

State of Illinois
Department of Transportation

Timothy W. Martin, Secretary

Date _____

By: _____
Secretary's Delegate – _____, Director of Highways

Ellen Schanzle-Haskins, Chief Counsel

Ann Sundeen, Director of Finance and Administration

NOTE: If signature is by an APPOINTED official, a resolution authorizing said appointed official to execute this agreement is required.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2006-01
SUBJECT: APPRENTICESHIP AND TRAINING PROGRAM FOR
LOCAL LET MATERIAL PROPOSALS
ISSUED DATE: March 28, 2006
EFFECTIVE DATE: April 1, 2006

This memorandum replaces Chapter 12 of the Bureau of Local Roads and Streets Manual dated January 2006.

Procedure Memorandum 2005-03 issued on June 22, 2005 established responsible bidder requirements for local let contract proposals. The Office of Chief Counsel has determined that these requirements also apply to local let material proposals that require the contractor to perform work at the jobsite. Therefore, all material proposals that have not been advertised by April 1, 2006 will require all prospective bidders to complete the apprenticeship and training certification if work is to be performed by the contractor or subcontractors.

[BLR 12240](#) has been revised to add an apprenticeship and training certification statement. The awarding local agency will need to require this certification if work is being performed by the contractor on a material proposals and denote this requirement in the *Notice to Contractors Bulletin*. All prospective bidders must submit this completed statement with their bid. If a bidder's certification statement is not completed their bid should be discarded. This statement does not apply to federal aid projects.

As a general guideline, local agencies should require apprenticeship and training certification if prevailing wage rates are required. The certification is not required if material is being delivered to stockpile or the local agency is transporting the material to the jobsite. If you are unsure if the certification is required, please contact the Office of Chief Counsel at (217) 782-0692.

Handwritten signature of Charles J. Dingersoll in black ink.

Engineer of Local Roads and Streets

Handwritten signature of the Chief Counsel in black ink.

Chief Counsel

Attachments

KB/kb

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Notice of Material Letting

- 1. Sealed proposals will be received in the office of the _____ until _____ o'clock _____ M., _____ for furnishing materials required in the construction/maintenance of Section _____ County _____ Municipality _____ Road District _____ and at that time publicly opened and read.
2. Proposals shall be submitted on forms furnished by the Local Agency which may be obtained at the office of _____ and shall be enclosed in an envelope endorsed "Material Proposal, Section _____".
3. The right is reserved to waive technicalities and to reject any or all proposals.
4. Proposal Guaranty. A proposal guaranty in the proper amount, as specified in BLRS Special Provision for Bidding Requirements and Conditions for Material Proposals, will be required. Bid bonds [] will [] will not be allowed as proposal guaranties.
5. Contract Bond. The successful bidder at the time of execution of the contract [] will [] will not be required to deposit a contract bond for the full amount of the award. When a contract bond is not required, the proposal guaranty check will be held in lieu thereof. Failure on the part of the contractor to deliver the material within the time specified or to do the work specified herein will be considered just cause to forfeit his surety as provided in Article 108.10 of the Standard Specifications.

By Order of _____ (Awarding Authority)

_____ Date _____ (County Engineer/Superintendent of Highways/Municipal Clerk)

Material Proposal

To _____ (Awarding Authority)

If this bid is accepted within 45 days from date of opening, the undersigned agrees to furnish any or all of the materials, at the quoted unit prices, subject to the following:

- 1. It is understood and agreed that the "Standard Specifications for Road and Bridge Construction" adopted _____ and the "Supplemental Specifications and Recurring Special Provisions", adopted, _____ prepared by the Department of Transportation, shall govern insofar as they may be applied and insofar as they do not conflict with the special provisions and supplemental specifications attached hereto.
2. It is understood that quantities listed are approximate only and that they may be increased or decreased as may be needed to properly complete the improvement within its present limits or extensions thereto, at the unit price stated and that bids will be compared on the basis of the total price bid for each group.
3. Delivery in total or partial shipments as ordered shall be made within the time specified in the special provisions or by the acceptance at the point and in the manner specified in the "Schedule of Prices". If delivery on the job site is specified, it shall mean any place or places on the road designated by the awarding authority or its authorized representative.
4. The contractor and/or local agency performing the actual material placement operations shall be responsible for providing work zone traffic control, unless otherwise specified in this proposal. Such devices shall meet the requirements of and be installed in accordance with applicable provisions of the "Illinois Manual on Uniform Traffic Control Devices" and any referenced Illinois Highway Standards.
5. Each pay item should have a unit price and a total price. If no total price is shown or if there is a discrepancy between the product of the unit price multiplied by the quantity, the unit price shall govern. If a unit price is omitted, the total price will be divided by the quantity in order to establish a unit price.
6. A bid will be declared unacceptable if neither a unit price nor a total price is shown.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BDE PROCEDURE MEMORANDUM

NUMBER: 49-06

BLRS PROCEDURE MEMORANDUM

NUMBER: 2006-02

SUBJECT: Guidance for Determining *De Minimis* Impacts to Section 4(f) Resources

DATE: April 21, 2006

Section 6009(a) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Pub. L. 109-59, amended existing Section 4(f) legislation at Section 138 of Title 23 and Section 303 of Title 49, United States Code. This is a revision of Section 4(f) legislation that is meant to simplify the processing and approval of projects that have only *de minimis* (minimal) impacts on lands protected by Section 4(f). The changes presented below will be incorporated in a future update of the BDE Manual.

Background

This revision provides that once the consideration of Section 4(f) impact avoidance, minimization, and mitigation or enhancement measures has occurred, the U.S. Department of Transportation (DOT) may determine that a transportation use of Section 4(f) property will result in a *de minimis* impact on that property. The analysis of avoidance alternatives will not be required in order to complete the Section 4(f) evaluation process. Refer to the attached guidance for additional information.

BDE PROCEDURE MEMORANDUM 49-06
BLRS PROCEDURE MEMORANDUM 2006-02

April 21, 2006

Page 2

Applicability

The procedures in this memorandum are applicable to all Federally funded State and Local Roads highway projects.

Contact the BDE at 217-782-7526 (for State projects) or BLRS at 217-782-3805 (for Local Roads projects) if there are questions concerning this information.

Engineer of Design and Environment Michael L. Hine

Engineer of Local Roads and Streets Charles J. Dugersoll

Attachment



Memorandum

Sent Via E-mail

Subject: **ACTION:** Guidance for Determining *De Minimis*
Impacts to Section 4(f) Resources

Date: December 13, 2005

Original Signed by:

From: Cynthia J. Burbank
Associate Administrator, Planning, Environment
and Realty, FHWA
Brigid Hynes-Cherin, Associate Administrator
for Planning and Environment, FTA

Reply to
Attn. of:
HEPE

To: FHWA Division Administrators
FTA Regional Administrators

Section 6009(a) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Pub. L. 109-59, amended existing Section 4(f) legislation at Section 138 of Title 23 and Section 303 of Title 49, United States Code, to simplify the processing and approval of projects that have only *de minimis* impacts on lands protected by Section 4(f). This is the first substantive revision of Section 4(f) legislation since passage of the U.S. Department of Transportation Act of 1966. This revision provides that once the U.S. Department of Transportation (DOT) determines that a transportation use of Section 4(f) property, after consideration of any impact avoidance, minimization, and mitigation or enhancement measures, results in a *de minimis* impact on that property, an analysis of avoidance alternatives is not required and the Section 4(f) evaluation process is complete.

Section 6009(c) of SAFETEA-LU requires the U.S. DOT to conduct a study and issue a report on the implementation of the new Section 4(f) provisions. The study will include evaluation of: 1) the implementation processes developed and the resulting efficiencies; 2) the post-construction effectiveness of any impact mitigation and avoidance commitments adopted as part of the projects; and 3) the number of projects determined to have *de minimis* impacts, including information on the location, size, and cost of the projects. The initial study and report will address the first three years of implementation. The Federal Highway Administration (FHWA) Division and Federal Transit Administration (FTA) Regional Offices should maintain a record of the projects for which *de minimis* findings were made and track the progress of those projects in order to facilitate the future evaluation of the post construction effectiveness of any commitments of mitigation made as part of the *de minimis* finding. Additional guidance and information regarding the study and report will be provided in the future.



Questions and Answers on the Application of the Section 4(f) *De Minimis* Impact Criteria

Introduction

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) amendment to the Section 4(f) requirements allows the U.S. Department of Transportation (DOT) to determine that certain uses of Section 4(f) land will have no adverse effect on the protected resource. When this is the case, and the responsible official(s) with jurisdiction¹ over the resource agrees in writing, compliance with Section 4(f) is greatly simplified, as explained in this guidance.

The *de minimis*² impact criteria and associated determination requirements specified in Section 6009(a) of SAFETEA-LU³ are different for historic sites than for parks, recreation areas, and wildlife and waterfowl refuges. *De minimis* impacts related to historic sites are defined as the determination of either “no adverse effect” or “no historic properties affected” in compliance with Section 106 of the National Historic Preservation Act (NHPA)⁴. *De minimis* impacts on publicly owned parks, recreation areas, and wildlife and waterfowl refuges are defined as those that do not “adversely affect the activities, features and attributes” of the Section 4(f) resource.

The following questions and answers provide information and guidance on the process of determining *de minimis* impacts of highway and transit projects that propose the use of Section 4(f) property. A diagram of the determination process for parks, recreation areas, and wildlife and waterfowl refuges is included for illustration following the questions and answers.

1. General Information Regarding Application of the *De Minimis* Impact Criteria.

Question A. Are *de minimis* impact findings limited to any particular type of project or National Environmental Policy Act (NEPA) document?

Answer: No. The *de minimis* impact criteria may be applied to any project, as appropriate, regardless of the type of environmental document required by the NEPA process as described in the FHWA and FTA Environmental Impact and Related Procedures⁵.

Question B. What effect does the *de minimis* impact provision have on the application of the existing FHWA nationwide programmatic evaluations?

Answer: Existing FHWA programmatic Section 4(f) evaluations⁶ remain in effect and may be applied, as appropriate, to the use of Section 4(f) property by a highway project. However, since FTA does not have its own or share FHWA’s programmatic evaluations, the programmatic option applies only to FHWA projects and to multimodal projects in which FHWA and FTA are co-lead agencies.

¹ “Official(s) with jurisdiction” means the SHPO, THPO and ACHP, if participating in the consultation, for historic resources, and is defined in Question 3C for other Section 4(f) resources.

² Black’s Law Dictionary (8th ed. 1999) defines *de minimis* as 1. Trifling, minimal. 2. (Of a fact or thing) so insignificant that a court may overlook it in deciding an issue or case. 3. *De Minimis Non Curat Lex, The law does not concern itself with trifles.*

³ Section 6009 amends 49 U.S.C. § 303 and 23 U.S.C § 138; see specifically 49 U.S.C. § 303(d) and 23 U.S.C §138(b)

⁴ 16 U.S.C. 470f, with implementing regulation at 36 CFR part 800

⁵ 23 CFR 771.115

⁶ <http://environment.fhwa.dot.gov/projdev/4fnspeval.htm>

Question C. Is it appropriate to apply the *de minimis* impact criteria to projects that are already in the project development process?

Answer: Yes. The Section 4(f) statutory amendment was effective immediately upon enactment of SAFETEA-LU and the *de minimis* impact criteria may be applied to projects currently in the project development process, where the requirements of a *de minimis* impact finding have been or will be satisfied. The decision to apply the *de minimis* impact criteria to those projects is a matter of agency choice and professional judgment. The factors that should be considered in decisions to apply the *de minimis* impact criteria to projects in the “pipeline” include, but are not limited to: 1) the stage of the NEPA or project development process the project is in; 2) the benefits to the project delivery schedule realized by applying the *de minimis* impact criteria; 3) the impact to the project delivery schedule due to other agency (e.g., SHPO and/or THPO and park authorities) or public concern; 4) the overall benefit to the project realized by the reevaluation of a more viable alternative through a *de minimis* impact finding; 5) the degree and type of controversy and/or public scrutiny related to the project; and 6) the resulting benefits realized to a Section 4(f) resource by the *de minimis* impact finding.

While the *de minimis* impact criteria may be applied to any project meeting the specified requirements, Section 6009(a) of SAFETEA-LU does not require the U.S. DOT to re-open decisions already made concerning Section 4(f) impacts of individual projects. Project sponsors are encouraged to examine projects currently in the environmental process to see if any would benefit from application of the *de minimis* impact criteria, but the decision must be made on a case-by-case basis.

Question D. Can a *de minimis* impact finding be made for a project as a whole, where multiple Section 4(f) resources are involved?

Answer: No. Where multiple Section 4(f) resources are present in the study area and potentially used by a transportation project, *de minimis* impact findings must be made for the individual Section 4(f) resources. The impacts to Section 4(f) resources and any impact avoidance, minimization, and mitigation or enhancement measures must be considered on an individual resource basis and *de minimis* impact findings made individually for each Section 4(f) resource. However, when there are multiple resources for which *de minimis* impact findings are appropriate, the procedural requirements of Section 4(f) can and should be completed in a single process, document and circulation, so long as it is clear that distinct determinations are being made. Also in these cases, the written concurrence of the official(s) with jurisdiction may be provided for the project as a whole, so as long as the *de minimis* impacts findings have been made on an individual resource basis.

Question E. What role does mitigation play in the *de minimis* impact finding?

Answer: The *de minimis* impact finding is based on the degree or level of impact including any avoidance, minimization, and mitigation or enhancement measures that are included in the project to address the Section 4(f) use. The expected positive effects of any measures included in a project to mitigate the adverse effects of a Section 4(f) resource must be taken into account when determining whether the impact to the Section 4(f) resource is *de minimis*. The purpose of taking such measures into account is to encourage the incorporation of Section 4(f) protective measures as part of the project⁷. *De minimis* impact findings must be expressly conditioned upon the implementation of any measures that were relied upon to reduce the impact to a *de minimis* level. The implementation of such measures will become the responsibility of the project sponsor, with FHWA or FTA oversight⁸.

⁷ Conference Report of the Committee of Conference on H.R. 3, Report 109-203, page 1057.

⁸ 23 CFR 771.109(b)

Question F. How should the *de minimis* impacts to Section 4(f) resources be considered in the alternative selection process when all feasible and prudent alternatives result in Section 4(f) use?

Answer: For those situations in which multiple Section 4(f) resources will be used by a project and it has been determined that no feasible and prudent avoidance alternatives exist, the *de minimis* impacts of Section 4(f) resources must be factored into the analysis to determine which alternative results in the least overall harm as described in the FHWA Section 4(f) Policy Paper⁹.

In most cases, the *de minimis* impacts will have little or no influence on the determination of overall harm because the activities, features and attributes of the Section 4(f) resources will not be adversely affected. Also, because potential adverse impacts to the Section 4(f) resources will be completely mitigated or enhanced by inclusion of such measures as part of the project in making *de minimis* impact findings, the Section 4(f) benefit should be included in the least harm analysis. Where it is not clear which alternative results in the least overall harm, consultation with the FHWA or FTA Headquarters or the FHWA or FTA Office of the Chief Counsel is recommended.

Question G. Can a *de minimis* impact finding be made for a “constructive use” of Section 4(f) property?

Answer: No. A *de minimis* impact finding can only be made where the transportation use would not adversely affect the activities, features, and attributes that qualify a property for protection under Section 4(f). Constructive use, by definition, involves impacts to a Section 4(f) resource such that the protected activities, features, and attributes would be substantially impaired¹⁰. Therefore, a *de minimis* impact finding would not be appropriate where there is a constructive use. Furthermore, if a potential constructive use can be reduced below a substantial impairment, with the inclusion of mitigation measures, then Section 4(f) would not apply.

Question H. Can a *de minimis* impact finding be made for a “temporary occupancy” of Section 4(f) property?

Answer: Yes. As long as the *de minimis* impact criteria are met, the impacts associated with a temporary occupancy of a Section 4(f) resource could be determined to be *de minimis*. It should be noted, however, that Section 4(f) does not apply to the temporary occupancy of Section 4(f) property when the conditions set forth in the FHWA and FTA Environmental Impact and Related Procedures¹¹ are satisfied. Therefore, application of the *de minimis* impact provision for these situations should only be considered when the project does not meet the temporary occupancy exception criteria.

Question I. Who makes the *de minimis* impact findings?

Answer: The FHWA Division Administrator or FTA Regional Administrator makes the *de minimis* impact findings. In the determination, FHWA or FTA shall consider any impact avoidance, minimization, and mitigation or enhancement measures that are included in the project to address the impacts and adverse effects on the Section 4(f) resource. The FHWA Division Administrator or FTA Regional Administrator must consider the facts supporting the determination of a *de minimis* impact, the record that was compiled in the coordination that must precede the determination of *de minimis* impact, the concurrence of the official(s) with jurisdiction, and use his or her own best judgment in making the *de minimis* impact finding. It is ultimately the

⁹ March 1, 2005, pages 6, 7; <http://www.environment.fhwa.dot.gov/projdev/4fpolicy.htm>

¹⁰ 23 CFR 771.135(p)(2)

¹¹ 23 CFR 771.135(p)(7)

responsibility of the FHWA or FTA to ensure that *de minimis* impact findings and required concurrences are reasonable.

Coordination with the FHWA or FTA Headquarters or the FHWA or FTA Office of the Chief Counsel is not required for routine *de minimis* impact findings but is recommended for controversial projects and complex situations.

2. *De Minimis* Impact Findings for Section 4(f) Uses of Historic Properties.

Question A. What are the requirements for a finding of *de minimis* impact on a historic site?

Answer: A finding of *de minimis* impact on a historic site may be made when:

- 1) The process required by Section 106 of the National Historic Preservation Act¹² results in the determination of "no adverse effect" or "no historic properties affected" with the concurrence of the SHPO and/or THPO, and ACHP if participating in the Section 106 consultation;
- 2) The SHPO and/or THPO, and ACHP if participating in the Section 106 consultation, is informed of FHWA's or FTA's intent to make a *de minimis* impact finding based on their written concurrence in the Section 106 determination; and
- 3) FHWA or FTA has considered the views of any consulting parties participating in the Section 106 consultation.

Question B. How should the concurrence of the SHPO and/or THPO, and ACHP if participating in the Section 106 determination, be documented when the concurrence will be the basis for a *de minimis* finding?

Answer: Section 4(f)¹³ requires that the SHPO and /or THPO, and ACHP if participating, must concur in writing in the Section 106 determination of "no adverse effect" or "no historic properties affected." The request for concurrence in the Section 106 determination should include a statement informing the SHPO or THPO, and ACHP if participating, that the FHWA or FTA intends to make a *de minimis* finding based upon their concurrence in the Section 106 determination.

Under the Section 106 regulation, concurrence by a SHPO and/or THPO may be assumed if they do not respond within a specified timeframe, but Section 4(f) explicitly requires their written concurrence. It is recommended that transportation officials share this guidance with the SHPOs and THPOs in their States so that these officials fully understand the implication of their concurrence in the Section 106 determinations and the reason for requesting written concurrence.

Question C. Certain Section 106 programmatic agreements (PAs) allow the lead agency to assume the concurrence of the SHPO and/or THPO in the determination of "no adverse affect" or "no historic properties affected" if response to a request for concurrence is not received within a period of time specified in the PA. Does such concurrence through non-response, in accordance with a written and signed Section 106 PA, constitute the "written concurrence" needed to make a *de minimis* finding?

Answer: In accordance with the provisions of a written and signed programmatic agreement, if the SHPO and/or THPO does not respond to a request for concurrence in the Section 106

¹² 16 U.S.C. 470f, with implementing regulation at 36 CFR part 800

¹³ 49 U.S.C 303(d)(2)

determination within the specified time, the non-response together with the written agreement, will be considered written concurrence in the Section 106 determination that will be the basis of the *de minimis* finding by FHWA or FTA.

FHWA or FTA must inform the SHPOs and THPOs who are parties to such PAs, in writing, that a non-response that would be treated as a concurrence in a “no adverse effect” or “no historic properties affected” determination will also be treated as the written concurrence for purposes of the FHWA or FTA *de minimis* impact finding. It is recommended that this understanding of the parties be documented by either appending the written notice to the existing PA, or by amending the PA itself.

Question D. For historic properties, will a separate public review process be necessary for the determination of a *de minimis* impact?

Answer: No. Section 6009(a) of SAFETEA-LU requires the U.S. DOT to consult with the parties participating in the Section 106 process but does not require additional public notice or opportunity for review and comment. Documentation of consulting party involvement is recommended. For projects requiring the preparation and distribution of a NEPA document, the information supporting a *de minimis* impact finding will be included in the NEPA documentation and the public will be afforded an opportunity to review and comment during the formal NEPA process.

3. De Minimis Impact Findings for Parks, Recreation Areas, and Wildlife and Waterfowl Refuges

Question A. What constitutes a *de minimis* impact with respect to a park, recreation area, or wildlife and waterfowl refuge?

Answer: An impact to a park, recreation area, or wildlife and waterfowl refuge may be determined to be *de minimis* if the transportation use of the Section 4(f) resource, including consideration of impact avoidance, minimization, and mitigation or enhancement measures, does not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f). Language included in the SAFETEA-LU Conference Report¹⁴ provides additional insight on the meaning of *de minimis* impact.

“The purpose of the language is to clarify that the portions of the resource important to protect, such as playground equipment at a public park, should be distinguished from areas such as parking facilities. While a minor but adverse effect on the use of playground equipment should not be considered a *de minimis* impact under section 4(f), encroachment on the parking lot may be deemed *de minimis*, as long as the public's ability to access and use the site is not reduced.”

This simple example helps to distinguish the activities, features, and attributes of a Section 4(f) resource that are important to protect from those which can be used without resulting adverse effects. Playground equipment in a public park may be central to the recreational value of the park that Section 4(f) is designed to protect. When impacts are proposed to playground equipment or other essential feature, a *de minimis* impact finding will, at a minimum, require a commitment to replace the equipment with similar or better equipment at a time and in a location that results in no adverse effect to the recreational activity. A parking lot encroachment or other similar type of land use, on the other hand, could result in a *de minimis* impact with minimal mitigation, as long as there are no adverse effects on public access and the official(s) with jurisdiction agree.

¹⁴ Conference Report of the Committee of Conference on H.R. 3, Report 109-203, page 1057.

Question B. What are the requirements for a finding of *de minimis* impact with respect to a park, recreation area, or wildlife and waterfowl refuge?

Answer: The impacts of a transportation project on a park, recreation area, or wildlife and waterfowl refuge that qualifies for Section 4(f) protection may be determined to be *de minimis* if:

- 1) The transportation use of the Section 4(f) resource, together with any impact avoidance, minimization, and mitigation or enhancement measures incorporated into the project, does not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f);
- 2) The official(s) with jurisdiction over the property are informed of FHWA's or FTA's intent to make the *de minimis* impact finding based on their written concurrence that the project will not adversely affect the activities, features, and attributes that qualify the property for protection under Section 4(f); and
- 3) The public has been afforded an opportunity to review and comment on the effects of the project on the protected activities, features, and attributes of the Section 4(f) resource.

Question C. What officials are considered to be "officials with jurisdiction" over a park, recreation area, or wildlife or waterfowl refuge for the purposes of the *de minimis* impact finding?

Answer: The officials with jurisdiction are the officials of an agency or agencies that own or administer a Section 4(f) property and who are empowered to represent that agency on related matters. In some cases, the agency that owns or administers the land has either delegated or relinquished its authority to another agency. In those cases, FHWA or FTA should review the applicable agreements to determine which agency or agencies have the authority to concur in the assessment of impacts to the property.

Question D. How should Section 6(f) of the Land and Water Conservation Fund Act (LWCFA) or other U.S. Department of Interior (DOI) grants-in-aid programs be treated in *de minimis* impact findings?

Answer: *De minimis* impact findings will satisfy Section 4(f) requirements only. For projects that propose the use of land from a property or site purchased or improved with funds under the LWCFA, the Federal Aid in Fish Restoration Act (Dingell-Johnson Act), the Federal Aid in Wildlife Act (Pittman-Robertson Act), or other similar law, or the lands are otherwise encumbered with a Federal interest, coordination with the appropriate Federal agency is required to ascertain the agency's position on the land conversion or transfer. Other federal requirements that may apply to the Section 4(f) land should be determined through consultation with the officials with jurisdiction or appropriate DOI or other federal official. These federal agencies may have regulatory or other requirements for converting land to a different use. These requirements are independent of the *de minimis* impact finding and must be satisfied.

Question E. Is consultation with DOI routinely required for *de minimis* impact findings?

Answer: No. As a routine matter, FHWA and FTA do not need to consult with the DOI on *de minimis* impact findings. Where the Section 4(f) resource involved is owned or administered by the DOI, FHWA or FTA will need the written concurrence of the appropriate DOI official as the official with jurisdiction. If the Section 4(f) resource is encumbered with a Federal interest as a result of a DOI grant, then the answer to Question D applies.

Question F. Does the concurrence of the official(s) with jurisdiction over the Section 4(f) resource need to be in writing?

Answer: Yes. The concurrence of the official(s) with jurisdiction that the protected activities, features, and attributes of the resource are not adversely affected must be in writing. The written

concurrence can be in the form of a signed letter on agency letterhead, signatures in concurrence blocks on transportation agency documents, agreements provided via e-mail or other method deemed acceptable by the FHWA Division Administrator or FTA Regional Administrator. Obtaining these agreements in writing is consistent with effective practices related to preparing project administrative records.

Question G. What constitutes compliance with the public notice, review and comment requirements related to *de minimis* impact findings?

Answer: Information supporting a *de minimis* impact finding should be included in the appropriate NEPA document prepared for the project. This information includes, at a minimum, a description of the involved Section 4(f) resource(s), the impact(s) to the resources and any impact avoidance, minimization, and mitigation or enhancement measures that are included in the project as part of the *de minimis* impact finding. The public involvement requirements related to the specific NEPA document and process will, in most cases, be sufficient to satisfy the public notice and comment requirements for the *de minimis* impact finding.

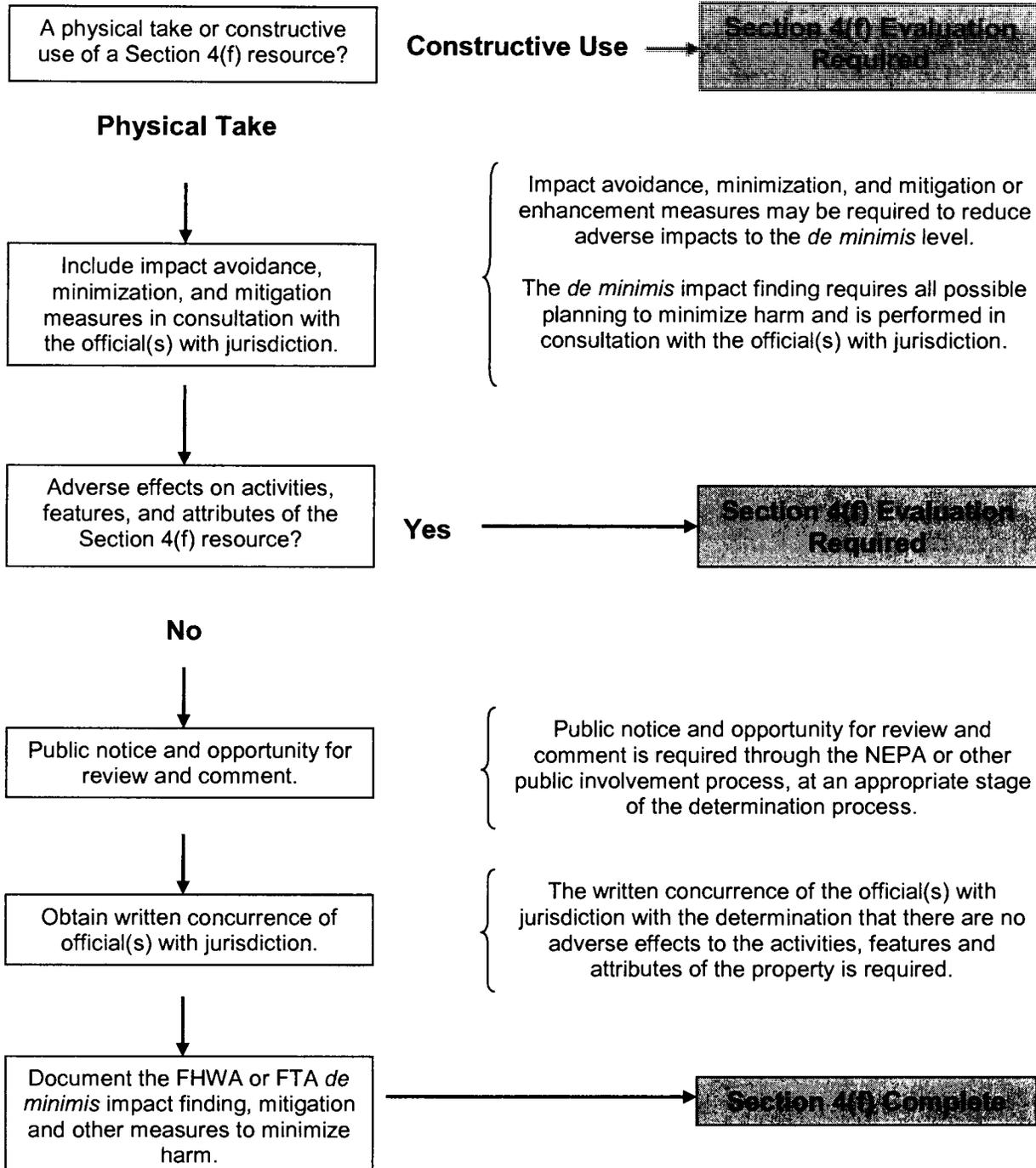
In general, for highway projects, the public notice and comment process related to *de minimis* impact findings will be accomplished through the State DOT's approved public involvement process¹⁵.

For those actions that do not routinely require public review and comment (e.g., certain categorical exclusions and reevaluations) but for which a *de minimis* impact finding will be made, a separate public notice and opportunity for review and comment will be necessary. In these cases, appropriate public involvement should be based on the specifics of the situation and commensurate with the type and location of the Section 4(f) resource(s), impacts and public interest.

All comments received and responses thereto, shall be documented in the same manner that other comments on the proposed action would be handled. Where public involvement was initiated solely for the purpose of a *de minimis* impact finding, responses or replies to the public comments may not be required, depending on the substantive nature of the comments. All comments and responses shall be documented in the administrative record.

¹⁵ 23 CFR 771.111(h)(1))

Suggested Section 4(f) *De Minimis* Impact Determination Process for Parks, Recreation Areas, and Wildlife and Waterfowl Refuges





Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2006-03
SUBJECT: PLAN APPROVAL AND RELEASE SIGNATURE BLOCK
ISSUED DATE: July 12, 2006
EFFECTIVE DATE: September 22, 2006

This memorandum adds Chapter 11 Section 2.04 and Chapter 23 Section 2.04 to the Bureau of Local Roads and Streets Manual dated January 2006.

In order to ensure consistency between the districts, the department has created a uniform signature block for all local agency plans that require department review and approval. The signature block should be used on any plans that have not been submitted to the district for review; however, as of the September 22, 2006 letting, it will be required for all local agency projects requiring department review and approval.

Charles J. Dingersoll

Engineer of Local Roads and Streets

KB/kb

Attachments



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2006-04
SUBJECT: ELIMINATION OF DIRECT LABOR MULTIPLIER ON
FEDERALLY FUNDED PROJECTS
ISSUED DATE: July 12, 2006
EFFECTIVE DATE: September 1, 2006

This memorandum replaces Chapter 5 Section 5 and Section 6 of the Bureau of Local Roads and Streets Manual dated January 2006.

The Illinois Division of the Federal Highway Administration (IL-FHWA) notified the department that the numeric multiplier used in the Direct Labor Multiplier (DLM) compensation method is no longer allowed as a result of recent changes to 23 U.S.C. § 112(b)(2). Accordingly the DLM compensation method will no longer be an option for federally funded engineering projects. The IL-FHWA will allow local agencies that had previously discussed or negotiated specific projects using DLM prior to December 1, 2005 to finalize the agreement using DLM. As of September 1, 2006, DLM agreements will no longer be accepted regardless of when negotiations began.

Please note that details concerning consultant compensation formulas have been moved to section 5-5.06 (Engineering Agreements – MFT and State Funds). Allowable formulas for federally funded projects, section 5-6.01(d), will now refer back to the appropriate formula details in section 5-5.06.

If you have any questions concerning consultant payment methods, please contact Greg Lupton at Greg.Lupton@illinois.gov or 217/785-1670.

A handwritten signature in black ink that reads "Charles J. Dingersoll".

Engineer of Local Roads and Streets

Attachments

GSL/kb

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2006-05

SUBJECT: PARK ZONE SIGNS

ISSUED DATE: November 1, 2006

EFFECTIVE DATE: November 26, 2006

This memorandum adds Chapter 39 Section 2.08(b) to the Bureau of Local Roads and Streets Manual dated January 2006.

Public Act 94-0808, effective May 26, 2006 adds a Section 11-605.3 to the Illinois Vehicle Code allowing local agencies to establish Park Zones and Park Zone Street speed limits of 20 mph on designated streets or intersections posted and controlled by local agencies. It also charges the Department with the responsibility of designing a set of standardized traffic signs for park zones and park zone streets.

In order to designate a park zone and park zone streets, and establish a park zone speed limit, local agencies need to pass an ordinance or resolution. If a local agency establishes a park zone, the traveling public shall not exceed the posted reduced speed limit on any day when children are present and within 50 feet of motorized traffic on such designated zone streets.

Chapter 39, Section 2.08(b) establishes a set of signs to be posted and maintained by local agencies in such designated areas as defined by 625 ILCS 5/11-605.3.

A handwritten signature in cursive script that reads "Charles J. Dingsell".

Engineer of Local Roads and Streets

JK/jk

Public Act 094-0808

SB0509 Enrolled

LRB094 07627 DRH 37799 b

AN ACT concerning transportation.

WHEREAS, The Illinois General Assembly finds that laws protecting school-age children with legislation limiting speed limits near schools has successfully protected Illinois children for decades, and a considerable number of recreational facilities in Illinois often border or are in close proximity to educational facilities and do not have the same protections afforded to educational facilities; and

WHEREAS, The Illinois General Assembly finds that ensuring Safe Streets near educational and recreational facilities is a goal requiring the full attention of this General Assembly and the full cooperation of the federal, State, and local units of government and their respective executive departments and agencies; therefore

Be it enacted by the People of the State of Illinois, represented in the General Assembly:

Section 5. The Illinois Vehicle Code is amended by adding Section 11-605.3 as follows:

(625 ILCS 5/11-605.3 new)

Sec. 11-605.3. Special traffic protections while passing parks and recreation facilities and areas.

(a) As used in this Section:

(1) "Park district" means the following entities:

(A) any park district organized under the Park District Code;

(B) any park district organized under the Chicago Park District Act; and

(C) any municipality, county, forest district, school district, township, or other unit of local government that operates a public recreation department or public recreation facilities that has recreation facilities that are not on land owned by any park district listed in subparagraphs (A) and (B) of this subdivision (a)(1).

(2) "Park zone" means the recreation facilities and areas on any land owned or operated by a park district that are used for recreational purposes, including but not limited to: parks; playgrounds; swimming pools; hiking trails; bicycle paths; picnic areas; roads and streets; and parking lots.

(3) "Park zone street" means that portion of any street or intersection under the control of a local unit of government, adjacent to a park zone, where the local unit of government has, by ordinance or resolution, designated and approved the street or intersection as a park zone street. If, before the effective date of this amendatory

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Act of the 94th General Assembly, a street already had a posted speed limit lower than 20 miles per hour, then the lower limit may be used for that park zone street.

(4) "Safety purposes" means the costs associated with: park zone safety education; the purchase, installation, and maintenance of signs, roadway painting, and caution lights mounted on park zone signs; and any other expense associated with park zones and park zone streets.

(b) On any day when children are present and within 50 feet of motorized traffic, a person may not drive a motor vehicle at a speed in excess of 20 miles per hour or any lower posted speed while traveling on a park zone street that has been designated for the posted reduced speed.

(c) On any day when children are present and within 50 feet of motorized traffic, any driver traveling on a park zone street who fails to come to a complete stop at a stop sign or red light, including a driver who fails to come to a complete stop at a red light before turning right onto a park zone street, is in violation of this Section.

(d) This Section does not apply unless appropriate signs are posted upon park zone streets maintained by the Department or by the unit of local government in which the park zone is located. With regard to the special speed limit on park zone streets, the signs must give proper due warning that a park zone is being approached and must indicate the maximum speed limit on the park zone street.

(e) A first violation of this Section is a petty offense with a minimum fine of \$250. A second or subsequent violation of this Section is a petty offense with a minimum fine of \$500.

(f) When a fine for a violation of this Section is imposed, the person who violates this Section shall be charged an additional \$50, to be paid to the park district for safety purposes.

(g) The Department shall, within 6 months of the effective date of this amendatory Act of the 94th General Assembly, design a set of standardized traffic signs for park zones and park zone streets, including but not limited to: "park zone", "park zone speed limit", and "warning: approaching a park zone". The design of these signs shall be made available to all units of local government or manufacturers at no charge, except for reproduction and postage.

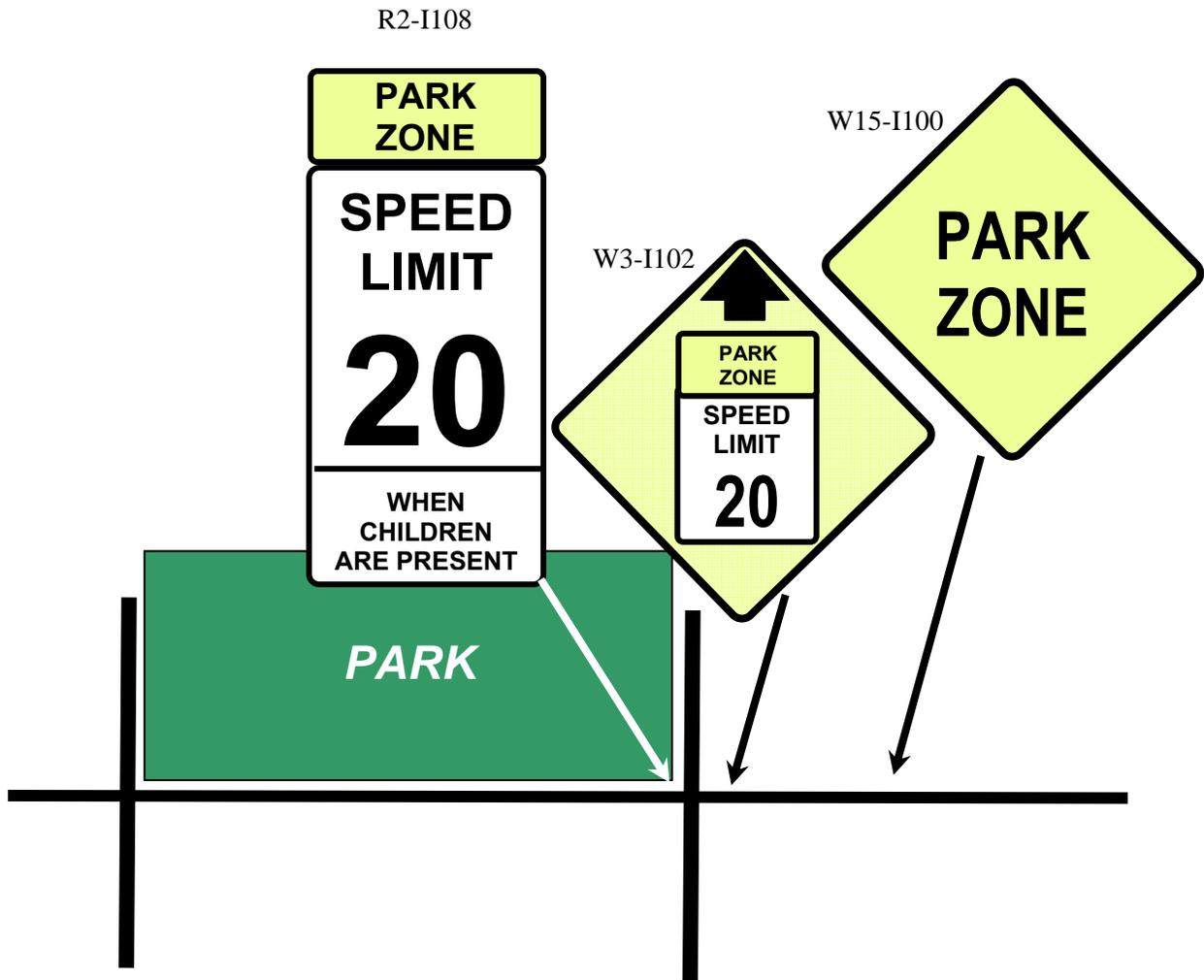
Section 99. Effective date. This Act takes effect upon becoming law.

Effective Date: 5/26/2006

Floor Actions

Date	Action
5/26/2006	Public Act094-0808

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TYPICAL PARK ZONE SIGNING

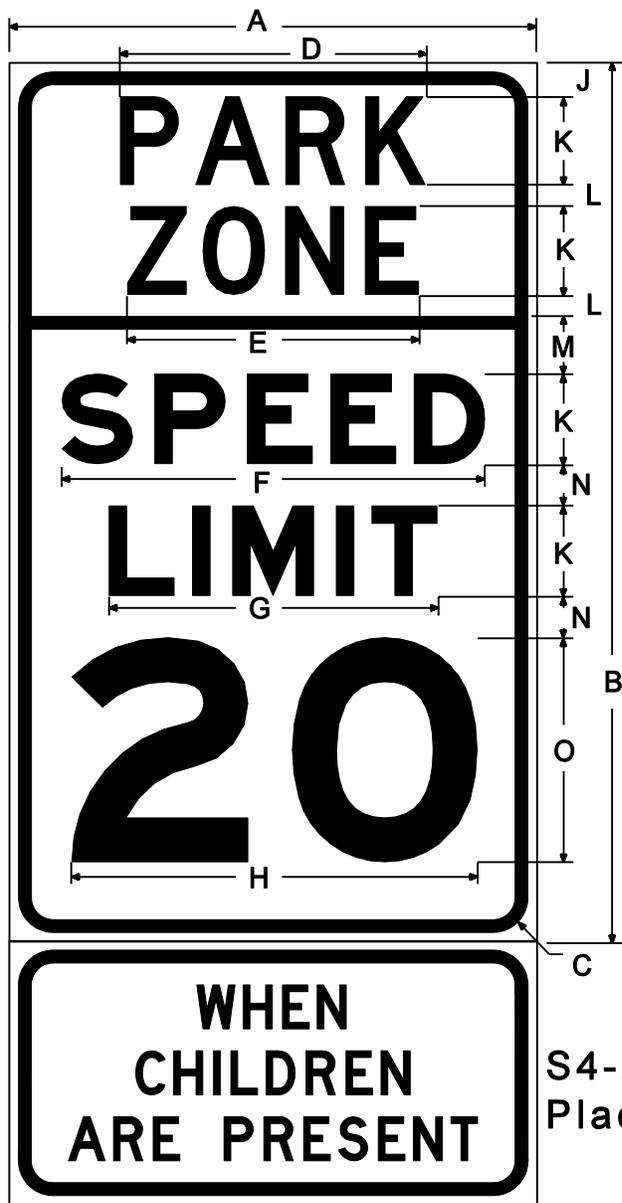
If the local ordinance or resolution establishing a Park Zone Speed limit includes the hours the limit is in effect, the hours may be included on lower portion of the PARK ZONE SPEED LIMIT sign (R2-I108) such as "8 AM - 8 PM WHEN CHILDREN ARE PRESENT."

The advance PARK ZONE sign (W15-I100) may be used alone where a Park Zone Speed Limit is not established.

Standard Speed Limit signs shall not be placed within a Park Speed Zone. The end of the Park Speed Zone shall be designated with a standard speed limit sign.

ILLINOIS STANDARD

R2-I108



Federal Standard S4-2 shall be used on lower portion of sign. If local ordinance or resolution includes hours those may be included as well and placed on lower portion. Example: (8 AM - 8 PM)

S4-2 Placement Shown

COLOR	LEGEND AND BORDER	BLACK	NON-REFLECTORIZED
	BACKGROUND (TOP)	YELLOW/GREEN	REFLECTORIZED
	BACKGROUND (BOTTOM)	WHITE	REFLECTORIZED

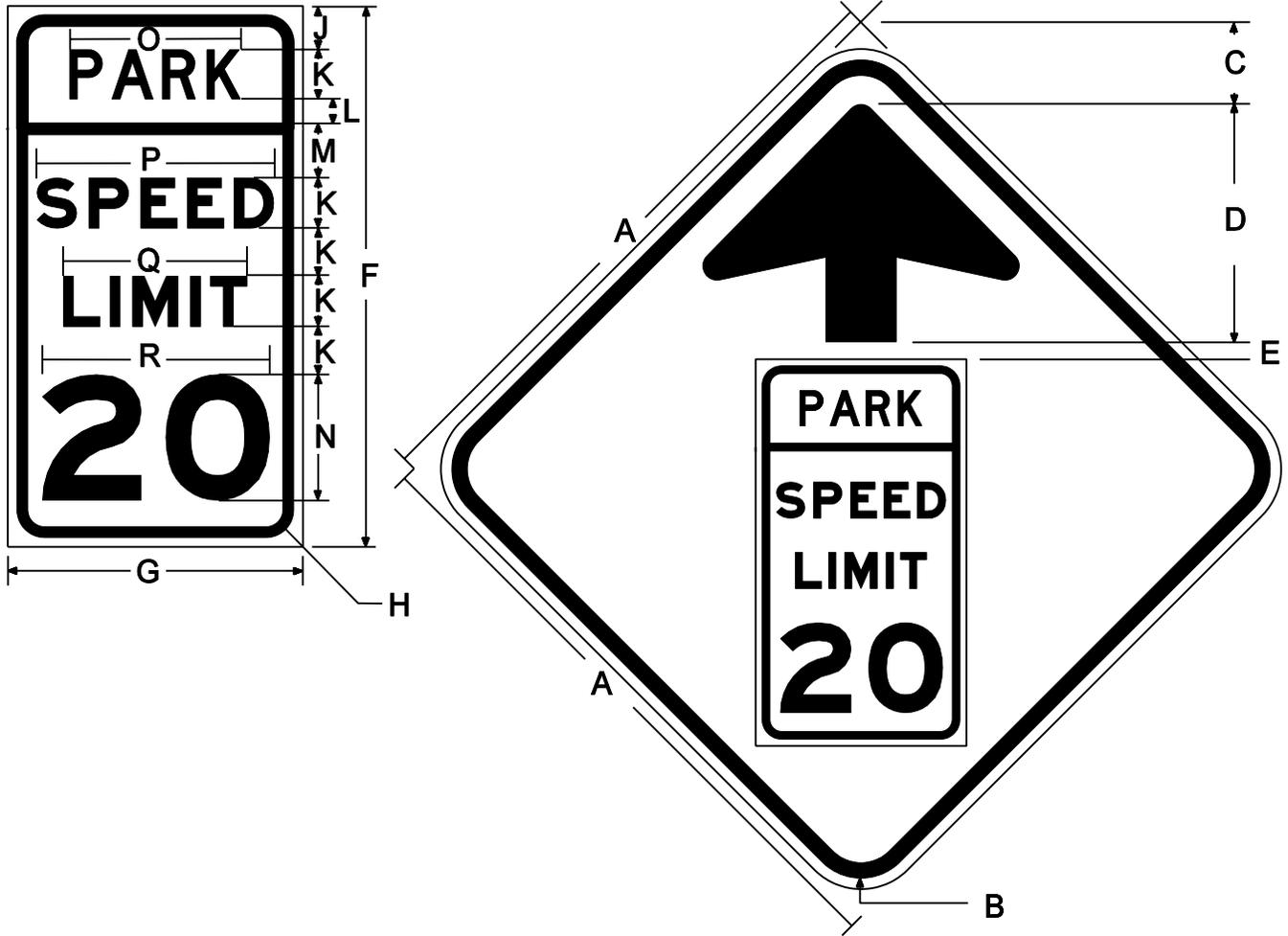
SIGN SIZE	DIMENSIONS													
	A	B	C	D	E	F	G	H	J	K	L	M	N	O
24 X 42	24.00	42.00	1.50	14.00	13.20	19.20	15.00	18.40	1.90	4.00	1.00	3.60	2.00	10.00
36 X 60	36.00	60.00	3.00	20.80	19.80	28.80	22.40	27.40	2.30	6.00	1.50	4.00	3.00	15.00

SIGN SIZE	SERIES BY LINE					MARGIN	BORDER
	1	2	3	4	5		
24 X 42	4D	4D	4E	4E	10E	0.375	0.625
36 X 60	6D	6D	6E	6E	15E	0.625	0.875

All dimensions in inches. Sign not to scale.

ILLINOIS STANDARD

W3-I102



COLOR	LEGEND AND BORDER	BLACK	NON-REFLECTORIZED
	BACKGROUND(SIGN)	YELLOW/GREEN	REFLECTORIZED
	BACKGROUND(PARK)	YELLOW/GREEN	REFLECTORIZED
	BACKGROUND(SPEED LIMIT 20)	WHITE	REFLECTORIZED

SIGN SIZE	DIMENSIONS																
	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R
36 X 36	36.00	2.25	3.20	13.50	1.00	22.00	12.00	1.50	1.80	2.00	1.00	3.20	5.00	7.00	9.60	7.40	9.20

SIGN SIZE	SERIES BY LINE				MARGIN	BORDER	PARK SPEED LIMIT	
	1	2	3	4			MARGIN	BORDER
	36 X 36	2D	2E	2E			5E	0.625

All dimensions in inches. Sign not to scale.

ILLINOIS STANDARD

W15-I100



COLOR	LEGEND AND BORDER BACKGROUND	BLACK	NON-REFLECTORIZED
		YELLOW/GREEN	REFLECTORIZED

SIGN SIZE	DIMENSIONS						
	A	B	C	D	E	F	G
30 X 30	30.00	2.25	16.90	16.60	12.40	6.00	3.00
36 X 36	36.00	2.25	22.50	22.10	15.40	8.00	2.20

SIGN SIZE	SERIES BY LINE		MARGIN	BORDER
	1	2		
30 X 30	6C	6C	0.625	0.875
36 X 36	8C	8C	0.625	0.875

All dimensions in inches. Sign not to scale.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BDE PROCEDURE MEMORANDUM

NUMBER: 53-06

BLRS PROCEDURE MEMORANDUM

NUMBER: 2006-06

SUBJECT: Design Guidance for Median and Curb Treatments at Railroad Grade Crossings

DATE: November 15, 2006

This memorandum revises information in Sections 7-3.02 and 34-2.04 of the BDE Manual and Section 40-1.01(f) of the LRS Manual. The changes presented below will be incorporated in future updates of the BDE Manual and LRS Manual.

Background

The Department and the Illinois Commerce Commission collaborated to develop revised details for median and curb treatments at railroad grade crossings. The revision entails providing mountable curb on the departure side of at-grade railroad crossings instead of barrier curb. This change will provide escape areas for vehicles that may be trapped on the railroad tracks.

Applicability

The procedures in this memorandum are applicable to State Highway projects with median and curb treatments at railroad grade crossings.

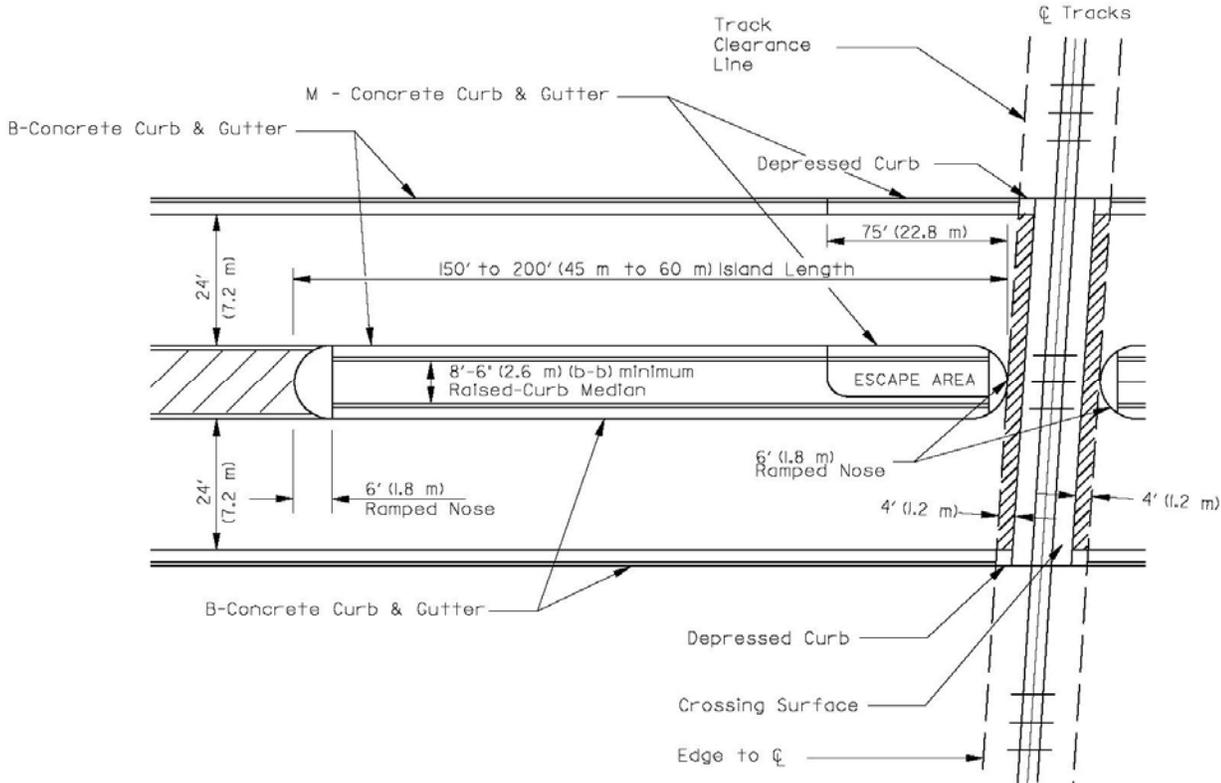
Procedures

7-3.02(f) Design Considerations [40-1.01(f) of LRS Manual]

Revise subsection 1.b. of this Section to read:

Medians. Where median-mounted warning devices will be installed and other than an earth median is adjacent to a grade crossing, the median should have a minimum median width of 8.5 ft (2.6 m) (10 ft (3.0 m) desirable) back-to-back of curb. Depress all medians and curbs on approaches to the crossing to the level of the pavement edge or gutter flag within the track clearance line which is parallel to and 8 ft (2.4 m) from the centerline of the nearest track. See Figure 7-3E.

Revise Figure 7-3E (LRS Figure 40-1C) as follows:



Notes:

1. Where a raised-curb, flush, or traversable type median is used on the roadway, provide B-6 or B-9 (B-15 or B-22) raised-curb median on crossing approaches and provide M-2 or M-4 (M-5 or M-10) raised-curb median on crossing departures adjacent to each side of the railroad track(s); see Section 34-2.04.
2. In addition to deterring vehicular movements over the track(s) in the median area, the raised-curb median provides a space for mounting railroad warning device units, if required. Also, see Section 36-8.
3. If the railroad tracks are located close to a cross street and lie within the left-turn lane of the intersection, this section will require a special design and the use of barrier type curb along the median adjacent to the turn lane.
4. The median should have a minimum width of 8.5 ft (2.6 m) (10 ft (3.0 m) desirable) back-to-back of curb.

TYPICAL MID-BLOCK MEDIAN TREATMENT ADJACENT TO RAILROAD CROSSINGS
(Multilane Urban and Suburban Highways)

Figure 7-3E (LRS Figure 40-1C)

34-2.04(c) Curb Type Selection

Add the following after the first paragraph of subsection 9.a., Special Median Conditions for Railroads:

Where a highway departs an at-grade railroad crossing and the design speed is 45 mph or less, provide M-4 (M-10) CC&G along the median edges for a short distance adjacent to the crossing. When the design speed is 50 mph or greater, provide M-2 (M-5) CC&G. These mountable curb types will provide an escape area for vehicles. See Figure 7-3E.

Engineer of Design and Environment Michael L. Hine

Engineer of Local Roads and Streets Charles J. Ingersoll



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2006-07

SUBJECT: LOCAL LETTING PROTESTS - APPRENTICESHIP
AND TRAINING CERTIFICATION

ISSUED DATE: December 6, 2006

EFFECTIVE DATE: January 1, 2007

This memorandum adds Section 4 to Chapter 12 of the Bureau of Local Roads and Streets Manual dated April 2006.

Procedure Memorandums 2005-03 and 2006-01 established responsible bidder requirement for local let contract and material proposals.

Chapter 12, Section 4 establishes a uniform protest acceptance and handling procedure previously outlined in Circular letter 2006-01 that the department has implemented to handle responsible bidder protests on local let projects funded with motor fuel tax or other state funds administered by the department. The protest procedure outlined in Section 4 may be utilized to protest a lack of participation in the approved apprenticeship and training program only.

All other protests, as outlined in the same Section 4, should be handled and resolved based on the local authority's procurement practices. If the local authority does not have protest procedures, Special Provision LR 102 may be inserted into the contract or material proposal in order to establish protest guidelines on local lettings.

A handwritten signature in cursive script that reads "Charles J. Dingersoll".

Engineer of Local Roads and Streets

Attachments

JK/jk

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State of Illinois
Department of Transportation
Bureau of Local Roads and Streets

SPECIAL PROVISION
FOR
PROTESTS ON LOCAL LETTINGS

Effective: January 1, 2006

All protests will be handled according to Subpart F of Subtitle B of Title 44 of the Illinois Administrative Code except for apprenticeship and training certification issues. The Chief Procurement Officer will be a representative of the awarding authority.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2006-08
SUBJECT: ENGINE BRAKING SIGNS
ISSUED DATE: December 6, 2006
EFFECTIVE DATE: January 1, 2007

This memorandum adds Section 39-2.06(j) to the Bureau of Local Roads and Streets Manual dated November 2006.

Effective January 1, 2007, Public Act 94-0756 adds a Section 12-602.1 to the Illinois Vehicle Code allowing a county or municipality to post signs prohibiting the use of engine braking systems emitting excessive noise. The act prescribes a specific content of the signs, such as "EXCESSIVE ENGINE BRAKING NOISE PROHIBITED". Additionally, it requires the department to promulgate rules concerning the signs. Finally, the Act provides that the provision does not apply to the use of an engine braking system that has an adequate sound muffling system in proper working order that prevents excessive noise.

92 Illinois Administrative Code 547, Engine Braking Signs, was adopted by IDOT. The rules provide that counties and municipalities may furnish, install and maintain signs on streets and highways under their jurisdiction and with permission of the Department, on state roads and streets within their corporate limits. The signs are not to be used on freeways or interstate highways.

Chapter 39, Section 2.06(j) establishes a Engine Braking (R5-I106) sign to be furnished, posted and maintained by a county or municipality as defined by 625 ILCS 5/12-602.1. Because the Public Act is very specific as to the wording of the sign, existing non-conforming signs on state highways should be removed and replaced with the new design.

A handwritten signature in cursive script, reading "Charles J. Dingsell".

Engineer of Local Roads and Streets

JK/jk

Attachments

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Public Act 094-0756

HB2497 Enrolled

LRB094 09720 DRH 39976 b

AN ACT concerning transportation.

**Be it enacted by the People of the State of Illinois,
represented in the General Assembly:**

Section 5. The Illinois Vehicle Code is amended by adding Section 12-602.1 as follows:

(625 ILCS 5/12-602.1 new)

Sec. 12-602.1. Excessive engine braking noise signs.

(a) A county or municipality may post signs that prohibit the driver of a commercial vehicle, as defined in Section 1-111.8 of this Code, from operating or actuating any engine braking system that emits excessive noise.

(b) The sign shall state, "EXCESSIVE ENGINE BRAKING NOISE PROHIBITED". The Department of Transportation shall adopt rules providing for the erection and placement of these signs.

(c) This Section does not apply to the use of an engine braking system that has an adequate sound muffling system in proper working order that prevents excessive noise.

(d) It is a defense to this Section that the driver used an engine braking system that emits excessive noise in an emergency to avoid a collision with a person or another vehicle on the highway.

(e) A violation of this Section is an equipment violation punishable by a fine of \$75.

Effective Date: 1/1/2007

ENGINE BRAKING SIGN

R5-I106

The standard size sign shall be 30" wide by 36" high with 3"D letters. The plaque size will vary with the message.

For high-speed locations or multi-lane highways, a larger sized 48" by 60" sign with 5" D letters may be used.

The sign shall be black on white and shall be retroreflective.

The message on the sign is prescribed by statute.*



The sign and plaque may be combined into a single panel.

A plaque should be used to define the extent of the prohibition such as NEXT X MILES, ON VILLAGE STREETS, NEXT X BLOCKS, etc. and may indicate a time such as 8 PM - 7 AM.

**See Section 12-602.1 of the Illinois Vehicle Code (Public Act 094-0756) and 92 Ill. Admin. Code 547, Engine Braking Signs.*



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2006-09
SUBJECT: DESIGNATION OF TRUCK ROUTES
ISSUED DATE: December 28, 2006
EFFECTIVE DATE: January 1, 2007

This memorandum revises Chapter 3 Section 2.02(d) to the Bureau of Local Roads and Streets Manual dated December 2006.

Public Act 94-0763 was signed into law on May 12, 2006, and will become effective on January 1, 2007. This law requires the Department of Transportation to maintain and provide a listing of all Class I, Class II, and Class III designated highways and streets defined by 625 ILCS 5/1-126.1. Additionally, this law includes local streets and highways that have been designated as Class II or Class III highways by local agencies. It is the responsibility of local agencies with jurisdiction over a Class II or III designated highway to report its location to the department.

Chapter 3, Section 2.02(d) establishes local agencies' reporting requirements of their designated Class II and Class III streets and highways, reference names, and telephone numbers to the Department. Local agencies should use BLR 03210 to designate Class II or III highways or streets.

Charles J. Dingsell

Engineer of Local Roads and Streets

JK/jk

Attachments

Public Act 094-0763

SB1086 Enrolled

LRB094 04762 DRH 34791 b

AN ACT concerning transportation.

**Be it enacted by the People of the State of Illinois,
represented in the General Assembly:**

Section 5. The Illinois Vehicle Code is amended by adding Section 15-116 as follows:

(625 ILCS 5/15-116 new)

Sec. 15-116. Designated truck route system. The Department of Transportation shall maintain and provide a listing of all Class I, Class II, and Class III designated streets and highways as defined in Chapter 1 of this Code. The Department shall also maintain and provide a listing of all local streets or highways that have been designated Class II or Class III by local agencies. Local agencies shall be responsible for reporting to the Department all streets and highways under their jurisdiction designated Class II and Class III. Local agencies shall also provide to the Department reference contact names and telephone numbers. The Department shall also maintain and provide an official map of the Designated State Truck Route System that includes State and local streets and highways that have been designated Class I, Class II, or Class III.

Effective Date: 1/1/2007

DESCRIPTION

This form should be used by local agencies to designate Class II or Class III truck routes on highways and streets under their jurisdiction.

COMPANION FORMS

BLR 05321 and BLR 05322, if necessary.

DEFINITIONS

Local Agency is a municipality, road district/township and county.

Clerk is a person charged with a record keeping duty for a local agency.

INSTRUCTIONS

Body of the Resolution:

In all fields following "Local Agency," a full name of a municipality, road district/township or county should be inserted.

In the fields for "Name," "Title" and "Signature," appropriate terms should be inserted by mayor/village president, highway commissioner or chairman of a county board.

Clerk Certification:

A name of the clerk, full name of a municipality, road district/township or county, and a date should be inserted into the fields, respectively. A signature of a clerk should appear in a field above the "Clerk" line.

SUBMITTAL

Local Agency must submit 2 (two) copies of this form and a location map to their District Engineer. The District will distribute the forms and location maps as follows:

- 1 copy to the District files
- 1 copy to the Central Bureau of Operations.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BDE PROCEDURE MEMORANDUM

NUMBER: 54-07

BLRS PROCEDURE MEMORANDUM

NUMBER: 2007-01

SUBJECT: Categorical Exclusion Group II Approval Documentation

DATE: January 8, 2007

This memorandum revises information in Section 23-1.05(d) of the BDE Manual and Section 19-1.04(c) of the LRS Manual.

Background

The Department and the Federal Highway Administration (FHWA) conducted a process review of Categorical Exclusions. An observation in the review noted that districts document CE determination decisions in the minutes of the coordination meetings and it is also documented in the project report. When decisions are made via phone call, e-mails, or special meetings, CE determination decisions are documented in the project files. The process review team recommended a clear, concise statement that should be used for documentation.

Applicability

The procedures in this memorandum are applicable to all projects utilizing federal funds.

Procedures

23-1.05(d) Group II Actions [19-1.04(c) of LRS Manual]

Replace the last sentence of the first paragraph [last sentence of the third paragraph of LRS manual] with the following:

“Minutes of the meeting or a memorandum to the file, as appropriate, shall document the discussions and concurrence by stating ‘The FHWA approves the designation of this project as a Categorical Exclusion Group II on [DATE].”

BDE PROCEDURE MEMORANDUM 54-07
BLRS PROCEDURE MEMORANDUM 2007-01
January 8, 2007
Page 2

Replace the last sentence of the fifth paragraph [second to last sentence of the fourth paragraph of LRS manual] with the following:

"When verbal concurrence is obtained from the FHWA, minutes of the meeting or a memorandum to the file, as appropriate, shall document the discussions and concurrence by stating 'The FHWA approves the designation of this project as a Categorical Exclusion Group II on [DATE].'"

Interim Engineer of Design and Environment 

Engineer of Local Roads and Streets 



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2007-02

SUBJECT: LETTING AND CONTRACT AWARD – MFT AND STATE FUNDS

ISSUED DATE: April 26, 2007

EFFECTIVE DATE: May 1, 2007

This memorandum supersedes Section 12-1 dated April 2006 and Sections 12-1 and 12-3 dated December 2006 of the Bureau of Local Roads and Streets Manual.

In order to clarify the apprenticeship or training certification applicability in locally let projects, the department created a new type of proposal - Deliver and Install Proposal.

A deliver and install proposal is similar to a material proposal in that the cost and delivery of material for the work operation is the substantial or principal cost of the contract. A deliver and install proposal, however, includes work performed at the site. Section 12-1.01(c) describes when a deliver and install proposal may be used. The apprenticeship or training program certification is required for all deliver and install proposals. BLR 12325 shall be inserted in all deliver and install proposals and has to be completed appropriately by every bidder.

When the on site work included in a contract or deliver and install proposal is performed solely by individual owners, partners, or members and not by employees to whom the payment of prevailing wages would be required, the certification is not required. BLR 12325 provides an appropriate section to indicate that.

A material proposal shall be used for furnishing material to the job site, stockpile, or other location. A material proposal may also be used when the supplier is tailgating and distributing the material. The apprenticeship or training certification is not required for a material proposal.

Material proposals and deliver and install proposals shall utilize the same invitation for bid documents, as outlined in Section 12-2.01(b). Prequalification of bidders is optional for all material proposals and deliver and install proposals regardless of the estimated cost.



Engineer of Local Roads and Streets

Attachments
JK/jk



Chief Counsel



Apprenticeship or Training Program Certification

Return with Bid

Route
County
Local Agency
Section

All contractors are required to complete the following certification:

- For this contract proposal or for all groups in this deliver and install proposal.
For the following deliver and install groups in this material proposal:

Blank lines for listing deliver and install groups.

Illinois Department of Transportation policy, adopted in accordance with the provisions of the Illinois Highway Code, requires this contract to be awarded to the lowest responsive and responsible bidder. The award decision is subject to approval by the Department. In addition to all other responsibility factors, this contract or deliver and install proposal requires all bidders and all bidders' subcontractors to disclose participation in apprenticeship or training programs that are (1) approved by and registered with the United States Department of Labor's Bureau of Apprenticeship and Training, and (2) applicable to the work of the above indicated proposals or groups. Therefore, all bidders are required to complete the following certification:

- I. Except as provided in paragraph IV below, the undersigned bidder certifies that it is a participant, either as an individual or as part of a group program, in an approved apprenticeship or training program applicable to each type of work or craft that the bidder will perform with its own employees.
II. The undersigned bidder further certifies for work to be performed by subcontract that each of its subcontractors submitted for approval either (A) is, at the time of such bid, participating in an approved, applicable apprenticeship or training program; or (B) will, prior to commencement of performance of work pursuant to this contract, establish participation in an approved apprenticeship or training program applicable to the work of the subcontract.
III. The undersigned bidder, by inclusion in the list in the space below, certifies the official name of each program sponsor holding the Certificate of Registration for all of the types of work or crafts in which the bidder is a participant and that will be performed with the bidder's employees. Types of work or craft that will be subcontracted shall be included and listed as subcontract work. The list shall also indicate any type of work or craft job category for which there is no applicable apprenticeship or training program available.

Blank lines for listing program sponsors and work categories.

IV. Except for any work identified above, any bidder or subcontractor that shall perform all or part of the work of the contract or deliver and install proposal solely by individual owners, partners or members and not by employees to whom the payment of prevailing rates of wages would be required, check the following box, and identify the owner/operator workforce and positions of ownership.

The requirements of this certification and disclosure are a material part of the contract, and the contractor shall require this certification provision to be included in all approved subcontracts. The bidder is responsible for making a complete report and shall make certain that each type of work or craft job category that will be utilized on the project is accounted for and listed. The Department at any time before or after award may require the production of a copy of each applicable Certificate of Registration issued by the United States Department of Labor evidencing such participation by the contractor and any or all of its subcontractors. In order to fulfill the participation requirement, it shall not be necessary that any applicable program sponsor be currently talking or that it will take applications for apprenticeship, training or employment during the performance of the work of this contract, material or deliver and install proposal.

Bidder: _____

By: _____

(Signature)

Address: _____

Title: _____



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2007-03
SUBJECT: CONTEXT SENSITIVE SOLUTIONS
ISSUED DATE: May 18, 2007
EFFECTIVE DATE: June 1, 2007

This memorandum adds Section 10-5 and Section 21-7 to the Bureau of Local Roads & Streets Manual.

Public Act 093-0545, which became effective January 1, 2004, provides that the Illinois Department of Transportation "...shall embrace principles of context sensitive design and context sensitive solutions in its policies and procedures for the planning, design, construction, and operation of its projects for new construction, reconstruction, or major expansion of existing transportation facilities." This is to ensure that the Department's projects "...adequately meet the State's transportation needs, exist in harmony with their surroundings, and add lasting value to the communities they serve." Departmental Policy D&E 21, issued on August 1, 2005, formally codified Context Sensitive Solutions (CSS) as the official policy of the Department for projects utilizing CSS principles.

If local agencies chose to implement CSS on local highway projects funded with federal, State, or Motor Fuel Tax, the procedures outlined in [BDE Procedure Memorandum 48-06](#) should be used. Under certain circumstances the department may require CSS to be used on local projects in order to comply with PA 093-0545.

For more information about CSS, go to www.dot.il.gov/css/home.html. Please contact Kevin Burke at kevin.burkeiii@illinois.gov with any questions.

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Engineer of Local Roads and Streets

Attachments

KB/kb

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BDE PROCEDURE MEMORANDUM

NUMBER: 5-07

BLRS PROCEDURE MEMORANDUM

NUMBER: 2007- 04

SUBJECT: Value Engineering Program

DATE: June 18, 2007

This memorandum supersedes and replaces BDE Procedure Memorandum 5-00, dated April 3, 2000. The changes clarify and expand the previous guidance and will be incorporated in future updates of the BDE Manual and into Section 4-1.15 of the LRS Manual.

Background

Under 23 CFR, Part 627, the FHWA requires a program be established to improve project quality, reduce project costs, foster innovations, eliminate unnecessary and costly design elements, and to ensure efficient investments through the use of Value Engineering (VE).

Applicability

The procedures in this memorandum are applicable to all federal-aid highway projects with an estimated cost of \$25 million or more and all federal-aid bridge projects with an estimated cost of \$20 million or more.

Definitions

Highway Project - Projects with an estimated cost of \$25 million or more and bridge projects with an estimated cost of \$20 million or more. Such projects may encompass multiple construction contracts.

Value Engineering (VE) - The systematic application of recognized techniques by a multi-disciplinary team to identify the function of a product or service, establish a worth for that function, generate alternatives through the use of creative thinking, and provide the needed functions to accomplish the original purpose of the project, reliably and at the lowest life-cycle cost without sacrificing safety, necessary quality, and environmental attributes of the project.

Procedures

(a) **Project Selection.** Each district identifies applicable projects during the preparation of the multi-year program. Due to the complexity and scope of large projects, more than one VE study may be desirable. Other projects not meeting the definition may be selected for this program. The District shall notify the central office and FHWA of the identified projects as part of the multi-year plan development.

(b) **Project Cost.** Costs associated with environmental studies, preliminary engineering, final design, land acquisition and construction should be used in determining the selected project's cost. The project cost includes state, local agency, and federal-aid highway funds.

(c) **Scope of Studies.**

(1) Initiation of VE Study. Schedule VE studies in such a manner so as not to cause delay of the project. For a Phase I report with multiple construction contracts, develop a plan for conducting the VE study(s) based on the Phase I considerations and the nature and complexity of the work type, (e.g., one VE study may cover alike construction projects). A single VE study should cover as many construction contracts under the single Phase I report as practicable and beneficial. The VE study should be initiated as close to the completion of the Phase I report as possible. Initiate the VE study no later than the time the construction plans are 30% complete and to allow for the implementation of the recommendations without delaying the project. The VE study should be, at the least, scheduled when the Phase I report is completed.

(2) Team Makeup. The VE team, selected by the district, consists of individuals not personally involved in the design of the project. The team leader should have attended the NHI course on Value Engineering or have equivalent experience in the preparation of VE studies. When making up the team, take into account the following:

- Draw team members from either the district or central office;
- Consider individuals from specialty areas depending on the project scope;
- Assign personnel from construction, maintenance, and studies and plans (as applicable);
- Include representatives from environment, operations, and land acquisition as necessary;
- Include individuals from the public and other agencies when in the public interest;
- Participation by FHWA members is encouraged where feasible;
- Participation by the central office is encouraged; and
- Invitation of IDOT personnel from nearby districts should be considered.

Qualified consultants may be retained to conduct VE studies provided the consultant has not worked on the subject project or the consultant maintains an independent VE study team.

(3) Process. To best accomplish the goals of Value Engineering, the districts have considerable latitude in determining the type, size, and complexity of a VE study. Value engineering studies should follow widely recognized problem solving principles.

(4) Final Report. Each Study concludes with a formal VE report, which outlines the decisions and recommendations and is presented to the Deputy Director/Regional Engineer or his/her representative. Each district establishes a procedure for prompt review and implementation of the approved recommendations. When any recommendation is a major change to an approved Design Report or is a design exception to policy, the recommended change is coordinated through the appropriate central bureau.

(5) Monitoring. Each district appoints a VE coordinator who is knowledgeable in VE studies and trained in VE procedures. The VE coordinator's responsibilities include monitoring each VE study from initiation through the final report, reviewing the report, and assisting in the implementation of the findings. As there may be local projects meeting this threshold, the district VE coordinator will be responsible for coordinating both state and local roads administered projects. During the month of October, each year, the district VE coordinator sends the Bureau of Design and Environment's VE coordinator a list, which itemizes the total number of VE studies conducted over the past year and the estimated cost savings for each study. BDE will summarize the information and forward it to the FHWA. The central office BDE VE coordinator will compile an annual list of approved recommendations from all VE studies completed within that year. This report shall be compiled and highlights presented at the fall project development meeting.

Constructability Reviews

Constructability reviews are a useful tool for complex or unusual projects and are encouraged as a cost or time saving measure. These reviews may include the use of IDOT personnel, unassociated with the project, or consultant/contractor teams that would not be bidding on the project. These reviews would not typically be making complex design change recommendations as would be expected in a full VE study. The constructability review would focus upon staging issues, work staging areas, field expedient procedures or methods, and similar activities focused upon accelerating or enhancing the proposed design.

Interim Engineer of Design and Environment



Engineer of Local Roads and Streets





Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2007-05
SUBJECT: HIGHWAY BRIDGE PROGRAM (HBP) APPROACH LIMITS
ISSUED DATE: October 1, 2007
EFFECTIVE DATE: October 1, 2007

This memorandum modifies Sections 4-1, Section 32-2 and Section 35-3 to the Bureau of Local Roads and Streets Manual.

The Illinois Department of Transportation formed a task force comprised of staff from the Federal Highway Administration, Department of Transportation and local government highway officials to review and specify the eligible approach and touchdown limits for federally-funded projects; to clarify requirements for use of a design speed greater than the minimum design speed in appropriate situations; and to increase funding opportunities for bridge approaches, thereby reducing the effects of immediate functional obsolescence that could result from constructing "perched" bridges.

Extended eligible approach limits allow local governments with limited funds to fully construct bridge projects in a safe and functionally adequate manner. The design engineer may decide to use a higher design speed for given bridges in order to provide an operating speed commensurate with the use of the highway. The design speed shall be applied consistently throughout the project.

Please contact Darrell Lewis at (217)782-3827 or Jim Klein at (217)782-5928 with any questions.

A handwritten signature in cursive script that reads "Charles J. Dingersoll".

Engineer of Local Roads and Streets

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2008-01
SUBJECT: FINAL RULE ON MAINTAINING SIGN
RETROREFLECTIVITY
ISSUED DATE: February 28, 2008
EFFECTIVE DATE: January 22, 2008

This memorandum and PM2008-02 supersede Chapter 39 Section 2 of the BLRS Manual dated August 2007.

Revision 2 of the 2003 Manual on Uniform Traffic Control Devices (MUTCD) was published in the Federal Register on December 21, 2007, and became effective on January 22, 2008. The final rule provides additional requirements, guidance, and clarification in maintaining traffic sign retroreflectivity that is already required by the MUTCD. The minimum retroreflectivity levels and maintenance methods consider changes in the composition of the vehicle population, vehicle headlamp design, and the demographics of drivers. The FHWA expects that the levels and maintenance methods will help to promote safety and mobility on the nation's streets and highways

The final rule establishes the following compliance periods from the effective date:

- 4 years for implementation and continued use of an assessment or management method that is designed to maintain traffic sign retroreflectivity at or above the established minimum levels;
- 7 years for replacement of regulatory, warning, and ground-mounted guide (except street name) signs that are identified using the assessment or management method as failing to meet the established minimum levels; and
- 10 years for replacement of street name signs and overhead guide signs that are identified using the assessment or management method as failing to meet the established minimum levels.

Resource guides and other information are available from the Federal Highway Administration's (FHWA) website at www.fhwa.dot.gov/retro.

The Bureau of Local Roads & Streets' Illinois Technology Transfer (ILT2) Center in partnership with FHWA IL Division is holding several training courses to assist local highway agencies comply with the final rule. Please go to www.dot.il.gov/blr/training.asp for a complete list of training courses.

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The ILT2 Center has also partnered with the Utah Local Technical Assistance Program (UT LTAP) to provide Geographic Information System (GIS) based sign inventory. This software will be made available to local highway agencies over the upcoming months and training will be provided. However, agencies may elect to maintain a sign inventory and inspection records using a field book, other paper documentation, in-house developed software, or purchased software.

If you have any questions, please contact Kevin Burke of this bureau at kevin.burkeiii@illinois.gov.

A handwritten signature in black ink that reads "Charles J. Dingersoll". The signature is written in a cursive, flowing style.

Engineer of Local Roads and Streets

KB/kb

Attachments



RETROREFLECTIVITY REQUIREMENTS

Traffic signs provide important information to drivers at all times, both day and night. To be effective, their visibility must be maintained. The 2003 *Manual on Uniform Traffic Control Devices* (MUTCD) addresses sign visibility in several places, including Sections 1A.03, 1A.04, 1A.05, 2A.06, 2A.08, and 2A.22. These sections address factors such as uniformity, design, placement, operation, and maintenance. Previously, the MUTCD did not specify minimum retroreflectivity levels.

The second revision of the 2003 MUTCD introduces new language establishing minimum retroreflectivity levels that must be maintained for traffic signs.

Agencies have until January 2012, to establish and implement a sign assessment or management method to maintain minimum levels of sign retroreflectivity.

The compliance date for regulatory, warning, and ground-mounted guide signs is January 2015. For overhead guide signs and street name signs, the compliance date is January 2018. The new MUTCD language is shown on page 2 and 3 of this document.

The new standard in Section 2A.09 requires that agencies maintain traffic signs to a minimum level of retroreflectivity outlined in Table 2A-3 of the MUTCD. The Federal Highway Administration (FHWA) believes that this proposed change will promote safety while providing sufficient flexibility for agencies to choose a maintenance method that best matches their specific conditions.

Including Table 2A-3 in the MUTCD does not imply that an agency must measure the retroreflectivity of every sign. Rather, the new MUTCD language describes five methods that agencies can use to maintain traffic sign retroreflectivity at or above the minimum levels. Agencies can choose from these methods or combine them. Agencies are allowed to develop other appropriate methods based on engineering studies. However, agencies should adopt a consistent method that produces results that correspond to the values in Table 2A-3.

The new MUTCD language recognizes that there may be some

individual signs that do not meet the minimum retroreflectivity levels at a particular point in time. As long as the agency with jurisdiction is maintaining signs in accordance with Section 2A.09 of the MUTCD, the agency will be considered to be in compliance. This document describes methods that can be used to maintain sign retroreflectivity at or above the MUTCD's minimum maintained retroreflectivity levels.

RETROREFLECTIVITY MAINTENANCE

The MUTCD describes two basic types of methods that agencies can use to maintain sign retroreflectivity at or above the MUTCD minimum maintained retroreflectivity levels — assessment methods and management methods. The FHWA has identified and listed assessment and management methods for maintaining sign retroreflectivity in accordance with Section 2A.09. These methods are described on page four. A full report on these methods can be found at www.fhwa.dot.gov/retro.

New MUTCD Minimum Retroreflectivity Compliance Periods

- Four years for implementation and continued use of an assessment or management method that is designed to maintain traffic sign retroreflectivity at or above the established minimum levels;
- Seven years for replacement of regulatory, warning, and ground-mounted guide (except street name) signs that are identified using the assessment or management methods as failing to meet the established minimum levels; and
- Ten years for replacement of street name signs and overhead guide signs that are identified using the assessment or management method as failing to meet the established minimum levels.

New MUTCD Section 2A.09 Maintaining Minimum Retroreflectivity

Support:

Retroreflectivity is one of several factors associated with maintaining nighttime sign visibility (see Section 2A.22).

Standard:

Public agencies or officials having jurisdiction shall use an assessment or management method that is designed to maintain sign retroreflectivity at or above the minimum levels in Table 2A-3.

Support:

Compliance with the above Standard is achieved by having a method in place and using the method to maintain the minimum levels established in Table 2A-3. Provided that an assessment or management method is being used, an agency or official having jurisdiction would be in compliance with the above Standard even if there are some individual signs that do not meet the minimum retroreflectivity levels at a particular point in time.

Guidance:

Except for those signs specifically identified in the Option portion of this Section, one or more of the following assessment or management methods should be used to maintain sign retroreflectivity:

- Visual Nighttime Inspection** – The retroreflectivity of an existing sign is assessed by a trained sign inspector conducting a visual inspection from a moving vehicle during nighttime conditions. Signs that are visually identified by the inspector to have retroreflectivity below the minimum levels should be replaced.
- Measured Sign Retroreflectivity** – Retroreflectivity is measured using a retroreflectometer. Signs with retroreflectivity below the minimum levels should be replaced.
- Expected Sign Life** – When signs are installed, the installation date is labeled or recorded so that the age of a sign is known. The age of the sign is compared to the expected sign life. The expected sign life is based on the experience of sign retroreflectivity degradation in a geographic area compared to the minimum levels. Signs older than the expected life should be replaced.

- Blanket Replacement** – All signs in an area/corridor, or of a given type, should be replaced at specified intervals. This eliminates the need to assess retroreflectivity or track the life of individual signs. The replacement interval is based on the expected sign life, compared to the minimum levels, for the shortest-life material used on the affected signs.
- Control Signs** – Replacement of signs in the field is based on the performance of a sample of control signs. The control signs might be a small sample located in a maintenance yard or a sample of signs in the field. The control signs are monitored to determine the end of retroreflective life for the associated signs. All field signs represented by the control sample should be replaced before the retroreflectivity levels of the control sample reach the minimum levels.
- Other Methods** – Other methods developed based on engineering studies can be used.

Support:

Additional information about these methods is contained in the 2007 Edition of FHWA's "Maintaining Traffic Sign Retroreflectivity" (see Section 1A.11).

Option:

Highway agencies may exclude the following signs from the retroreflectivity maintenance guidelines described in this Section:

- Parking, Standing, and Stopping signs (R7 and R8 series)
- Walking/Hitchhiking/Crossing signs (R9 series, R10-1 through R10-4b)
- Adopt-A-Highway signs
- All signs with blue or brown backgrounds
- Bikeway signs that are intended for exclusive use by bicyclists or pedestrians

New MUTCD Table 2A-3. Minimum Maintained Retroreflectivity Levels ①

SIGN COLOR	SHEETING TYPE (ASTM D4956-04)				ADDITIONAL CRITERIA
	Beaded Sheeting			Prismatic Sheeting	
	I	II	III	III, IV, VI, VII, VIII, IX, X	
White on Green	W*; G ≥ 7	W*; G ≥ 15	W*; G ≥ 25	W ≥ 250; G ≥ 25	Overhead
	W*; G ≥ 7	W ≥ 120; G ≥ 15			Ground-mounted
Black on Yellow or Black on Orange	Y*; O*	Y ≥ 50; O ≥ 50			②
	Y*; O*	Y ≥ 75; O ≥ 75			③
White on Red	W ≥ 35; R ≥ 7				④
Black on White	W ≥ 50				—

- ① The minimum maintained retroreflectivity levels shown in this table are in units of cd/lx/m² measured at an observation angle of 0.2° and an entrance angle of -4.0°.
- ② For text and fine symbol signs measuring at least 1200 mm (48 in) and for all sizes of bold symbol signs
- ③ For text and fine symbol signs measuring less than 1200 mm (48 in)
- ④ Minimum Sign Contrast Ratio ≥ 3:1 (white retroreflectivity ÷ red retroreflectivity)
- * This sheeting type should not be used for this color for this application.

BOLD SYMBOL SIGNS

- W1-1, -2 – Turn and Curve
- W1-3, -4 – Reverse Turn and Curve
- W1-5 – Winding Road
- W1-6, -7 – Large Arrow
- W1-8 – Chevron
- W1-10 – Intersection in Curve
- W1-15 – 270 Degree Loop
- W2-1 – Cross Road
- W2-2, -3 – Side Road
- W2-4, -5 – T and Y Intersection
- W2-6 – Circular Intersection
- W3-1 – Stop Ahead
- W3-2 – Yield Ahead
- W3-3 – Signal Ahead
- W4-1 – Merge
- W4-2 – Lane Ends
- W4-3 – Added Lane
- W4-6 – Entering Roadway Added Lane
- W6-1, -2 – Divided Highway Begins and Ends
- W6-3 – Two-Way Traffic
- W10-1, -2, -3, -4, -11, -12 – Highway-Railroad Advance Warning
- W11-2 – Pedestrian Crossing
- W11-3 – Deer Crossing
- W11-4 – Cattle Crossing
- W11-5 – Farm Equipment
- W11-6 – Snowmobile Crossing
- W11-7 – Equestrian Crossing
- W11-8 – Fire Station
- W11-10 – Truck Crossing
- W12-1 – Double Arrow
- W16-5p, -6p, -7p – Pointing Arrow Plaques
- W20-7a – Flagger
- W21-1a – Worker

FINE SYMBOL SIGNS – Symbol Signs Not Listed As Bold Symbol Signs

SPECIAL CASES

- W3-1 – Stop Ahead: Red retroreflectivity ≥ 7
- W3-2 – Yield Ahead: Red retroreflectivity ≥ 7; White retroreflectivity ≥ 35
- W3-3 – Signal Ahead: Red retroreflectivity ≥ 7; Green retroreflectivity ≥ 7
- W3-5 – Speed Reduction: White retroreflectivity ≥ 50
- For non-diamond shaped signs such as W14-3 (No Passing Zone), W4-4p (Cross Traffic Does Not Stop), or W13-1, -2, -3, -5 (Speed Advisory Plaques), use largest sign dimension to determine proper minimum retroreflectivity level.

ASSESSMENT METHODS

Assessment methods require evaluation of individual signs within an agency's jurisdiction. There are two basic assessment methods — visual assessment and measured sign retroreflectivity.

1. VISUAL ASSESSMENT

Nighttime Inspection

In the visual nighttime inspection method, on-the-fly assessments of retroreflectivity are made by an inspector during nighttime conditions. The following recommendations provide general guidance for the inspections:

- Develop guidelines and procedures for inspectors to use in conducting the nighttime inspections and train inspectors in the use of these procedures.
- Conduct inspections at normal speed from the travel lane(s).
- Conduct inspections using low-beam headlights while minimizing interior vehicle lighting.
- Evaluate signs at typical viewing distances so that adequate time is available for an appropriate driving response.

One or more of the following procedures should be used to support visual inspections.

Calibration Signs Procedure

In this procedure, an inspector views a “calibration sign” prior to conducting the nighttime inspection described above. Calibration signs have known retroreflectivity levels at or above minimum levels. These signs are set up where the inspector can view the calibration signs in a manner similar to nighttime field inspections. The inspector uses the visual appearance of the calibration sign to establish the evaluation threshold for that night's inspection activities. The following factors provide additional information on the use of this procedure:

- Calibration signs are needed for each color of sign in Table 2A-3.
- Calibration signs are viewed at typical viewing distances using the inspection vehicle.
- Calibration signs need to be properly stored between inspections so that their retroreflectivity does not deteriorate over time.
- Calibration sign retroreflectivity should be verified periodically.

Comparison Panels Procedure

Comparison panels are used to assess signs that have marginal retroreflectivity. The comparison panels are fabricated at retroreflectivity levels at or above the minimum levels. When the visual inspection identifies the retroreflectivity of a sign as marginal, a comparison panel is attached to the sign and the sign/panel combination is viewed and compared by the inspector.

Consistent Parameters Procedure

Nighttime inspections are conducted under similar factors that were used in the research to develop the minimum retroreflectivity levels. These factors include:

- Using a sport utility vehicle or pick-up truck to conduct the inspection.
- Using a model year 2000 or newer vehicle for the inspection.
- Using an inspector who is at least 60 years old.

2. MEASURED SIGN RETROREFLECTIVITY

In this method the retroreflectivity of a sign is measured and directly compared to the minimum level appropriate for that sign. ASTM E1709, Standard Test Method for Measurement of Retroreflective Signs Using a Portable Retroreflectometer, provides a standard method for measuring sign retroreflectivity.

An agency can choose to use either an assessment method or a management method, or a combination of the two. Agencies may develop other methods as long as they are documented in an engineering study and correspond to the values in Table 2A.3.

MANAGEMENT METHODS

Management methods provide an agency with the ability to maintain sign retroreflectivity without having to assess individual signs. There are three basic management methods — sign replacement based on expected sign life, blanket replacement of large numbers of signs at appropriate intervals, and use of control signs.

1. EXPECTED SIGN LIFE

In this method, individual signs are replaced before they reach the end of their expected service life, which is the time anticipated for the retroreflective material to degrade to the appropriate minimum level. Expected service life can be based on sign sheeting warranties, weathering deck results, measurements of field signs, or other criteria.

This method requires a system for tracking sign age. A common approach for identifying the age of individual signs uses a label on the sign to mark the year of fabrication or installation. Sign management systems can also be used to track the age of individual signs.

2. BLANKET REPLACEMENT

With this method, an agency replaces all signs in an area, or of a given type, at specified time intervals based on the relevant expected sign life. This method typically requires that all of the designated signs within a replacement area, or of the particular sign type, be replaced even if a sign was recently installed.

3. CONTROL SIGNS

In this method, a control sample of signs is used to represent all of an agency's signs. The retroreflectivity of the control signs is monitored and sign replacement is based on the performance of the control signs.

- Agencies should develop a sampling plan to determine the appropriate number and type of control signs needed to represent the agency's signs.
- Control signs may be actual signs in the field or signs in a maintenance yard (for convenience).
- The retroreflectivity of the control signs should be monitored using an assessment method.



MUTCD Revision 2

Introduction

Add the following new entry in the compliance date list that begins on Page I-3:

Section 2A.09 Maintaining Minimum Retroreflectivity—new section—from the effective date of the Final Rule for Revision 2 of the 2003 MUTCD:

- 4 years for implementation and continued use of an assessment or management method that is designed to maintain traffic sign retroreflectivity at or above the established minimum levels;
- 7 years for replacement of regulatory, warning, and ground-mounted guide (except street name) signs that are identified using the assessment or management method as failing to meet the established minimum levels; and
- 10 years for replacement of street name signs and overhead guide signs that are identified using the assessment or management method as failing to meet the established minimum levels.

Section 1A.11 Relation to Other Publications

Add the following new paragraph just prior to the paragraph that begins with "Other publications that are useful sources...":

The publication entitled "Maintaining Traffic Sign Retroreflectivity" (2007 Edition) is available at www.fhwa.dot.gov/retro, or write to the FHWA, 1200 New Jersey Avenue, SE, HSA-1, Washington, DC 20590.

Section 2A.09 Maintaining Minimum Retroreflectivity

Replace the previous title and parenthetical note that reserved this section for future rulemaking with the title shown above and the text shown below:

Support:

Retroreflectivity is one of several factors associated with maintaining nighttime sign visibility (see Section 2A.22).

Standard:

Public agencies or officials having jurisdiction shall use an assessment or management method that is designed to maintain sign retroreflectivity at or above the minimum levels in Table 2A-3.

Support:

Compliance with the above Standard is achieved by having a method in place and using the method to maintain the minimum levels established in Table 2A-3. Provided that an assessment or management method is being used, an agency or official having jurisdiction would be in compliance with the above Standard even if there are some individual signs that do not meet the minimum retroreflectivity levels at a particular point in time.

Guidance:

Except for those signs specifically identified in the Option in this Section, one or more of the following assessment or management methods should be used to maintain sign retroreflectivity:

- A. Visual Nighttime Inspection – The retroreflectivity of an existing sign is assessed by a trained sign inspector conducting a visual inspection from a moving vehicle during nighttime conditions. Signs that are visually identified by the inspector to have retroreflectivity below the minimum levels should be replaced.
- B. Measured Sign Retroreflectivity – Sign retroreflectivity is measured using a retroreflectometer. Signs with retroreflectivity below the minimum levels should be replaced.
- C. Expected Sign Life – When signs are installed, the installation date is labeled or recorded so that the age of a sign is known. The age of the sign is compared to the expected sign life. The expected sign life is based on the experience of sign retroreflectivity degradation in a geographic area compared to the minimum levels. Signs older than the expected life should be replaced.
- D. Blanket Replacement – All signs in an area/corridor, or of a given type, should be replaced at specified intervals. This eliminates the need to assess retroreflectivity or track the life of individual signs. The replacement interval is based on the expected sign life, compared to the minimum levels, for the shortest-life material used on the affected signs.
- E. Control Signs – Replacement of signs in the field is based on the performance of a sample of control signs. The control signs might be a small sample located in a maintenance yard or a sample of signs in the field. The control signs are monitored to determine the end of retroreflective life for the associated signs. All field signs represented by the control sample should be replaced before the retroreflectivity levels of the control sample reach the minimum levels.
- F. Other Methods – Other methods developed based on engineering studies can be used.

Support:

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Additional information about these methods is contained in the 2007 Edition of FHWA's "Maintaining Traffic Sign Retroreflectivity" (see Section 1A.11).

Option:

Highway agencies may exclude the following signs from the retroreflectivity maintenance guidelines described in this Section:

- A. Parking, Standing, and Stopping signs (R7 and R8 series)
- B. Walking/Hitchhiking/Crossing signs (R9 series, R10-1 through R10-4b)
- C. Adopt-A-Highway signs
- D. All signs with blue or brown backgrounds
- E. Bikeway signs that are intended for exclusive use by bicyclists or pedestrians

Table 2A-3 Minimum Maintained Retroreflectivity Levels

Add the following new table:

Table 2A-3. Minimum Maintained Retroreflectivity Levels^①

Sign Color	Sheeting Type (ASTM D4956-04)				Additional Criteria
	Beaded Sheeting			Prismatic Sheeting	
	I	II	III	III, IV, VI, VII, VIII, IX, X	
White on Green	W*; G ≥ 7	W*; G ≥ 15	W*; G ≥ 25	W ≥ 250; G ≥ 25	Overhead
	W*; G ≥ 7	W ≥ 120; G ≥ 15			Ground-mounted
Black on Yellow or Black on Orange	Y*; O*	Y ≥ 50; O ≥ 50			②
	Y*; O*	Y ≥ 75; O ≥ 75			③
White on Red	W ≥ 35; R ≥ 7				④
Black on White	W ≥ 50				—
<p>① The minimum maintained retroreflectivity levels shown in this table are in units of cd/lx/m² measured at an observation angle of 0.2° and an entrance angle of -4.0°.</p> <p>② For text and fine symbol signs measuring at least 1200 mm (48 in) and for all sizes of bold symbol signs</p> <p>③ For text and fine symbol signs measuring less than 1200 mm (48 in)</p> <p>④ Minimum Sign Contrast Ratio ≥ 3:1 (white retroreflectivity ÷ red retroreflectivity)</p> <p>* This sheeting type should not be used for this color for this application.</p>					
Bold Symbol Signs					
<ul style="list-style-type: none"> • W1-1, -2 – Turn and Curve • W1-3, -4 – Reverse Turn and Curve • W1-5 – Winding Road • W1-6, -7 – Large Arrow • W1-8 – Chevron • W1-10 – Intersection in Curve • W1-11 – Hairpin Curve • W1-15 – 270 Degree Loop • W2-1 – Cross Road • W2-2, -3 – Side Road • W2-4, -5 – T and Y Intersection • W2-6 – Circular Intersection • W3-1 – Stop Ahead • W3-2 – Yield Ahead • W3-3 – Signal Ahead • W4-1 – Merge • W4-2 – Lane Ends • W4-3 – Added Lane • W4-5 – Entering Roadway Merge • W4-6 – Entering Roadway Added Lane • W6-1, -2 – Divided Highway Begins and Ends • W6-3 – Two-Way Traffic • W10-1, -2, -3, -4, -11, -12 – Highway-Railroad Advance Warning • W11-2 – Pedestrian Crossing • W11-3 – Deer Crossing • W11-4 – Cattle Crossing • W11-5 – Farm Equipment • W11-6 – Snowmobile Crossing • W11-7 – Equestrian Crossing • W11-8 – Fire Station • W11-10 – Truck Crossing • W12-1 – Double Arrow • W16-5p, -6p, -7p – Pointing Arrow Plaques • W20-7a – Flagger • W21-1a – Worker 					
Fine Symbol Signs – Symbol signs not listed as Bold Symbol Signs.					
Special Cases					

- W3-1 – Stop Ahead: Red retroreflectivity ≥ 7
- W3-2 – Yield Ahead: Red retroreflectivity ≥ 7 ; White retroreflectivity ≥ 35
- W3-3 – Signal Ahead: Red retroreflectivity ≥ 7 ; Green retroreflectivity ≥ 7
- W3-5 – Speed Reduction: White retroreflectivity ≥ 50
- For non-diamond shaped signs such W14-3 (No Passing Zone), W4-4p (Cross Traffic Does Not Stop), or W13-1, -2, -3, -5 (Speed Advisory Plaques), use largest sign dimension to determine proper minimum retroreflectivity level.

Section 2A.22 Maintenance

Replace the first paragraph with the text shown below:

Maintenance activities should consider proper position, cleanliness, legibility, and daytime and nighttime visibility (see Section 2A.09). Damaged or deteriorated signs should be replaced.

§ 563e.26 Small savings association performance standards.

(a) *Performance criteria*—(1) *Small savings associations that are not intermediate small savings associations.*

* * *

* * * * *

Dated: December 5, 2007.

Julie L. Williams,

First Senior Deputy Comptroller and Chief Counsel.

By order of the Board of Governors of the Federal Reserve System.

Dated: December 14, 2007.

Jennifer J. Johnson,

Secretary of the Board.

By order of the Board of Directors.

Dated at Washington, DC, this 10th day of December, 2007.

Federal Deposit Insurance Corporation.

Robert E. Feldman,

Executive Secretary.

Dated: December 14, 2007.

By the Office of Thrift Supervision.

John M. Reich,

Director.

[FR Doc. E7-24719 Filed 12-20-07; 8:45 am]

BILLING CODE 4810-33-P; 6210-01-P; 6714-01-P; 6720-01-P

DEPARTMENT OF TRANSPORTATION**Federal Highway Administration****23 CFR Part 655****[FHWA Docket No. FHWA-2003-15149]****RIN 2125-AE98**

National Standards for Traffic Control Devices; the Manual on Uniform Traffic Control Devices for Streets and Highways; Maintaining Traffic Sign Retroreflectivity

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Final rule.

SUMMARY: The Manual on Uniform Traffic Control Devices (MUTCD) is incorporated by reference in 23 CFR part 655, subpart F, approved by the Federal Highway Administration, and recognized as the national standard for traffic control devices used on all public roads. The purpose of this final rule is to revise standards, guidance, options, and supporting information relating to maintaining minimum levels of retroreflectivity for traffic signs on all roads open to public travel.

EFFECTIVE DATE: This final rule is effective January 22, 2008. The incorporation by reference of the publication listed in this regulation is

approved by the Director of the Office of the Federal Register as of January 22, 2008.

FOR FURTHER INFORMATION CONTACT: Ms. Mary McDonough, Office of Safety Design, (202) 366-2175, or Mr. Raymond W. Cuprill, Office of the Chief Counsel, (202) 366-0791, U.S. Department of Transportation, Federal Highway Administration, 1200 New Jersey Ave., SE., Washington, DC 20590. Office hours are from 7:45 a.m. to 4:15 p.m., E.T., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:**Electronic Access**

This document, the notice of proposed amendments (NPA), the supplemental notice of proposed amendments (SNPA), and all comments received may be viewed online through the Federal eRulemaking portal at <http://www.regulations.gov>. Electronic submission and retrieval help and guidelines are available under the help section of the Web site.

An electronic copy of this document may also be downloaded from the Office of the **Federal Register's** home page at: <http://www.archives.gov> and the Government Printing Office's Web page at: <http://www.access.gpo.gov/nara>.

Background

On July 30, 2004, at 69 FR 45623, the FHWA published in the **Federal Register** a NPA proposing to amend the MUTCD to include methods to maintain traffic sign retroreflectivity. The NPA was issued in response to section 406 of the Department of Transportation and Related Agencies Appropriations Act, 1993 (Pub. L. 102-388; October 6, 1992). Section 406 of this Act directed the Secretary of Transportation to revise the MUTCD to include a standard for minimum levels of retroreflectivity that must be maintained for traffic signs and pavement markings, which apply to all roads open to public travel. The FHWA is currently conducting research to develop a standard for minimum levels of pavement marking retroreflectivity. The FHWA expects to initiate the pavement marking retroreflectivity rulemaking process once the research is concluded and the results are analyzed and considered.

The FHWA has led a significant effort toward establishing minimum-maintained levels of sign retroreflectivity since the statute was issued in 1993. Three national workshops were held in 1995 to educate State and local highway agency personnel and solicit their input regarding an initial set of minimum

maintained sign retroreflectivity levels. In 1998, FHWA published revisions to initial research recommendations on minimum sign retroreflectivity levels¹ noting that additional work would be needed because the National Highway Traffic Safety Administration was also revising the Federal Motor Vehicle Safety Standard Number 108 Lamps, Reflective Devices, and Associated Equipment (FMVSS 108). The additional research was completed in 2003, at which time FHWA began preparing the NPA for traffic sign retroreflectivity for the MUTCD, which was published in 2004.

After considering and analyzing the comments on the NPA for minimum levels of retroreflectivity for traffic signs, FHWA decided to publish a supplemental notice of proposed amendments (SNPA). In particular, the SNPA was developed to address comments to the docket that: (1) Expressed concern that the NPA proposal did not meet the intent of the 1993 statute, (2) suggested that the table of minimum retroreflectivity levels should be placed in the MUTCD, (3) requested clarification of the compliance period, and (4) expressed concern about the resource requirements for complying with the rulemaking. The proposed MUTCD text in the SNPA included a STANDARD statement that required that a method be used to manage and maintain retroreflectivity and required that sign retroreflectivity be maintained at minimum levels. It also included the table of minimum retroreflectivity levels in the MUTCD. These changes were significant enough to warrant an SNPA to allow FHWA to obtain and assess additional public comments. The SNPA was published on May 8, 2006, at 71 FR 26711. The comment period for the SNPA ended on November 6, 2006.

Based on the comments received and its own experience, FHWA is issuing this final rule establishing the minimum levels of retroreflectivity that must be maintained for traffic signs. The FHWA is designating the MUTCD, with these changes incorporated, as Revision 2 of the 2003 Edition of the MUTCD.

The text of this Revision No. 2 and the text of the 2003 Edition of the MUTCD with Revision No. 2 final text incorporated are available for inspection and copying as prescribed in 49 CFR

¹ A copy of "An Implementation Guide For Minimum Retroreflectivity Requirements for Traffic Signs," dated April 1, 1998, can be found on the Docket Management System (FHWA-2003-15149-229) for this ruling at the following Web address: <http://dms.dot.gov/search/document.cfm?documentid=467771&docketid=15149>.

part 7 at the FHWA Office of Transportation Operations. Furthermore, final Revision No. 2 changes are available on the official MUTCD Web site at <http://mutcd.fhwa.dot.gov>. The entire MUTCD text with final Revision No. 2 text incorporated is also available on this Web site.

Summary of Comments

The FHWA received 121 letters submitted to the docket in response to the SNPA containing approximately 550 individual comments. The FHWA received comments from the National Committee on Uniform Traffic Control Devices (NCUTCD), the American Association of State Highway and Transportation Officials (AASHTO) and 20 State Departments of Transportation (DOT) members of AASHTO, the National Association of County Engineers (NACE) and seven county association members of NACE, city and county governmental agencies, consulting firms, private industry, associations, other organizations, and individual private citizens. The FHWA has considered all these comments. Docket comments and summaries of FHWA's analyses and determinations are discussed below. General comments are discussed first, followed by discussion of major issues and adopted changes, and finally, discussion of other comments.

Discussion of General Comments

Many respondents agreed with the intent and the concepts proposed in both the NPA and the SNPA. In analyzing the comments to the SNPA, FHWA decided that additional clarification should be provided in the MUTCD text and in the explanations provided in the final rule in order to address the following five major issues:

- (1) Clarification of compliance period;
- (2) Resource burdens on public agencies;
- (3) Statutory requirements;
- (4) Table of minimum retroreflectivity levels in the MUTCD; and
- (5) Impacts of sign retroreflectivity on safety.

Discussion of Major Issues

This section provides a discussion of each of the five major issues raised by commenters in response to the SNPA, along with FHWA's analysis and resolution.

- (1) Clarification of the compliance period.

Several county associations and many county and local officials requested an extension from 2 to 4 years for the compliance period for the establishment

and implementation of a method to maintain sign retroreflectivity, in order to accommodate their programs within their 2-year budget cycles. There were also a few requests to extend the 7 and 10 year compliance periods for the signs themselves.

Considering the comments regarding budget cycles, particularly budget cycles for local agencies, FHWA has extended to 4 years the compliance period for establishing and implementing a sign assessment or management method to maintain minimum levels of sign retroreflectivity. This extended compliance period will allow transportation agencies to make allowances for budgets (including working with the States or regional organizations) to access funds and/or partnerships to achieve the minimum levels of sign retroreflectivity.

The 7 and 10 year compliance dates for minimum levels for sign retroreflectivity will remain 7 years for regulatory, warning, and ground-mounted guide signs and 10 years for street name and overhead guide signs, because these compliance target dates correspond to the normal expected service life of sign sheeting and will allow highway agencies to make the proper accommodations in their efforts to maintain minimum retroreflectivity levels. The 7 and 10 year compliance dates are counted from the effective date of this rule and are not in addition to the 4-year period for establishing the methods.

- (2) Resource burdens on public agencies.

While the Minnesota DOT (MNDOT) recognized that the proposed language would impose additional time and resource burdens on public agencies, it did not perceive this rule as an "unmanageable burden." Several sign manufacturers and some private citizens appreciated the FHWA's effort to point out that Federal funds are available for up to 100 percent funding of "replacement of signs in this program." In addition, the American Traffic Safety Services Association (ATSSA), the American Automobile Association (AAA), the American Association of Retired People (AARP), the American Highway Users Alliance (AHUA), and several private citizens agree that the benefits from this rulemaking will outweigh the costs that agencies may experience. However, AASHTO, NACE, and several State and local DOTs believe that the requirements, as proposed in the SNPA, are an unfunded mandate with serious financial implications to their agencies.

The FHWA conducted a study to determine if unfunded mandates, as

defined by the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4, 109 Stat. 48, March 22, 1995), would be imposed by including requirements in the MUTCD for minimum maintained traffic sign retroreflectivity levels.² Based on the analysis, this rulemaking effort does not impose an unfunded mandate. Additionally, because Federal-aid highway dollars are often provided to States to use for these types of sign replacements, this requirement does not rise to the level of an unfunded mandate.

One commenter reviewed the FHWA's report "Maintaining Traffic Sign Retroreflectivity: Impacts on State and Local Agencies (DRAFT)" (1994-15149-06), and suggested that perhaps there was a mathematical error in that report that would mean that the costs incurred by agencies when replacing signs would be above those that can be required from agencies without funding. The FHWA has updated the 1994 draft report with a 2007 version (see footnote # 2). The updated report now includes the costs of overhead and street name signs, which the 1994 version excluded. The updated report concludes that the national impact of including the minimum maintained traffic sign retroreflectivity levels in the MUTCD is approximately \$37.5 million over a 10-year implementation period, with a maximum annual impact of \$4.5 million in years 1 through 7. This is below the annual \$128.1 million unfunded mandate level.

The FHWA has also provided ample phase-in time for agencies to comply. Agencies are already required to have a highway safety program that includes provisions for the upgrading of substandard traffic control devices and installations to achieve conformity with the MUTCD, so this rulemaking does not create additional burdens.

While many counties believe that FHWA should consider a funding stream directly to local jurisdictions for rulemaking activities such as minimum retroreflectivity standards, such funding stream discussions are outside the scope of this rulemaking. Signing programs remain eligible for Federal-aid highway dollars.

- (3) Statutory requirements:

Several organizations representing highway users from a safety perspective agree that the language proposed in the SNPA satisfied the statutory requirements to establish a standard for the minimum levels of sign

² "Maintaining Traffic Sign Retroreflectivity: Impacts on State and Local Agencies," Publication No. FHWA-HRT-07-042, dated April 2007, is available at the following Web address: <http://www.tfhrc.gov/safety/pubs/07042/index.htm>.

retroreflectivity; however, AASHTO, and several States, commented that Congress did not explicitly indicate that the minimum values for maintaining sign retroreflectivity had to be included in the MUTCD as a Standard.

Alternatively, the Advocates for Highway and Auto Safety (AHAS) believe that the language proposed in the SNPA still did not fully satisfy the statutory requirements, which AHAS interprets as requiring the establishment of specific and mandatory minimum levels of retroreflectivity for signs and pavement markings in the MUTCD and an obligation on State and local authorities to maintain those specific minimum values of retroreflectivity. AHAS stated that the intent can only be met by including such requirements in a "standard" statement in the MUTCD, which is defined as one of the "required, mandatory, or specifically prohibitive practice regarding a traffic control device."

The FHWA includes the reference to minimum levels for sign retroreflectivity in a Standard statement because the statute requires the Secretary to revise the MUTCD to include a standard for minimum levels of retroreflectivity that must be maintained for traffic signs. Under the MUTCD's current organization, the best way to do this is by including it in a STANDARD statement, because Standards represent requirements.³ In addition, the

³In the context of this final rule, the definitions of STANDARD and GUIDANCE are identical to the definitions provided in the Introduction of the MUTCD (<http://mutcd.fhwa.dot.gov>). Specifically, a STANDARD is a statement of required, mandatory or specifically prohibitive practice regarding a traffic control device, while a GUIDANCE is a statement of recommended, but not mandatory, practice in typical situations, with deviations

congressional reference to a standard did not exclude the use of GUIDANCE, OPTION, and SUPPORT statements to help clarify the STANDARD statement of required minimum levels of retroreflectivity that must be maintained, similar to the other sections of the MUTCD.

The FHWA also received comments from the city of Plano, Texas, and the Illinois County Engineers expressing a concern and/or confusion that the language proposed in the SNPA "imbedded" a GUIDANCE statement within a STANDARD, because the STANDARD statement referenced the GUIDANCE statement for minimum retroreflectivity levels.

Based on this concern, and to clarify FHWA's intent, FHWA revises the STANDARD statement to explicitly reference Table 2A-3 Minimum Maintained Retroreflectivity Levels, which contains minimum-maintained retroreflectivity levels for various sign color combinations and types of sign sheeting.

The National Association of Counties (NACo) and NACE suggested adding "recommended" before "minimum level" in describing the retroreflectivity levels shown in Table 2A-3. The FHWA retains the wording "minimum level" in describing the levels shown in Table 2A-3, because the word "recommended" is not appropriate when referencing a Standard.

(4) Table of minimum retroreflectivity levels in the MUTCD.

The ATSSA, AAA, AARP, AHUA, Minnesota and Virginia DOTs, the city of Plano, Texas, sign manufacturers, and many private citizens were in favor of

allowed if engineering judgment or engineering study indicates the deviation to be appropriate.

including the table of minimum retroreflectivity levels in the MUTCD. However, many organizations, such as AASHTO, NACo, NACE, and numerous State DOTs, as well as county and local agencies were opposed to the inclusion of the table. Those who opposed including the table in the MUTCD expressed concern over potential litigation that could be brought against public agencies if an individual sign within their jurisdiction was to fall below the minimum maintained levels in the table. The NCUTCD also commented that before any table is inserted into the MUTCD, FHWA should provide substantial clarification regarding the process and frequency for updating or changing the table of retroreflectivity values.

The FHWA believes that including this table in the MUTCD is necessary to satisfy the statutory requirement that the MUTCD be amended to include minimum retroreflectivity levels. Therefore, the FHWA includes Table 2A-3, titled "Minimum Maintained Retroreflectivity Levels" in the MUTCD. The FHWA also believes inclusion of the table will provide clarity and convenience to the users of the MUTCD. In response to the request by the NCUTCD that FHWA clarify the process for updating or changing values in the table, we note that updates or changes to the table would be subject to a public rulemaking process before FHWA could adopt changes to the values of the table in the MUTCD. This process will include notice and opportunity for comment by the public.

Table 2A-3 will be included in the MUTCD as follows (note that the values in this table have not changed during the rulemaking process):

Table 2A-3. Minimum Maintained Retroreflectivity Levels^①

Sign Color	Sheeting Type (ASTM D4956-04)				Additional Criteria
	Beaded Sheeting		Prismatic Sheeting		
	I	II	III	III, IV, VI, VII, VIII, IX, X	
White on Green	W*; G ≥ 7	W*; G ≥ 15	W*; G ≥ 25	W ≥ 250; G ≥ 25	Overhead
	W*; G ≥ 7	W ≥ 120; G ≥ 15			Ground-mounted
Black on Yellow or Black on Orange	Y*; O*	Y ≥ 50; O ≥ 50			②
	Y*; O*	Y ≥ 75; O ≥ 75			③
White on Red	W ≥ 35; R ≥ 7				④
Black on White	W ≥ 50				—
<p>① The minimum maintained retroreflectivity levels shown in this table are in units of cd/lx/m² measured at an observation angle of 0.2° and an entrance angle of -4.0°.</p> <p>② For text and fine symbol signs measuring at least 1200 mm (48 in) and for all sizes of bold symbol signs</p> <p>③ For text and fine symbol signs measuring less than 1200 mm (48 in)</p> <p>④ Minimum Sign Contrast Ratio ≥ 3:1 (white retroreflectivity ÷ red retroreflectivity)</p> <p>* This sheeting type should not be used for this color for this application.</p>					
Bold Symbol Signs					
<ul style="list-style-type: none"> • W1-1, -2 – Turn and Curve • W1-3, -4 – Reverse Turn and Curve • W1-5 – Winding Road • W1-6, -7 – Large Arrow • W1-8 – Chevron • W1-10 – Intersection in Curve • W1-11 – Hairpin Curve • W1-15 – 270 Degree Loop • W2-1 – Cross Road • W2-2, -3 – Side Road • W2-4, -5 – T and Y Intersection • W2-6 – Circular Intersection • W3-1 – Stop Ahead • W3-2 – Yield Ahead • W3-3 – Signal Ahead • W4-1 – Merge • W4-2 – Lane Ends • W4-3 – Added Lane • W4-5 – Entering Roadway Merge • W4-6 – Entering Roadway Added Lane • W6-1, -2 – Divided Highway Begins and Ends • W6-3 – Two-Way Traffic • W10-1, -2, -3, -4, -11, -12 – Highway-Railroad Advance Warning • W11-2 – Pedestrian Crossing • W11-3 – Deer Crossing • W11-4 – Cattle Crossing • W11-5 – Farm Equipment • W11-6 – Snowmobile Crossing • W11-7 – Equestrian Crossing • W11-8 – Fire Station • W11-10 – Truck Crossing • W12-1 – Double Arrow • W16-5p, -6p, -7p – Pointing Arrow Plaques • W20-7a – Flagger • W21-1a – Worker 					
Fine Symbol Signs – Symbol signs not listed as Bold Symbol Signs.					
Special Cases					
<ul style="list-style-type: none"> • W3-1 – Stop Ahead: Red retroreflectivity ≥ 7 • W3-2 – Yield Ahead: Red retroreflectivity ≥ 7; White retroreflectivity ≥ 35 • W3-3 – Signal Ahead: Red retroreflectivity ≥ 7; Green retroreflectivity ≥ 7 • W3-5 – Speed Reduction: White retroreflectivity ≥ 50 • For non-diamond shaped signs such W14-3 (No Passing Zone), W4-4p (Cross Traffic Does Not Stop), or W13-1, -2, -3, -5 (Speed Advisory Plaques), use largest sign dimension to determine proper minimum retroreflectivity level. 					

The FHWA received comments from NACo, NACE and several local agencies that suggested adding a statement clarifying that all signs need not meet the minimum retroreflectivity values at every point in time.

Considering these comments in conjunction with FHWA's understanding that there will be cases where vandalism, weather, or damage due to a crash influences the visibility of a sign, the FHWA clarified the SUPPORT statement in Section 2A.09. The revised statement clarifies that an agency or an official having jurisdiction would be in compliance with the Standard even if there are some individual signs that do not meet the minimum retroreflectivity levels at a particular point in time, provided that an assessment or management method implemented in accordance with Section 2A.09 of the MUTCD is being used.

The FHWA also received comments from NACo, NACE and several local agencies stating specific concerns that the establishment of specific retroreflectivity values within Table 2A-3 will become "the de-facto standard" that will be used against highway agencies in tort claims and lawsuits.

The FHWA believes that the selection of a reasonable method for maintaining sign retroreflectivity and strict adherence to the same might serve to defend highway agencies in tort liability claims and litigation. Public agencies and officials that implement and follow a reasonable method in conformance with the national MUTCD would appear to be in a better position to successfully defend tort litigation involving claims of improper sign retroreflectivity than jurisdictions that lack any method. In addition, as a result of adding clarifying language to the Support statement indicating that once an assessment or management method is used by an agency or official having jurisdiction, agencies would be in compliance with the STANDARD even if some individual signs do not meet the minimum retroreflectivity levels at a point in time.

Including Table 2A-3 in the MUTCD does not imply that an agency needs to measure the retroreflectivity of every sign in its jurisdiction. Instead, agencies must implement methods designed to provide options on how to maintain the minimum retroreflectivity levels, using the criteria in Table 2A-3.

(5) Impacts of sign retroreflectivity on safety.

The ATSSA and several sign manufacturers believe there is a proven link between maintained sign retroreflectivity and safety, especially as

it relates to older drivers. In addition, several citizens believe that improved retroreflectivity will lead to safer roads. One citizen who worked for several years in the field of nighttime visibility stated that his research with actual drivers on the road showed conclusive results that greater levels of retroreflectivity increase a driver's ability to be warned well in advance of a traffic situation or pedestrian encounter. The North Carolina DOT (NCDOT) and the AHAS, however, recommend that further FHWA studies be done to demonstrate that retroreflective improvements translate into safety improvements.

The FHWA believes that improving sign retroreflectivity will be a benefit to all drivers, including older drivers. All drivers need legible signs in order to make important decisions at key locations, such as intersections and exit ramps on high speed facilities. This is particularly true for regulatory and warning signs. This is fundamental to safe driving, and the lack of uniform retroreflectivity standards has led to wide variations in maintenance levels of these critical signs. As discussed in the SNPA, there have been some investigations that demonstrate potential safety benefits of upgrading sign materials.⁴ More importantly, maintaining sign retroreflectivity is consistent with one of FHWA's primary goals, which is to improve safety on the Nation's streets and highways. Improvements in sign visibility will also support FHWA's efforts to be responsive to the needs of older drivers, which is important because the number of older drivers is expected to increase significantly in the next 30 years.

Discussion of Other Comments

In addition to the five major issues discussed in the previous section, FHWA also received comments that can be grouped into the following three topics:

- (6) Assessment methods;
- (7) Blue and brown signs; and
- (8) Minimum retroreflectivity levels.

This section contains a discussion of each of these topics.

- (6) Assessment methods:

The FHWA received comments from the AASHTO, NCUTCD, ATSSA, AHAS, AAA, AARP, AHUA, ARTBA, Maryland and Wisconsin DOTs, and several counties in Illinois regarding the

⁴Supplemental Notice of Proposed Amendments, page 26717. The SNPA was published on May 8, 2006, at 71 FR 26711. This notice can be found at: <http://www.gpoaccess.gov/fr/retrieve.html> and on the Docket Management System (FHWA-2003-15149-229) for this ruling at the following Internet Web site: <http://dms.dot.gov>.

assessment and management methods for maintaining sign retroreflectivity as proposed in the GUIDANCE statement of the SNPA. The AASHTO and several State DOTs did not support actual measurement of signs as one of the methods, but supported visual nighttime inspections, blanket replacement, control signs, and expected sign life methods.

The city of Plano, Texas and a private citizen suggested that the numerical values in Table 2A-3 should only apply to Method B: Measured Sign Retroreflectivity. Those commenters suggested that for all other methods where subjective judgment is used, such as visual nighttime inspection, the table should serve as guidance for local offices to reject and accept signs.

Finally, the NCUTCD, the Illinois Association of County Engineers, and the DeWitt County, Illinois Highway Department suggested adding additional language to the GUIDANCE statement to explicitly, rather than implicitly, state that other assessment methods based on engineering study can be used to assess sign retroreflectivity.

The FHWA believes that the final rule provides several assessment or management methods that agencies can choose from, based on the method that best fits the agencies' resources and needs. An agency can choose to use either assessment methods or management methods, or a combination; however, agencies should develop a method in such a way that it corresponds to the values in Table 2A-3. The methods have been developed to provide flexibility for agencies for addressing their local conditions. To address the comments received regarding the types of assessment methods that should be used, FHWA clarifies the GUIDANCE statement by adding a sixth method to the list of assessment or management methods titled "Other Methods," which explicitly states that other methods developed based on engineering studies can be used.⁵

- (7) Blue and brown signs:

In the SNPA, FHWA asked for comments on the need for retroreflectivity levels to be developed for signs with blue and brown

⁵ As defined in the MUTCD, an engineering study shall be performed by an engineer, or by an individual working under the supervision of an engineer, through the application of procedures and criteria established by the engineer. An engineering study shall be documented. In accordance with the text heading GUIDANCE in the MUTCD, deviations to a recommended practice are allowed if engineering study indicates the deviation to be appropriate.

backgrounds.⁶ The Maryland State Highway Administration suggested that recommended minimum retroreflectivity levels be established for blue-background signs and that those levels apply to certain signs such as Hospital, EMS, Ambulance Station, and Emergency Medical Care signs, whose nighttime readability can be important. The combined letter from a representative of AAA, AARP, and AHUA, and one comment letter from a sign manufacturer stated that blue and brown signs are intended for use both day and night, and that motorist safety, particularly for older drivers, would be enhanced by including minimum retroreflectivity levels for blue and brown signs. The commenters acknowledged that if blue and brown signs are being excluded because there is a lack of data on which to base a requirement, a "placeholder" could be included in the MUTCD until more data is available and the table of minimum levels can be updated.

The FHWA is currently studying blue and brown minimum sign retroreflectivity levels. Because the study has not been finalized and FHWA did not analyze the costs associated with the sign retroreflectivity of blue and brown signs in the economic impacts study, minimum retroreflectivity levels for blue and brown signs are not included in the MUTCD at this time. At the conclusion of FHWA's study on this topic, the results may indicate a need to pursue such a requirement. If so, updates or changes to Table 2A-3 would be subject to the public rulemaking process before FHWA could add blue and brown minimum retroreflectivity levels.

(8) Minimum retroreflectivity levels:

Several of the commenters, including AASHTO, NACE, the Illinois and Indiana Associations of County Engineers, DeWitt County, Illinois Highway Department, the North Carolina DOT and the Maryland State Highway Administration suggested that the data within the table were not precise, and reflected data that were developed based on assumptions and varying characteristics.

The FHWA acknowledges that the data are based on some assumptions and varying characteristics; however, they are based on the latest science and empirical-based research emphasizing

⁶ Blue signs are generally described as informational signs, and include evacuation route and road user signs. Examples include hospital, specific service signs (food, gas, lodging, camping, and attraction) and tourist-oriented directional signs. Brown signs, which are also informational signs, are primarily recreational and cultural interest area signs.

older drivers.⁷ The supporting research reflects the best information at this time. One of the key aspects to the research supporting the minimum retroreflectivity levels is that it was based on field studies under conditions on a closed course facility that represented real roadway scenarios to the maximum extent possible without jeopardizing safety. Research subjects were recruited and participated in the research, which ultimately developed cumulative distribution profiles for luminance levels needed to accommodate the legibility of older drivers. These luminance levels were then used in conjunction with computer modeling to determine the retroreflectivity needed under a variety of roadway conditions. The computer modeling allows analyses of an infinite set of roadway scenarios, but is based on the luminance levels derived through the human factors research supported by FHWA.

After the research was completed, FHWA held national workshops, which included nighttime inspections of signs at various retroreflectivity levels. The participants of the workshops evaluated the signs at night using a visual inspection technique. The results of this effort helped confirm that the minimum retroreflectivity levels in Table 2A-3 are appropriate.

The NCDOT suggested that a tiered system be applied to the retroreflectivity levels, similar to the tiered system used for letter heights and sign sizes based on roadway classification.⁸ The NCDOT commented that retroreflective sign applications for lower speed, lower volume roads should be coordinated with lower retroreflectivity values.

The FHWA believes that the values shown in the table are applicable to all classifications of roads, including lower volume and slower speed roadways. The retroreflectivity levels are based on the legibility design threshold level as specified in Section 2A.14 of the MUTCD (40 feet of legibility per inch of letter height). Therefore, the size of the sign, and the message on the sign, play a key role in the retroreflectivity levels. Smaller signs have smaller messages, which mean drivers need to be closer to

⁷ Carlson, P.J. and H.G. Hawkins. Minimum Retroreflectivity Levels for Overhead Guide Signs and Street-Name Signs. FHWA-RD-03-082. U.S. Department of Transportation, Federal Highway Administration, Washington, DC. This document is available at the following Web address: <http://www.fhrc.gov/safety/pubs/03082/index.htm>.

⁸ Part 2 of the MUTCD includes a table titled, "Table 2B-1 Regulatory Sign Sizes" that includes sign sizes for conventional roads, expressways, freeways, and oversized as well as minimum sign sizes. Generally, sign sizes for conventional roads are smaller than those for expressways or freeways.

the signs to read them. As the distance between the sign and the vehicle decreases, the efficiency of retroreflectivity materials generally decreases, meaning that more retroreflectivity is needed. This often outweighs the increased illumination available from the vehicle headlamps. The minimum retroreflectivity levels were designed to be easy to implement, without added complexities such as a tiered system based on letter heights and sign sizes. However, with the proper support (i.e., an engineering study), and using the values in Table 2A-3 as minimum maintained retroreflectivity levels, there is flexibility in this final rule and the associated MUTCD language that allows for an agency to develop a more complex set of minimum retroreflectivity levels, if it chooses to do so. Such levels cannot be below the minimums in Table 2A-3.

As mentioned in item 3 under Major Issues, a few commenters such as NACE, the NCUTCD and others, believed that Table 2A-3 and its title should be referred to as "Recommended." The FHWA believes that it is inappropriate to include "Recommended" in the title of a table that is referenced in a STANDARD statement of the MUTCD. In addition, the word "Recommended" implies guidance, rather than a standard, and would therefore be confusing.

ATSSA, the AHAS and the MNDOT agreed with eliminating Type I material for ground-mounted signs, and they also agreed with eliminating Types I, II, and III for overhead guide sign legends. These commenters felt that prohibiting the use of these less efficient retroreflective materials would substantially improve the nighttime driving environments, especially for older drivers with a variety of visual impairments. ATSSA also supported including Type X materials so that all currently defined American Society of Testing Materials (ASTM) Type designations that are used for traffic signs will be included in the MUTCD.

The NCDOT disagrees with any retroreflective requirement for illuminated signs. Their reasoning is that the assessment and management methods used to maintain retroreflectivity do not address signs with illumination and that Section 2A.08 does not require retroreflectivity for illuminated signs.

Illuminated signs do need to meet the minimum retroreflectivity requirements because there are times that the signs may not be illuminated due to power failure. Previous research has shown that overhead signs can be effective

without lighting, as long as the appropriate retroreflective sheeting materials are used to fabricate the sign.⁹ With this knowledge, many agencies have elected to use more efficient retroreflective sheeting on overhead guide signs without sign lighting, citing adequate visibility and concerns about energy use and light pollution (although sign lighting may continue to be used in areas of complex surroundings and/or roadway geometries). The minimum retroreflectivity levels in Table 2A-3 in the MUTCD prohibit the use of less efficient reflective materials for overhead signs so that agencies do not use them. As a result, agencies are more likely to select appropriate materials to meet nighttime driving requirements.

One supplier of overhead sign lighting systems and 22 citizens suggested that lighting of overhead signs should be mandatory. This final rule does not change the existing MUTCD language recommending lighting for overhead signs. Mandating lighting for overhead signs is outside the scope of this rulemaking.

One sign manufacturer suggested that retroreflectivity levels measured at 0.5 degree observation angle be included. As discussed in item #12 of the SNPA, research has been completed that supports moving toward the 0.5-degree concept and the ASTM has started working toward a revision to its specifications to describe 0.5-degree measurements.¹⁰ The FHWA believes that it is not practical to implement minimum retroreflectivity levels based on an observation angle of 0.5 degrees until measuring devices become more readily available, and the ASTM completes its work developing a standard measurement specification. At that time there may be a need for an alternative table and a transition period established while the 0.2-degree measurement geometries and devices are phased out. If so, these changes will be introduced through public rulemaking procedures described earlier for MUTCD changes or additions.

⁹ Carlson, P.J. and H.G. Hawkins. Minimum Retroreflectivity Levels for Overhead Guide Signs and Street-Name Signs. FHWA-RD-03-082. U.S. Department of Transportation, Federal Highway Administration, Washington, DC. This document is available at the following Web address: <http://www.tfhrc.gov/safety/pubs/03082/index.htm>.

¹⁰ The ASTM E12 committee is working to develop a standard measurement specification for 0.5 degree instruments. The committee is using ASTM E1709 as a template (ASTM E1709 is the standard measurement specification for 0.2 degree instruments). More information is available at <http://www.astm.org>.

Conclusion

To address the comments to the docket, the FHWA adopts the following key changes to Section 2A.09 Maintaining Minimum Retroreflectivity in the MUTCD from what was proposed in the SNPA:

(A) In the STANDARD statement, a reference to Table 2A-3 was added to clarify that the levels contained in Table 2A-3 are the minimum levels that are to be used by public agencies or officials having jurisdiction when they develop an assessment or management method that is designed to maintain sign retroreflectivity.

(B) The 2nd SUPPORT statement was clarified to indicate that once an assessment or management method is used, an agency or official having jurisdiction would be in compliance with the STANDARD even if some individual signs do not meet the minimum retroreflectivity levels at a particular point in time.

(C) The GUIDANCE statement was modified by adding a sixth method to the list of assessment or management methods that should be used to maintain sign retroreflectivity titled "Other Methods," which explicitly states that other methods developed based on engineering studies can be used.

In addition, FHWA adopts a 4-year compliance date (instead of the proposed 2-year compliance date) for implementation and continued use of an assessment or management method that is designed to maintain traffic sign retroreflectivity at or above the established minimum levels.

The final rule meets statutory requirements, provides clarity where needed, and provides flexibility for compliance.

Rulemaking Analyses and Notices

Executive Order 12866 (Regulatory Planning and Review) and U.S. DOT Regulatory Policies and Procedures

The FHWA has determined that this action is not a significant regulatory action within the meaning of Executive Order 12866 or under the regulatory policies and procedures of the U.S. Department of Transportation. While the FHWA had preliminarily designated this rulemaking as significant during the NPRM and SNPRM stages, the FHWA has determined that this rulemaking does not meet the criteria for a "significant regulatory action" under Executive Order 12866. This rule will not adversely affect, in a material way, any sector of the economy. Additionally, this rulemaking will not interfere with any action taken or

planned by another agency and will not materially alter the budgetary impact of any entitlements, grants, user fees or loan programs.

It is anticipated that the economic impact of this rulemaking would cause minimal additional expenses to public agencies. In 2007, FHWA updated its analysis of the cost impacts to State and local agencies to reflect higher material costs due to inflation, an increase in the proportion of signs that would be replaced with higher-level sign sheeting material, and changes in the overall mileage of State and local roads.¹¹ The findings of the 2007 analysis show that the costs of the proposed action to State and local agencies would be less than \$128.1 million per year.¹² The 7-year implementation period for ground-mounted signs will allow State and local agencies to delay replacement of recently installed Type I signs until they have reached their commonly accepted 7-year service life. The 10-year compliance period for overhead signs would allow an extended period of time because of the longer service life typically used for those signs. The final rule does not affect the impacts assessments described above.

Currently, the MUTCD requires that traffic signs be illuminated or retroreflective to enhance nighttime visibility. In 1993, Congress mandated that the MUTCD contain standards for maintaining minimum traffic sign and pavement marking retroreflectivity.¹³ The final rule provides additional guidance, clarification, and flexibility in maintaining traffic sign retroreflectivity that is already required by the MUTCD. The minimum retroreflectivity levels and maintenance methods consider changes in the composition of the vehicle population, vehicle headlamp design, and the demographics of drivers. The FHWA expects that the levels and maintenance methods will help to promote safety and mobility on the Nation's streets and highways.

This rulemaking addresses comments received in response to the Office of Management and Budget's (OMB's) request for regulatory reform nominations from the public. The OMB is required to submit an annual report to Congress on the costs and benefits of Federal regulations. The 2002 report included recommendations for

¹¹ "Maintaining Traffic Sign Retroreflectivity: Impacts on State and Local Agencies," Publication No. FHWA-HRT-07-042, dated April 2007, is available at the following Web address: <http://www.tfhrc.gov/safety/pubs/07042/index.htm>.

¹² Ibid.

¹³ United States Department of Transportation and Related Agencies Act of 1993, Public Law 102-388, 106 Stat. 1520, Section 406.

regulatory reform that OMB requested from the public.¹⁴ One recommendation was that the FHWA should establish standards for minimum levels of brightness of traffic signs.¹⁵ The FHWA has identified this rulemaking as responsive to that recommendation.

Regulatory Flexibility Act

In compliance with the Regulatory Flexibility Act (Pub. L. 96–354, 5 U.S.C. 601–612), the FHWA has evaluated the effects of this final rule on small entities and has determined that this final rule will not have a significant economic impact on a substantial number of small entities.

This rule would apply to State Departments of Transportation in the execution of their highway programs, specifically with respect to the retroreflectivity of traffic signs. Additionally, sign replacement is often eligible for up to 100 percent Federal-aid funding—this applies to local jurisdictions and tribal governments, pursuant to 23 U.S.C. 120(c). The implementation of this final rule would not affect the economic viability or sustenance of small entities, as States are not included in the definition of a small entity that is set forth in 5 U.S.C. 601.

Unfunded Mandates Reform Act of 1995

This rule does not impose unfunded mandates as defined by the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4, 109 Stat. 48, March 22, 1995). The impacts analysis shows that State and local agencies would be likely to incur impacts of roughly \$37.5 million. Using a 7-year implementation period for regulatory, warning, and guide signs and a 10-year implementation period for street name and overhead guide signs, the annual impacts are estimated to be approximately \$4.5 million for years 1 through 7, and \$2.1 million for years 8 through 10. The estimates are based upon the added cost of more efficient performance sign materials. The labor, equipment, and mileage costs for sign replacement were excluded under the assumption that the proposed implementation period was long enough to allow replacement of non-compliant

signs under currently planned maintenance cycles. Therefore, this final rule will not result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of \$128.1 million or more in any one year. In addition, sign replacement is often eligible for up to 100 percent Federal-aid funding—this applies to local jurisdictions and tribal governments, pursuant to 23 U.S.C. 120(c). Further, the definition of “Federal Mandate” in the Unfunded Mandates Reform Act excludes financial assistance of the type in which State, local or tribal governments have authority to adjust their participation in the program in accordance with changes made in the program by the Federal Government. The Federal-aid highway program permits this type of flexibility.

Executive Order 13132 (Federalism)

The FHWA analyzed this final rule in accordance with the principles and criteria contained in Executive Order 13132, dated August 4, 1999, and FHWA has determined that this final rule will not have a substantial direct effect or sufficient federalism implications on States and local governments that would limit the policy-making discretion of the States and local governments. Nothing in the MUTCD directly preempts any State law or regulation.

The MUTCD is incorporated by reference in 23 CFR Part 655, subpart F. This final rule is in keeping with the Secretary of Transportation’s authority under 23 U.S.C. 109(d), 315, and 402(a) to promulgate uniform guidelines to promote the safe and efficient use of the Nation’s streets and highways.

Executive Order 13175 (Tribal Consultation)

The FHWA has analyzed this action under Executive Order 13175, dated November 6, 2000, and believes that it will not have substantial direct effects on one or more Indian tribes, will not impose substantial direct compliance costs on Indian tribal governments, and will not preempt tribal law. Therefore, a tribal summary impact statement is not required.

Executive Order 13211 (Energy Effects)

The FHWA has analyzed this final rule under Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use. The FHWA has determined that this is not a significant energy action under that order because, although it is a significant regulatory action under Executive Order 12866, it is not likely to have a significant

adverse effect on the supply, distribution, or use of energy. Therefore, a Statement of Energy Effects under Executive Order 13211 is not required.

Executive Order 12372 (Intergovernmental Review)

Catalog of Federal Domestic Assistance Program Number 20.205, Highway Planning and Construction. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program.

Paperwork Reduction Act

Under the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501, *et seq.*), Federal agencies must obtain approval from OMB for each collection of information they conduct, sponsor, or require through regulations. The FHWA has determined that this action does not contain a collection of information requirement for the purposes of the PRA.

Executive Order 12988 (Civil Justice Reform)

This action meets applicable standards in Sections 3(a) and 3(b)(2) of Executive Order 12988, Civil Justice Reform, to minimize litigation, to eliminate ambiguity, and to reduce burden.

Executive Order 13045 (Protection of Children)

The FHWA has analyzed this action under Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. This is not an economically significant action and does not concern an environmental risk to health or safety that might disproportionately affect children.

Executive Order 12630 (Taking of Private Property)

This action would not affect a taking of private property or otherwise have taking implications under Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights.

National Environmental Policy Act

The agency has analyzed this final rule for the purpose of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and has determined that it will not have any effect on the quality of the environment.

Regulation Identification Number

A regulation identification number (RIN) is assigned to each regulatory

¹⁴ A copy of the OMB report “Stimulating Smarter Regulation: 2002 Report to Congress on the Costs and Benefits of Regulation and Unfunded Mandates on State, Local, and Tribal Entities” is available at the following Web address: http://www.whitehouse.gov/omb/inforeg/summaries_nominations_final.pdf.

¹⁵ A complete compilation of comments received by OMB is available at the following Web address: http://www.whitehouse.gov/omb/inforeg/key_comments.html. Comment 93 includes the recommendation concerning the retroreflectivity of traffic signs.

action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN contained in the heading of this document can be used to cross reference this action with the Unified Agenda.

List of Subjects in 23 CFR Part 655

Design standards, Grant programs—Transportation, Highways and roads, Incorporation by reference, Signs, Traffic regulations.

Issued on: December 13, 2007.

J. Richard Capka,

Federal Highway Administrator.

■ In consideration of the foregoing, the FHWA is amending title 23, Code of Federal Regulations, part 655, subpart F as follows:

PART 655—TRAFFIC OPERATIONS

1. The authority citation for part 655 continues to read as follows:

Authority: 23 U.S.C. 101(a), 104, 109(d), 114(a), 217, 315 and 402(a); 23 CFR 1.32; and 49 CFR 1.48(b).

Subpart F—Traffic Control Devices on Federal-Aid and Other Streets and Highways—[Amended]

■ 2. Revise § 655.601(a), to read as follows:

§ 655.601 Purpose.

* * * * *

(a) Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), 2003 Edition, including Revision No. 1, FHWA, dated November 2004, and revision No. 2, FHWA, dated January 2008. This publication is incorporated by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51 and is on file at the National Archives and Record Administration (NARA). For information on the availability of this material at NARA call (202) 741-6030, or go to http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. It is available for inspection at the Federal Highway Administration, 1200 New Jersey Ave., SE., Washington, DC 20590, as provided in 49 CFR part 7. The text is also available from the FHWA Office of Transportation Operations' Web site at <http://mutcd.fhwa.dot.gov>.

* * * * *

[FR Doc. E7-24683 Filed 12-20-07; 8:45 am]

BILLING CODE 4910-22-P

DEPARTMENT OF THE TREASURY

Internal Revenue Service

26 CFR Part 1

[TD 9368]

RIN 1545-BG55

Reduction of Foreign Tax Credit Limitation Categories Under Section 904(d)

AGENCY: Internal Revenue Service (IRS), Treasury.

ACTION: Final and temporary regulations.

SUMMARY: This document contains final and temporary Income Tax Regulations regarding the reduction of the number of separate foreign tax credit limitation categories under section 904(d) of the Internal Revenue Code (Code). Section 404 of the American Jobs Creation Act of 2004 (AJCA) reduced the number of section 904(d) separate categories from eight to two, effective for taxable years beginning after December 31, 2006. These temporary regulations affect taxpayers claiming foreign tax credits and provide guidance needed to comply with the statutory changes made by the AJCA. The text of these temporary regulations also serves as the text of the proposed regulations (REG-114126-07) set forth in the notice of proposed rulemaking on this subject published elsewhere in this issue of the **Federal Register**.

DATES: *Effective Date:* These regulations are effective on December 21, 2007.

Applicability Dates: For dates of applicability, see §§ 1.904-2T(i)(3), 1.904-4T(n), 1.904-5T(o)(3), 1.904-7T(g)(6), and 1.904(f)-12T(h)(6). These regulations apply to taxable years of United States taxpayers beginning after December 31, 2006, and ending on or after December 21, 2007, and to taxable years of foreign corporations which end with or within taxable years of their domestic corporate shareholders beginning after December 31, 2006, and ending on or after December 21, 2007.

FOR FURTHER INFORMATION CONTACT: Jeffrey L. Parry (202) 622-3850 (not a toll-free call).

SUPPLEMENTARY INFORMATION:

Background

This document contains amendments to the regulations under section 904 relating to the application of separate foreign tax credit limitations to certain categories of income under section 904(d), as amended by the AJCA. Prior to the effective date of the AJCA amendments (that is, for taxable years

beginning before January 1, 2007 (“pre-2007 taxable years”), the foreign tax credit limitation applied separately to the following categories of income: passive income, high withholding tax interest, financial services income, shipping income, certain dividends from a DISC or former DISC, taxable income attributable to certain foreign trade income, certain distributions from a FSC or former FSC, and any other income not described in this sentence (“general limitation income”). Other provisions of the Code that subject other categories of income to separate foreign tax credit limitations were not amended by the AJCA. See, for example, sections 56(g)(4)(C)(iii)(IV), 245(a)(10), 865(h), 901(j), and 904(h)(10); see also H.R. Rep. No. 108-755, at 383 (October 7, 2004).

Effective for taxable years beginning after December 31, 2006 (“post-2006 taxable years”), the AJCA reduced the number of section 904(d) separate categories to two categories for “passive category income” and “general category income.” New section 904(d)(2)(A) defines passive category income as passive income and specified passive category income, and general category income as income other than passive category income. In addition, new section 904(d)(2)(C) and (D) provides rules concerning the treatment of financial services income and companies.

These temporary regulations modify the regulations under section 904 to reflect the new separate categories for passive category income and general category income, and provide transition rules for the treatment of earnings and profits and foreign income taxes of controlled foreign corporations and noncontrolled section 902 corporations accumulated in pre-2007 taxable years, overall foreign losses and separate limitation losses under section 904(f), and the carryover and carryback of excess foreign taxes under section 904(c).

Explanation of Provisions

I. Carryovers and Carrybacks of Excess Foreign Taxes Under Section 904(c)

Section 904(d)(2)(K)(i), as added by the AJCA, provides that excess taxes carried from a pre-2007 taxable year to a post-2006 taxable year shall be assigned to the post-2006 separate categories based on where the related income would have been assigned had such taxes been paid or accrued in a post-2006 taxable year.

Consistent with this statutory amendment, § 1.904-2T(i)(1)(i) provides that if a taxpayer carries over to a post-2006 taxable year any excess taxes that



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2008-02
SUBJECT: GOLF CARTS AND NEIGHBORHOOD VEHICLES
ISSUED DATE: February 28, 2008
EFFECTIVE DATE: February 28, 2008

This memorandum and PM2008-01 supersede Chapter 39 Section 2 of the BLRS Manual dated August 2007.

According to 625 ILCS 5/11-1426.1 and 625 ILCS 5/11-1428 a municipality, township, county, or other unit of local government may authorize, by ordinance or resolution, the operation of neighborhood vehicles or golf carts on roadways under its jurisdiction if the unit of local government determines that public safety will not be jeopardized. The unit of local government must consider the volume, speed, and character of traffic on the roadway and determine whether neighborhood vehicles may safely travel on or cross the roadway. Upon determining that neighborhood vehicles or golf carts may safely operate a roadway, appropriate signs shall be posted.

A Golf Cart (W11-11) warning sign shall be posted at all locations where golf cart operation is permitted.

A Golf Cart (W11-11) warning sign and a supplemental warning plaque carrying the message NEIGHBORHOOD VEHICLE shall be posted at all locations where neighborhood vehicle operation is permitted.

If you have any questions, please contact Kevin Burke of this bureau at kevin.burkeiii@illinois.gov.

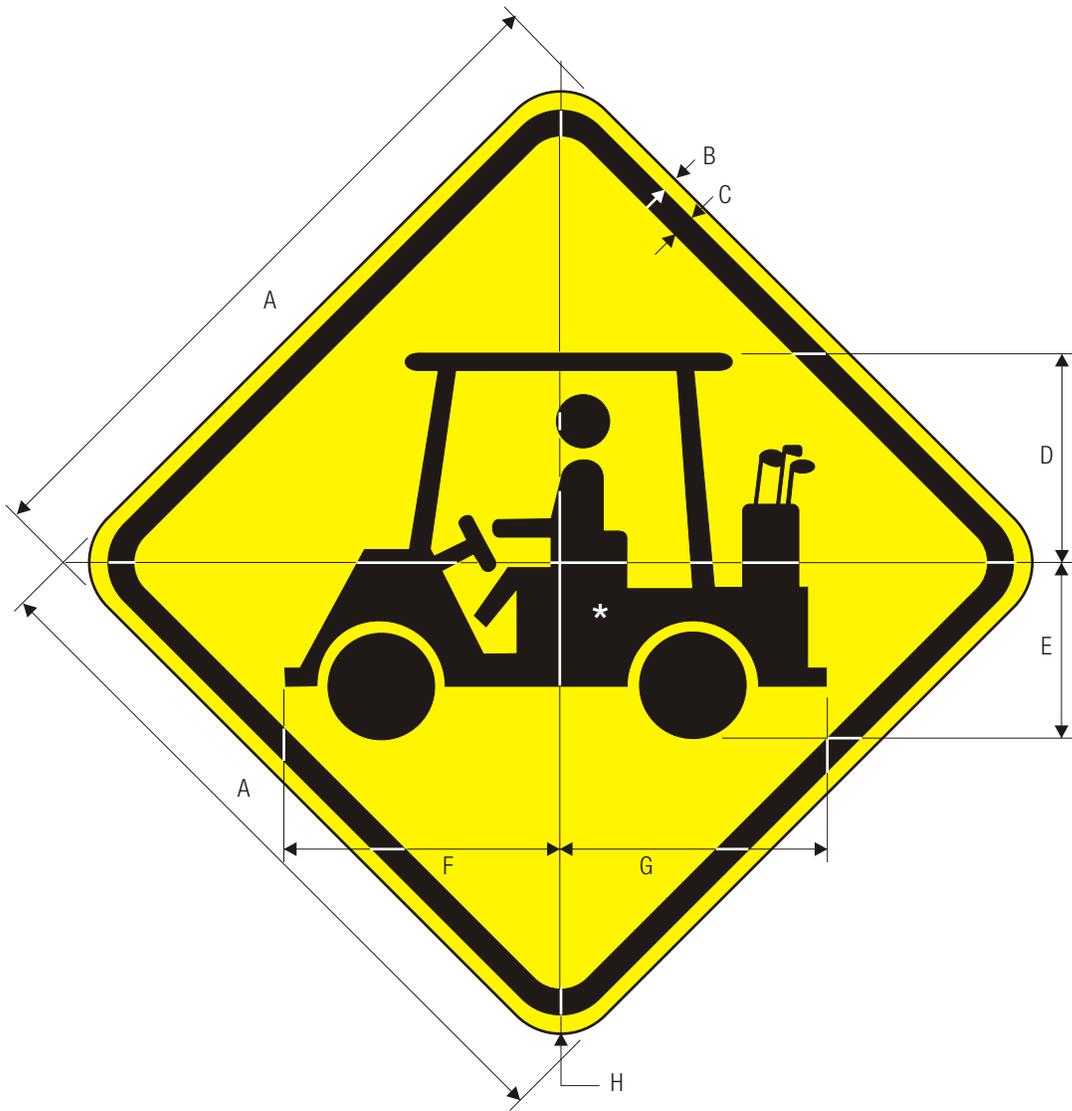
A handwritten signature in cursive script that reads "Charles J. Dingersoll".

Engineer of Local Roads and Streets

KB/kb

Attachments

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W11-11

GOLF CART TRAFFIC

	A	B	C	D	E	F	G	H
	24	.375	.625	7.285	6.064	9.467	9.126	1.5
C	30	.5	.75	9.126	7.605	11.889	11.448	1.875
	36	.625	.875	10.928	9.126	14.250	13.730	2.25
	48	.75	1.25	14.571	12.129	18.934	18.253	3

COLORS: SYMBOL — BLACK
 BACKGROUND — YELLOW (RETROREFLECTIVE)

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(625 ILCS 5/11-1426.1)

(Text of Section from P.A. 95-150)

Sec. 11-1426.1. Operation of neighborhood electric vehicles on streets, roads, and highways.

(a) As used in this Section, "neighborhood electric vehicle" means a self-propelled, electronically powered four-wheeled motor vehicle which is capable of attaining in one mile a speed of more than 20 miles per hour, but not more than 25 miles per hour, and which conforms to federal regulations under Title 49 C.F.R. Part 571.500.

(b) Except as otherwise provided in this Section, it is unlawful for any person to drive or operate a neighborhood electric vehicle upon any street, highway, or roadway in this State. If the operation of a neighborhood electric vehicle is authorized under subsection (d), the neighborhood electric vehicle may be operated only on streets where the posted speed limit is 35 miles per hour or less. This subsection (b) does not prohibit a neighborhood electric vehicle from crossing a road or street at an intersection where the road or street has a posted speed limit of more than 35 miles per hour.

(b-5) A person may not operate a neighborhood electric vehicle upon any street, highway, or roadway in this State unless he or she has a valid Illinois driver's license issued in his or her name by the Secretary of State.

(c) Except as otherwise provided in subsection (c-5), no person operating a neighborhood electric vehicle shall make a direct crossing upon or across any highway under the jurisdiction of the State, tollroad, interstate highway, or controlled access highway in this State.

(c-5) A person may make a direct crossing at an intersection controlled by a traffic light or 4-way stop sign upon or across a highway under the jurisdiction of the State if the speed limit on the highway is 35 miles per hour or less at the place of crossing.

(d) A municipality, township, county, or other unit of local government may authorize, by ordinance or resolution, the operation of neighborhood electric vehicles on roadways under its jurisdiction if the unit of local government determines that the public safety will not be jeopardized. The Department may authorize the operation of neighborhood electric vehicles on the roadways under its jurisdiction if the Department determines that the public safety will not be jeopardized.

Before permitting the operation of neighborhood electric vehicles on its roadways, a municipality, township, county, other unit of local government, or the Department must consider the volume, speed, and character of traffic on the roadway and determine whether neighborhood electric vehicles may safely travel on or cross the roadway. Upon determining that neighborhood electric vehicles may safely operate on a roadway and the adoption of an ordinance or resolution by a municipality, township, county, or other unit of local government, or authorization by the Department, appropriate signs shall be posted.

If a roadway is under the jurisdiction of more than one unit of government, neighborhood electric vehicles may not be operated on the roadway unless each unit of government agrees and takes action as provided in this subsection.

(e) No neighborhood electric vehicle may be operated on a roadway unless, at a minimum, it has the following: brakes, a

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steering apparatus, tires, a rearview mirror, red reflectorized warning devices in the front and rear, a slow moving emblem (as required of other vehicles in Section 12-709 of this Code) on the rear of the neighborhood electric vehicle, a headlight that emits a white light visible from a distance of 500 feet to the front, a tail lamp that emits a red light visible from at least 100 feet from the rear, brake lights, and turn signals. When operated on a roadway, a neighborhood electric vehicle shall have its headlight and tail lamps lighted as required by Section 12-201 of this Code.

(f) A person who drives or is in actual physical control of a neighborhood electric vehicle on a roadway while under the influence is subject to Sections 11-500 through 11-502 of this Code.

(Source: P.A. 94-298, eff. 1-1-06; 95-150, eff. 8-14-07.)

(Text of Section from P.A. 95-414 and 95-575)

Sec. 11-1426.1. Operation of neighborhood vehicles on streets, roads, and highways.

(a) As used in this Section, "neighborhood vehicle" means a self-propelled, electronically powered four-wheeled motor vehicle (or a self-propelled, gasoline-powered four-wheeled motor vehicle with an engine displacement under 1,200 cubic centimeters) which is capable of attaining in one mile a speed of more than 20 miles per hour, but not more than 25 miles per hour, and which conforms to federal regulations under Title 49 C.F.R. Part 571.500.

(b) Except as otherwise provided in this Section, it is unlawful for any person to drive or operate a neighborhood vehicle upon any street, highway, or roadway in this State. If the operation of a neighborhood vehicle is authorized under subsection (d), the neighborhood vehicle may be operated only on streets where the posted speed limit is 35 miles per hour or less. This subsection (b) does not prohibit a neighborhood vehicle from crossing a road or street at an intersection where the road or street has a posted speed limit of more than 35 miles per hour.

(b-5) A person may not operate a neighborhood vehicle upon any street, highway, or roadway in this State unless he or she has a valid Illinois driver's license issued in his or her name by the Secretary of State.

(c) No person operating a neighborhood vehicle shall make a direct crossing upon or across any highway under the jurisdiction of the State, tollroad, interstate highway, or controlled access highway in this State.

(d) A municipality, township, county, or other unit of local government may authorize, by ordinance or resolution, the operation of neighborhood vehicles on roadways under its jurisdiction if the unit of local government determines that the public safety will not be jeopardized. The Department may authorize the operation of neighborhood vehicles on the roadways under its jurisdiction if the Department determines that the public safety will not be jeopardized.

Before permitting the operation of neighborhood vehicles on its roadways, a municipality, township, county, other unit of local government, or the Department must consider the volume, speed, and character of traffic on the roadway and determine whether neighborhood vehicles may safely travel on or cross the roadway. Upon determining that neighborhood vehicles may safely operate on a roadway and the adoption of

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an ordinance or resolution by a municipality, township, county, or other unit of local government, or authorization by the Department, appropriate signs shall be posted.

If a roadway is under the jurisdiction of more than one unit of government, neighborhood vehicles may not be operated on the roadway unless each unit of government agrees and takes action as provided in this subsection.

(e) No neighborhood vehicle may be operated on a roadway unless, at a minimum, it has the following: brakes, a steering apparatus, tires, a rearview mirror, red reflectorized warning devices in the front and rear, a slow moving emblem (as required of other vehicles in Section 12-709 of this Code) on the rear of the neighborhood vehicle, a headlight that emits a white light visible from a distance of 500 feet to the front, a tail lamp that emits a red light visible from at least 100 feet from the rear, brake lights, and turn signals. When operated on a roadway, a neighborhood vehicle shall have its headlight and tail lamps lighted as required by Section 12-201 of this Code.

(f) A person who drives or is in actual physical control of a neighborhood vehicle on a roadway while under the influence is subject to Sections 11-500 through 11-502 of this Code.

(Source: P.A. 94-298, eff. 1-1-06; 95-414, eff. 8-24-07; 95-575, eff. 8-31-07.)

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(625 ILCS 5/11-1428) (from Ch. 95 1/2, par. 11-1428)

Sec. 11-1428. Operation of golf carts on streets, roads and highways.

(a) Except as otherwise provided in this Section, it shall be unlawful for any person to drive or operate any golf cart upon any street, highway or roadway in this State.

(b) Except as provided under subsection (c) of this Section, golf carts may make a direct crossing over a street, highway or roadway that runs through a golf course provided:

(1) The crossing is made at an interchange approved by the local unit of government and at a place where no obstruction prevents a quick and safe crossing; and

(2) The golf cart is brought to a complete stop before attempting a crossing; and

(3) The operator of the golf cart yields the right of way to all pedestrian and vehicular traffic which constitutes a hazard; and

(4) There is no tunnel or overpass ramp provided for the golf cart to cross through the golf course.

(c) No person operating a golf cart shall make a direct crossing upon or across any highway under the jurisdiction of the State, tollroad, interstate highway, or controlled access highway in this State.

(d) For purposes of this Section, "golf cart" means a vehicle specifically designed and intended for the purposes of transporting one or more persons and their golf clubs or maintenance equipment while engaged in the playing of golf, supervising the play of golf, or maintaining the condition of the grounds on a public or private golf course.

(e) Subject to subsection (b), a municipality, township, county, or other unit of local government may authorize, by ordinance or resolution, the operation of golf carts on roadways under their respective jurisdictions. The Department may authorize the operation of golf carts on the roadways under its jurisdiction.

Before permitting the operation of golf carts on its roadway, a municipality, township, county, other unit of local government, or the Department must consider the volume, speed, and character of traffic on the roadway and determine whether golf carts may safely travel on or cross the roadway. Upon determining that golf carts may safely operate on a roadway and the adoption of an ordinance or resolution by a municipality, township, county or other unit of local government, or authorization by the Department, appropriate signs shall be posted.

If a roadway is under the jurisdiction of more than one unit of government, golf carts may not be operated on the roadway unless each unit of government agrees and takes action as provided in this subsection.

No golf cart may be operated on a roadway unless, at a minimum, it has the following: brakes, a steering apparatus, tires, a rearview mirror, red reflectorized warning devices in the front and rear, a slow moving emblem (as required of other vehicles in Section 12-709) on the rear of the golf cart, a headlight that emits a white light visible from a distance of 500 feet to the front, a tail lamp that emits a red light visible from at least 100 feet from the rear, brake lights, and turn signals. When operated on a roadway, a golf cart shall have its headlight and tail lamps lighted as required by Section 12-201.

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(f) A person who drives or is in actual physical control of a golf cart on a roadway while under the influence is subject to Section 11-500 through 11-502.
(Source: P.A. 90-683, eff. 1-1-99.)

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2008-03
SUBJECT: DENSITY TESTING ON HOT MIX ASPHALT (HMA) PAVEMENTS
ISSUED DATE: March 6, 2008
EFFECTIVE DATE: March 1, 2008

This memorandum revises Section 37-1 of the Bureau of Local Roads and Streets Manual, dated August 2007.

Illinois Department of Transportation's Quality Control/Quality Assurance (QC/QA) procedures require correlated nuclear gauge density testing on all Hot Mix Asphalt projects. If a correlated gauge is not appropriate for the mixture (low tonnage, thin lift, etc.), core density testing is required.

For local agency HMA projects constructed under general maintenance, special maintenance, Local Agency Pavement Preservation (LAPP), functional overlay policy, or for any mixture quantity less than 3,000 tons, the preferred alternative test method is also core density testing. Core density testing assures a reliable comparison to the maximum density for the mix. If core holes are not filled properly, potholes and other pavement distresses may occur at the test location. LR 406 "Filling HMA Core Holes with Non-Shrink Grout" may be used to reduce the possibility of pot holes at the test location.

Local agencies may also use uncorrelated nuclear gauge density or growth curves; however, both of these alternative methods may lead to inaccurate results. Since an uncorrelated nuclear gauge is not adjusted to the material and pavement cross-section on the project, density errors as high as 2% are common. Likewise, growth curves are subject to numerous environmental (temperature, wind, etc.) and equipment variables (speed, frequency, etc.); therefore, growth curve density should be approached with caution. LR 1030 "Growth Curve" shall be used on all projects verifying density with growth curves. For more information about growth curve variability, see attached "Growth Curve Variables" summary.

If alternative density testing is performed, both the contractor and local agency must comply with the QC/QA testing frequency required for a given mixture.

If you have any questions, please contact Kevin Burke of this bureau at kevin.burkeiii@illinois.gov.

Charles J. Dinger

Engineer of Local Roads and Streets

Attachments

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Growth Curve Variables

The primary difficulty in utilizing a percentage of the growth curve is determining an “accurate” peak density. There are numerous variables to control and/or account for when performing a growth curve to ensure the peak density obtained is accurate. Listed below are a few variables that should be considered:

1. **Mix Temperature.** Too Cold; Too Hot; Temperature Gradient
2. **Ambient Conditions.** Sunshine vs. Overcast; Wind Speed; Base Temperature.
3. **Roller.** Operator Experience; Force Applied (Static or Dynamic); Speed; Amplitude; Frequency; Length of Pattern.
4. **Existing Pavement Condition.** Variability; Stiffness; Cracks; Patches; Cross Slope.
5. **Pavement Preparation for Bond.** Milled; Cleaned; Tack Coat (Type, Amount, Uniformity, Condition)
6. **Mix Thickness.** Nominal Maximum Aggregate Size; Coarse or Fine Graded.
7. **Mix Properties.** Gradation; AC Content; Voids; VMA; VFA.
8. **Segregation.**
9. **Density Gauge.** Operator Experience; Reading Time; Cleanliness; Accuracy.
10. **Peak Determination.** Stabilization; Aggregate Degradation

Controlling and/or accounting for all of these variables (at a given point in time and at a given location) is difficult. Therefore, the “peak” density in a growth curve is often questionable. If multiple growth curves are performed, variability in the peak density is often observed.

There are two basic characteristics that are sought in HMA – stability and durability. As the in-place density achieved increases, both of these characteristics are improved. Problems with just a few of the variables listed previously will often work together to provide a peak density that is too low and therefore provide a benchmark that is too low, if a percentage of the growth curve is used. The end result will be less in-place density (in terms of % G_{mm}), less stability and less durability. There are many things that can contribute to field compaction problems and the goal should be to remedy as many of these things as possible in order to achieve the most stability and durability as possible to ensure long term pavement performance.

Adapted by the Federal Highway Administration - Illinois Division, Illinois Department of Transportation Bureau of Materials & Physical Research, and Illinois Department of Transportation Bureau of Local Roads & Streets from information provided by William J. Pine, P.E., Emulsicoat, Inc. / Heritage Research Group on May 9, 2007.

State of Illinois
DEPARTMENT OF TRANSPORTATION
Bureau of Local Roads & Streets

SPECIAL PROVISION
FOR
GROWTH CURVE

Effective: March 1, 2008

All references to Sections and Articles in this Special Provision shall be construed to mean specific Sections and Articles in the Standard Specifications for Road and Bridge Construction adopted by the Department of Transportation.

The Contractor shall perform a growth curve at the beginning of placement of each type of mix and each lift. The growth curve for each type of mix and each lift shall be performed within the first 200 tons (180 metric tons). If an adjustment is made to the specific mix design, the Engineer reserves the right to request an additional growth curve and supporting tests at the Contractor's expense.

Compaction of the growth curve shall commence immediately after the course is placed and at a temperature of not less than 280 °F (140 °C). The growth curve, consisting of a plot of lb/cu m (kg/cu m) vs. number of passes with the project breakdown roller, shall be developed. Roller speed during the growth curve testing shall be the same as the normal paving operation. This curve shall be established by use of a nuclear gauge. Tests shall be taken after each pass until the highest lb/cu m (kg/cu m) is obtained. This value shall be the target density provided the HMA Gyratory air voids are within acceptable limits. If the HMA Gyratory air voids are not within the specified limits, corrective action shall be taken, and a new target density shall be established.

A new growth curve is required if the breakdown roller used on the growth curve is replaced with a new roller during production. The target density shall apply only to the specific gauge used. If additional gauges are to be used to determine density specification compliance, the Contractor shall establish a unique minimum allowable target density from the growth curve location for each gauge.

At least one core sample per day shall be taken at a location specified by the Engineer. Core densities will be determined using the Illinois-Modified AASHTO T 166 or T 275 procedure by the Department. The core density shall be according to Articles 1030.05(d)(4) and (d)(7). The QA Manager is responsible for assuring and documenting that the determined number of roller passes has been accomplished. The Engineer reserves the right to take core samples at any time to verify density from the nuclear gauge,

All lifts shall be compacted to an average nuclear gauge density of not less than 95 percent nor greater than 102 percent of the target density obtained on the growth curve. The average nuclear gauge density shall be based on tests representing one day's production.

Quality Control density tests shall be performed at randomly selected locations within 1/2 mile (800 m) intervals per lift per lane. In no case shall more than one half day's production be completed without density testing being performed.

If the Contractor is not controlling the compaction process and is making no effort to take corrective action, the operation shall stop as directed by the Engineer.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2008-04
SUBJECT: JURISDICTIONAL TRANSFER AGREEMENTS
ISSUED DATE: April 15, 2008
EFFECTIVE DATE: April 15, 2008

This memorandum revises Chapter 5, Section 5-2.04 of the Bureau of Local Roads and Streets Manual, dated December 2006.

The Bureau of Local Roads and Streets (BLRS) has revised forms BLR5210, BLR5211 and BLR5212. In addition, Section 5-2.04 of the BLRS Manual has been revised to strongly recommend that draft agreements for all proposed jurisdictional transfers be submitted to the central BLRS for review prior to execution by the local agency(ies).

Utilization of these revised forms and submission of draft agreements will minimize the need for revisions to the final agreements.

If you have any questions, please contact Steve Dwyer at (217) 782-3401.

Charles J. Dingersoll

Engineer of Local Roads and Streets

Attachments



Local Agency	Type of Systems Transfer	
Municipality:	Type 1 From: State Highway System To: Local Highway System	Type 2 From: Local Highway System To: State Highway System
Township/Road District:		
County:	Indicate Type of Systems Transfer:	
Section Number:		

The above local agency, and the State of Illinois, acting by and through its Department of Transportation, agree to transfer the jurisdiction of the designated location in the manner indicated above under **Type of Systems Transfer**.

Location Description

Name _____ Route _____ Length _____
Termini _____, in its entirety.

This transfer does does not include Structure No. _____

The transfer does does not include a transfer to land rights (4-508). If it does, attach letter of intent approved by the Department.

WHEREAS, the authority to enter into this contract is granted the STATE by Section 4-409 of the Illinois Highway Code and the authority to make changes in the State Highway System is granted the State under Section 2-101 of the Illinois Highway Code.

Include for Municipalities Only

WHEREAS, the authority to make changes to the Municipal Street System is granted to the Municipality by Section 7-101 of the Illinois Highway Code.

NOW THEREFORE IT IS AGREED that the corporate authority of said municipality will pass an ordinance providing for the transfer of the above location and shall attach hereto and make a part hereof a copy of a location map as Addendum No. 1 and a copy of the ordinance as Addendum No. 2, and

Include for Counties Only

WHEREAS, the authority to make changes to the County Highway System is granted to the County by Section 5-105 of the Illinois Highway Code.

NOW THEREFORE IT IS AGREED that the County Board of said County will pass a resolution providing for the transfer of the above location and shall attach hereto and make a part hereof a copy of a location map as Addendum No. 1 and a copy of the resolution as Addendum No. 2, and

Include for Township/Road Districts Only

WHEREAS, the authority to make changes to the Township/Road District System is granted to the Highway Commissioner under Section 6-201.3 of the Illinois Highway Code and said Highway Commissioner shall attach hereto and make a part hereof a copy of a location map as Addendum No. 1, and

IT IS MUTUALLY AGREED, that this jurisdictional transfer will become effective _____ calendar days after:

(check one)

- Final Inspection by the State (Type)
- Acceptance by the State
- Execution of Agreement
- Approval of Land Conveyance
- Other: _____

Supplements

Additional information and/or stipulations, if any, are hereby attached and identified below as being a part of this jurisdictional transfer.

Supplement _____
(Insert supplement numbers of letters and page numbers, if applicable.)

IT IS FURTHER AGREED, that the provisions of this jurisdictional transfer shall be binding and inure to the benefit of the parties hereto, their successors and assigns.



Table with 2 main columns: Local Agency and Type of Systems Transfer. Sub-headers include Municipality, Township/Road District, County, Section Number, Type 1, Type 2, From, and To.

The above local agency, hereinafter referred to as "LA", and the State of Illinois, acting by and through its Department of Transportation, agree, to transfer the jurisdiction of the designated location in the manner indicated above under Type of Systems Transfer.

Location Description

Name _____ Route _____ Length _____
Termini _____, in its entirety.

This transfer [] does [] does not include Structure No. _____
The transfer [] does [] does not include a transfer to land rights (4-508). If it does, attach letter of intent approved by the Department.

WHEREAS, the authority to enter into this contract is granted the STATE by Section 4-409 of the Illinois Highway Code and the authority to make changes in the State Highway System is granted the State under Section 2-101 of the Illinois Highway Code.

Include for Municipalities Only

WHEREAS, the authority to make changes to the Municipal Street System is granted to the Municipality by Section 7-101 of the Illinois Highway Code.

NOW THEREFORE IT IS AGREED that the corporate authority of said municipality will pass an ordinance providing for the transfer of the above location and shall attach hereto and make a part hereof a copy of a location map as Addendum No. 1 and a copy of the ordinance as Addendum No. 2, and

Include for Counties Only

WHEREAS, the authority to make changes to the County Highway System is granted to the County by Section 5-105 of the Illinois Highway Code.

NOW THEREFORE IT IS AGREED that the County Board of said County will pass a resolution providing for the transfer of the above location and shall attach hereto and make a part hereof a copy of a location map as Addendum No. 1 and a copy of the resolution as Addendum No. 2, and

Include for Township/Road Districts Only

WHEREAS, the authority to make changes to the Township/Road District System is granted to the Highway Commissioner under Section 6-201.3 of the Illinois Highway Code and said Highway Commissioner shall attach hereto and make a part hereof a copy of a location map as Addendum No. 1, and

IT IS MUTUALLY AGREED, that this jurisdictional transfer will become effective 21 calendar days after (check one)

- [] Execution of Agreement [] Acceptance by the State
[] Approval of Land Conveyance [] Final Inspection by the State (Type)

Supplements

Additional information and/or stipulations, if any, are hereby attached and identified below as being a part of this agreement
Supplement _____ (Insert supplement numbers of letters and page numbers, if applicable.)

APPROVED

APPROVED STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

Name: _____

By _____ Director of Highways

Title: _____ Chairman County Board/Mayor/Village President/etc.

Date _____

Signature _____



Local Agency No. 1 (Conveyor)	Local Agency No. 2 (Recipient)
Municipality: _____	Municipality: _____
Township/Road District: _____	Township/Road District: _____
County: _____	County: _____

In accordance with authority granted in Section 4-409 of the Illinois Highway Code, this agreement is made and entered into between the above Local Agency No. 1, hereinafter referred to as "Conveyor" and the above Local Agency No. 2, hereinafter referred to as "Recipient", to transfer the jurisdiction of the designated location from the Conveyor to the Recipient.

Location Description

Name _____ Route _____ Length _____
Termini _____
_____ in its entirety.

This transfer does does not include Structure No. _____

Include for Municipalities Only

WHEREAS, the authority to make changes to the Municipal Street System is granted to the Municipality by Section 7-101 of the Illinois Highway Code.

NOW THEREFORE IT IS AGREED that the corporate authority of said municipality will pass an ordinance providing for the transfer of the above location and shall attach hereto and make a part thereof a copy of the ordinance, and

Include for Counties Only

WHEREAS, the authority to make changes to the County Highway System is granted to the County by Section 5-105 of the Illinois Highway Code.

NOW THEREFORE IT IS AGREED that the County Board of said County will pass a resolution providing for the transfer of the above location and shall attach hereto and make a part thereof a copy of the resolution, and

Include for Township/Road Districts Only

WHEREAS, the authority to make changes to the Township Road District System is granted to the Highway Commissioner under Section 6-201.3 of the Illinois Highway Code.

The Conveyor Agrees to prepare a map of the above location and attach a copy of such location map hereto.

IT IS MUTUALLY AGREED, that this jurisdictional transfer will become effective:

upon IDOT approval _____ calendar days after _____ .

Supplements

Additional information and/or stipulations, if any, are hereby attached and identified below as being a part of this agreement.

Supplement _____
(Insert supplement numbers or letters and page numbers, if applicable)

IT IS FURTHER AGREED, that the provisions of this agreement shall be binding upon and inure to the benefit of the parties hereto, their successors and assigns.

APPROVED BY CONVEYOR

APPROVED BY RECIPIENT

Name _____ Name _____

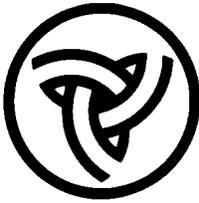
Title _____ Title _____
Chairman County Board/Mayor/Village President/etc. Chairman County Board/Mayor/Village President/etc.

Signature _____ Signature _____

APPROVED

STATE OF ILLINOIS

DEPARTMENT OF TRANSPORTATION By: _____ Date _____
Director of Highways



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2008-05

SUBJECT: ECOLOGICAL COMPLIANCE ASSESSMENT TOOL (EcoCAT) AND MFT CERTIFICATION/PROJECT STATUS FORM

ISSUED DATE: October 17, 2008

EFFECTIVE DATE: January 1, 2009

This memorandum supersedes Section 10-1 dated December 2006, and Section 20-9 dated January 2006 of the Bureau of Local Roads & Streets Manual.

The *Illinois Natural Areas Preservation Act* (525 ILCS 30/17), Section 11b of the *Illinois Endangered Species Protection Act* (520 ILCS 10/11), and the implementing rules (17 Ill. Adm. Code 1075) requires consultation with the Illinois Department of Natural Resources (IDNR) on all construction, land management, or other activities that are authorized, funded, or performed in whole or in part by agencies of State and local governments and that will result in a change to the existing environmental conditions or may affect listed threatened or endangered species or their essential habitat or Natural Areas.

The *Interagency Wetland Policy Act of 1989* (20 ILCS 830/1 et seq.) and the *Implementation Procedures for the Interagency Wetland Policy Act* (17 Ill. Admin. Code 1090) requires consultation with IDNR on all state and state pass-through funded construction projects.

For projects that are not funded with federal funds, consultation is done directly between the local agency and IDNR. IDNR has developed a web based system, Ecological Compliance Assessment Tool (EcoCAT), to streamline the consultation process. This system replaces the Agency Action Report and is available at <http://dnrecocat.state.il.us/ecopublic/>.

The EcoCAT system has four sections that need completed:

- General Information
- Applicant Information
- Project Information
- Location Information

An instruction sheet is attached to assist applicants with completing an EcoCAT submittal.

EcoCAT will provide local agencies with an instant biological and wetland review of the project area. If no resources are in the vicinity of the project, the report will state that consultation is closed and the local agency may proceed with the project.

If the report lists T&E species or INAI sites that may be in the vicinity, the project may not proceed until consultation is complete. IDNR will contact the applicant within 30 to 45 days after the project is first submitted. At that point in the consultation, IDNR will either: close consultation because impacts are unlikely; request additional information, which could include field studies; or recommend measures to avoid, minimize, or mitigate impacts. Whenever measures are recommended, the local agency must notify IDNR that the recommendations were considered and specify which measures will be implemented. If measures will not be implemented, the agency should include an explanation. At that point, IDNR will send the agency a letter closing consultation.

If the EcoCAT report states that wetlands are within 250 feet of the project location, the local agency will need to conduct a site visit and delineate any wetlands that could be impacted by the project. While the EcoCAT report may state that an IDNR staff member will contact you about wetland compliance, IDNR will not contact applicants about wetland compliance for projects funded with Motor Fuel Tax (MFT), Township Bridge Program (TBP), or other State funds. Beyond the initial EcoCAT submission, wetland compliance should be coordinated with IDOT according to Section 10-1.05 of the BLRS Manual.

BLR 10100 should be used to document environmental review for MFT, TBP, and State Funded projects. Local agencies, including those under Agreements of Understanding, should submit the completed form to the District BLRS prior to letting for all projects except for general maintenance. Copies of the consultation termination letter or consultation closed report from EcoCAT shall be submitted to the District BLRS with BLR10100 prior to advertisement in IDOT's *Notice to Contractors Bulletin* for all projects let after January 1, 2009. The District will acknowledge receipt of BLR 10100 by signature and return the signed copy for the project file.

The department will coordinate the EcoCAT submittal on all federally funded projects.



Engineer of Local Roads and Streets

KB/kb

Attachments

cc: Tom Flattery, Illinois Department of Natural Resources

How to Use EcoCAT

General Information

The General Information section asks three multiple choice questions that you must answer to ensure that your project receives the appropriate review and is assigned to the correct IDNR staff member. If you do not answer all of the questions, the program will not allow you to proceed to the mapping tool. The questions, with explanations, are provided below.

Q1. Why are you submitting the project to EcoCAT?

- To initiate consultation with IDNR (*Title 17 Ill. Admin. Code Part 1075*) to determine potential impacts to Illinois Natural Area Inventory sites or state-listed threatened or endangered species.
- To obtain information on Illinois T&E species or INAI sites for **project planning**.
- To obtain information on Illinois T&E species or INAI sites for **federal agency** actions (including NEPA compliance).

Choose “To initiate consultation.”

Q2. Indicate the government unit and type of action that has prompted consultation.

- Local Government**
 - Authorization (a unit of local government must issue a permit or other authorization)
 - Funding (a unit of local government will provide a grant, loan, or other direct support)
 - Performance (a unit of local government is performing the action, such as construction)
- State Agency**
 - Authorization (a state agency must issue a permit or other authorization)
 - Funding (a state agency will provide a grant, loan, or other direct support)
 - Performance (a state agency is performing the action, such as construction)

Choose “State Agency”, “Funding,” and “Illinois Department of Transportation” as the agency and “Bureau of Local Roads and Streets” as the Bureau.

Q3. Will state technical assistance or funding (including federal funding through a state agency) support the project?

- Yes.
- No.
- Don't Know.

Choose “Yes.”

- Screen resolution—1024 x 768 or higher is required.
- Preferred browser—Internet Explorer 6.0 or later.
- EcoCAT data entry must be completed within 20 minutes or previously entered information will be lost and the process will not work correctly.
- EcoCAT is a public record that is subject to disclosure under the Freedom of Information Act.

Applicant and Project Information

After you answer the three general information questions, you will move on to Applicant Information. Here you will be asked to indicate the applicant category to which you belong:

Non-governmental/Individual Local Government State Agency Federal Agency

Choose “Local Government” unless a consultant is submitting the project—then “Non-governmental/Individual” should be selected. The individual or organization submitting the project to EcoCAT is considered the Applicant. Any further communication from IDNR will be directed to the Contact Person at the address listed for Applicant.

Project Information asks you to provide a project name and a brief description of the proposed action.

Next is Project Location. In addition to County, you must know the Township, Range, and Section of the site location. (The correct Meridian will come up automatically when you click the Meridian button.) You can find the TRS—also known as the Public Land Survey System (PLSS)—on standard legal descriptions of property, on USGS topographical maps, and in plat books.

If the proposed action will occur in more than one section, just enter one section number because, once you click on “Go to Map Tool”, that is enough information to get you to the general location of the project. *(If the map tool doesn't appear, check your screen resolution. It must be set at 1024 x 768 or higher.)*

When you are in the mapping tool click the “zoom out” or “zoom in” button at the top and click the map until you are at the map scale needed to encompass the project area. When you have the appropriate scale, click the “Draw” button and draw a polygon around the project area. If your project is longer than five miles, you should break it up into five-mile segments and submit them as multiple projects with an identifying name, such as Witherspoon Road, segment 1.

The last step is to click the submit button to get the EcoCAT Results Report. (If the report does not appear, turn off pop-up blockers.) To print or save the report, click the printer icon on the EcoCAT toolbar (not your browser print icon) and select print all. An Acrobat dialogue box will appear from which you can print and/or save the report.

If no T&E species or wetlands are listed on the report, it will state that consultation is closed.

If the report lists T&E species or INAI sites, an IDNR staff person will contact you to either:

- Terminate consultation because adverse effects are unlikely,
- Request additional information, or
- Recommend methods to minimize potential adverse effects.

If the EcoCAT report states that wetlands are within 250 feet of the project location, you will need to conduct a site visit and delineate any wetlands that could be impacted by the project. While the EcoCAT report may state that an IDNR staff member will contact you, IDNR will not contact applicants about wetland compliance for IDOT-funded projects. You should coordinate wetland compliance with IDOT according to Section 10-1.05 of the Bureau of Local Roads and Streets Manual.

MOTOR FUEL TAX CERTIFICATION/ PROJECT STATUS CHECKLIST – BLR10100

This form is used to track compliance with Phase I (BLRS Manual Chapter 10) and Permit (BLRS Manual Chapter 7) requirements for local let projects funded with motor fuel tax and/or other state funds. Below is a brief description of each item on the checklist. For complete details the BLRS Manual should be consulted.

ENVIRONMENTAL ISSUES (Chapter 10-1)

1. Section 6(f) procedures must be followed for all projects, regardless of project type or funding source, which involve the taking of property acquired or developed with Land and Water Conservation (LAWCON) funds. See Section 10-1.03 of the BLRS Manual for more information.
2. Compliance procedures for proposed conversion of Open Space Lands and Development (OSLAD) assisted lands are applicable to all projects proposing conversion regardless of project type or funding source. See Section 10-1.04 of the BLRS Manual for more information about OSLAD assisted lands.
3. The *Interagency Wetland Policy Act* and the Illinois Administrative Code apply to all State and IDOT pass-through funded projects involving possible wetland impacts. This includes federal, Motor Fuel Tax (MFT), and other State funded projects. A copy of the Ecological Compliance Assessment Tool (EcoCAT) termination report/letter should be submitted with this form. See Section 10-1.05 of the BLRS Manual for more information.
4. Historic Preservation/Cultural compliance applies to all State-funded and State-approved projects that do not involve Federal funds or are not regulated by a Federal agency. Projects that are funded with MFT and State funds and do not require a Federal permit must comply with this Act. See Section 10-1.06 of the BLRS Manual for more information.
5. Threatened and Endangered Species/Natural Areas compliance applies where a project funded or authorized by State and local agencies involves acquisition of additional right-of-way or easements (temporary or permanent); construction activities outside the existing right-of-way; a drainage structure runaround or any in-stream work; impacts to a recognized Illinois Natural Areas Inventory site or Illinois dedicated Nature Preserve, a wetland; or a location where a State or federal listed species is known to occur. A copy of the Ecological Compliance Assessment Tool (EcoCAT) termination report/letter should be submitted with this form if applicable. See Section 10-1.07 of the BLRS Manual for more information.
6. Coordination with the Illinois Department of Agriculture (IDOA) is required for highway and bridge projects funded in whole or in part with State funds including TBP funds and Federal-aid projects, but not MFT, and which require additional right-of-way, unless any of the following apply:
 - The project is located within the boundaries of an incorporated municipality.
 - The project is within the official 1.5 mile (2.4 km) planning area of an incorporated municipality.
 - The project is nonlinear and requires acquisition of no more than 10 acres (4 hectares) of land.
 - The project is linear; requires acquisition of no more than 3 acres of land per project mile (0.75 ha per project kilometer); and does not involve alternative alignment in which the right-of-way diverges from, and is not contiguous to, the existing right-of-way.See Section 10-1.08 of the BLRS Manual for more information.
7. Special Waste Screening applies to all local agency Federal- and State-funded projects, and is recommended for MFT-funded projects. See Section 10-1.09 of the BLRS Manual for more information.

PROJECT STUDIES/REPORTS (Chapter 10-2)

1. Highway and bridge improvements within 2 miles (3.2 km) of publicly owned airports, within 1 mile (1.6 km) of privately owned airports open to the public, and within 0.5 miles (0.8 km) of restricted-landing areas require coordination with the IDOT Division of Aeronautics. See Section 10-2.01(e) of the BLRS Manual for more information.
2. When a project is involved with a railroad grade crossing or separation, coordination with the affected railroad should take place at an early stage to determine if any improvement is necessary to the railroad facility and to determine funding responsibilities for the improvement. Before the railroad work can begin, it will be necessary to prepare a railroad agreement or to obtain the approval of the Illinois Commerce Commission (ICC). See Section 10-2.01(f) of the BLRS Manual for more information.
3. The local agency will be required to prepare an Intersection Design Study for intersections if any of the following conditions apply. See Section 10-2.02 of the BLRS Manual for more information.
 - in a rural area when both roads have a current 30th maximum design hourly volume (DHV) of 300 vehicles or more;
 - in a rural area when a local road with a current DHV of 300 or more intersects a State marked route;
 - in an urban area when both streets have a current DHV of 400 vehicles or more;
 - in an urban area when a local street with a current DHV of 400 or more intersects a State marked route;
 - when additional lanes and/or channelization is proposed on one or both routes; or
 - when any intersection designed as a roundabout.
4. A Bridge Condition Report (BCR) is not required for total structure replacement for projects using non-Federal funding. A BCR is required for all rehabilitation and widening projects for which a Preliminary Bridge Design and Hydraulic Report (PBDHR) must be submitted for IDOT approval. See Section 10-2.03(a) of the BLRS Manual for more information.
5. Submittal of a PBDHR is required when a permit is to be issued and for all structures, including all county and road district structures having a clear span greater than 30 feet using non-MFT funding, except for the following exempt categories:
 - structures having a clear span of 10 ft (3 m) or less, or a waterway opening of 100 ft² (9 m²) or less (including over-the-road flow) for the design flood; or
 - structures for which the preliminary design has been prepared by IDOT.See Section 10-2.03(b) of the BLRS Manual for more information.
6. Submittal of the Asbestos Determination Certification for Local Highway Bridges must be submitted for all structures undergoing reconstruction or rehabilitation, even for non-MFT structures not otherwise requiring approvals from the BBS. This will enable the department to update the confirmed/unconfirmed list.
7. A drainage study containing preliminary hydrologic and hydraulic analyses should be prepared where highway drainage and/or structures will significantly affect the design or cost of a project. See the BBS Drainage Manual and Chapter 38 of the BLRS Manual for more information.
8. If soil stability problems are anticipated, a preliminary Geotechnical Report should be prepared during the preliminary study phase. See the IDOT Geotechnical Manual for more information.
9. A commitment file must be kept for all State-funded local projects and is recommended for MFT projects. See Section 10-2.06 of the BLRS Manual for more information.
10. Form BLR 22120 is used to document the justification and approval of variances that are necessary for the completion of the project. See Section 10-2.07(b) of the BLRS Manual for more information.

RIGHT-OF-WAY (Chapter 10-3)

1. Local agency projects built under the supervision of IDOT should not be advertised for letting until the necessary right-of-way has been secured. Material awards for day labor projects should not be made until the necessary right-of-way for construction has been secured. See Section 10-3 of the BLRS Manual for more information.

PERMITS (Chapter 7)

1. NPDES permits are required for construction activities involving clearing, grading, and excavation activities that disturb 1 acre (0.4 ha) or more of land area. Local agencies that are part of an MS4 will use the ILR40 permit. All other local agencies will use the ILR10. See Section 7-4.01 of the BLRS Manual for more information.
2. Section 404 permits, issued by the USACE, are required for activities that involve the discharge of dredged or fill material into waters of the United States, including wetlands. See Section 7-4.02 of the BLRS Manual for more information.
3. State certification is required in conjunction with the authorization by US Army Corps of Engineers (USACE) of any activity that may result in any discharge into waters of the United States requiring a Section 404 Permit. Water Quality Certification is also required for Section 9 Permits. See Section 7-4.03 of the BLRS Manual for more information.
4. Section 9 permits are required for the construction, modification, replacement, or removal of bridges or causeways over a navigable waterway. Construction of bridges crossing waters not presently used or susceptible to be used as a means of transporting Interstate or foreign commerce does not require a permit. Removal of an existing bridge without replacing it with another bridge also does not require a permit. See Section 7-4.04 of the BLRS Manual for more information.
5. For the burning of landscape waste in any area of the State, if open burning is conducted with the aid of an air curtain destructor or comparable device to reduce emissions substantially and does not occur within 1000 ft (300 m) of any residential or other populated area. See Section 7-3.01 of the BLRS Manual for more information.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BDE PROCEDURE MEMORANDUM

NUMBER: 57-08

BLRS PROCEDURE MEMORANDUM

NUMBER: 2008-06

SUBJECT: Use of Commercial and Department Wetland Mitigation Bank Site Credits

DATE: October 1, 2008

The information herein supersedes Procedure Memorandum 57-07, dated October 15, 2007, and augments sections of Procedure Memorandum 33-03 and Section 10-1.05(i) of the Bureau of Local Roads & Streets Manual.

Background

A mitigation bank is a site where wetlands and/or other aquatic resources are restored, created, enhanced, or preserved to provide compensatory mitigation in advance of authorized impacts to similar resources. Commercial wetland mitigation bank sites are in operation in various parts of Illinois. To date, several Districts have established wetland mitigation bank sites with more being planned.

Applicability

The procedures in this memorandum apply to all transportation projects funded by or through all divisions of the Department.

Procedures

The Department's preferred method of wetland compensation involves the use of pre-existing wetland credits from a commercial or Department owned wetland mitigation bank site. This preference may be met when the project is within the service area of a bank site. Information on Department wetland mitigation bank sites and service areas may be accessed at the Department's Environment webpage (<http://www.dot.il.gov/environment.html>). For projects that are not within the service area of a mitigation bank, Section 4.B of PM 33-03 should still be followed.

Credits generated at approved commercial and Department bank sites may be used by all Department divisions to satisfy impact requirements of Section 404 of the Clean Water Act and the Illinois Interagency Wetland Policy Act of 1989.

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Coordination

All proposals for use of credits from commercial and Department owned bank sites shall be coordinated with the Bureau of Design and Environment (BDE). State transportation projects (highway, aviation, mass transit, etc.) shall be coordinated in accordance with PM 33-03. For Local Roads projects, proposals shall be coordinated in accordance with Section 10-1.05 of the Bureau of Local Roads & Streets Manual.

For proposals to draw credits from a Department bank, a Wetland Impact Evaluation (WIE), the bank site name and number or debits sought shall be coordinated with BDE. Debits will be recorded on the bank site ledger. BDE will forward a copy of the WIE to the District Environmental Coordinator and District Programming Engineer. Debits are considered pending until the project is awarded. District bank site ledger information can be obtained by contacting BDE.

District Preference for Credit Use

The District will receive priority consideration for use of credits from their own bank(s), and BDE will only approve credit withdrawals if the bank has sufficient credits available to meet the foreseeable needs of the bank owning District. Each District will have the option to object to an incoming WIE in writing within twenty working days of receipt of the WIE. The reason for the objection must be included in the letter.

Regulatory Agencies

BDE will serve as the principal point of contact with the wetland regulatory agencies for resolving issues regarding the use of bank credits on specific projects and for any required reporting to those agencies associated with the banks (e.g. concerning credit balances, credits used, etc).

Credit Surplus

A District or other transportation entity may want to purchase a block or surplus of credits from a commercial or Department owned bank site. These credits would be purchased in advance of any known impacts and used to compensate for small losses (less than 0.5-acre) from several projects. When a block of credits is purchased, a ledger for tracking debits from that block shall be created and held by the District or other entity of the Department. When coordinating with BDE, the District or other entity shall submit a copy of the ledger associated with the block purchase along with the WIE.

Billing and Reimbursement of Bank Credits

A District or transportation entity that draws credits from a commercial bank must commit program funds to cover the purchase of credits. In cases where credits are sought from a Department owned wetland bank site, the site owning District must be reimbursed.

State Transportation Projects

Billing and reimbursement will be accomplished through the re-appropriation of District program funds by the Office of Planning and Programming (OPP). Re-appropriations will occur once each year and will be based on information provided by BDE. Each District should submit their cost for bank site development to OPP to ensure the District is adequately compensated during the re-appropriation process. Cost should be the sum of land acquisition, construction and maintenance for each acre.

Local Roads & Streets Transportation Projects

The local agency is responsible for purchasing all required wetland credits either with their own funds or with federal funds. If federal funds are involved, the purchase cannot occur prior to federal authorization of the project phase or the Federal Highway Administration will not approve reimbursement for the credits to the local agency. However, the use of local funds to purchase the wetland credits will not have any impact on the timing of the federal authorization.

In addition, the funding for the wetland credits will be included on the Joint Funding Agreement for either Preliminary Engineering (PE) or construction.

Phase II is the preferred phase for including the wetland credit funding. However, since many of the downstate local agencies combine their Phase I and Phase II into one funding agreement, the joint funding agreement would then have to be amended once the wetland requirements were identified in Phase I.

If the funding is included in the construction phase, as long as there is assurance from the local agency that the credits will be purchased after the authorization and prior to the letting, the project can proceed to letting. When the plans, specifications and estimate are submitted to the central Bureau of Local Roads and Streets (BLRS), the District/local agency should provide information at that time that the necessary wetland credits will be purchased after authorization. Including the wetland funding on the construction agreement alleviates the need for amending the PE Joint Funding Agreement.

The funding for the wetland credits will be shown as a separate 'Wetland Credit' line on the Division of Cost table of the Joint Funding Agreement.

When the wetland credit is included in the Joint Funding Agreement, that funding will be programmed in the Annual Proposed Highway Improvement Program through BLRS.

Federal funds: If the wetland credit is included on a PE agreement or locally-let construction agreement, only the federal funding (80% of the wetland credit) will be required to be programmed. If the project is on a state letting, the federal funding and required matching funds will need to be programmed.

Local funds: If the local agency uses their local funds to purchase the wetland credits, this funding will still be required to be programmed to accommodate the necessary transfer of appropriation (see last bullet point below). However, the use of local funds alleviates the need for federal authorization prior to reimbursement.

Once the federal funding is authorized, the local agency will then be able to be reimbursed for the 80% of federal funding to account for their expenditure for the wetland credit. Payment for wetland credit occurs through a reduction of their federal balances and BLRS transfers the associated appropriation.

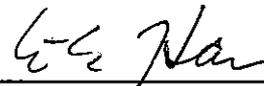
BDE will send an annual report at the end of each fiscal year to BLRS that lists the wetland credits purchased and the local agency and wetland bank involved. Based on this information, BLRS will verify that the funds for these credits were programmed and will transfer the necessary amount of appropriation to OPP for use on the state side of the program for the District from whose bank the credits were purchased.

Wetland Bank Prohibitions

The following is prohibited for Department owned wetland banks:

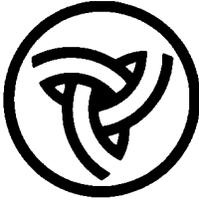
- The selling of credits to private entities.
- The use of wetland banks for non-transportation related projects.

Interim Engineer of Design and Environment



Engineer of Local Roads and Streets





Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2008-07
SUBJECT: INVOICE PROCESSING
ISSUED DATE: October 31, 2008
EFFECTIVE DATE: November 3, 2008

This memorandum adds Section 5-11 concerning invoice processing to Chapter 5 of the Bureau of Local Roads & Streets Manual.

Procedures for processing local agency invoices have been added to Chapter 5 of the Bureau of Local Roads and Streets Manual. Section 5-11 outlines general submittal procedures and supporting documentation requirements. The addition of this section to Chapter 5 simply formalizes existing procedures.

Charles J. Dingersoll

Engineer of Local Roads and Streets

GSL/gsl

Attachments



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2008-08
SUBJECT: DEFINITION OF MAJOR/MINOR CHANGE IN PLANS
ISSUED DATE: October 31, 2008
EFFECTIVE DATE: November 3, 2008

This memorandum revises Section 13-2 of the Bureau of Local Roads & Streets Manual dated November 2007.

The Motor Fuel Tax Streamlining workgroup composed of department staff, municipal representatives, county representatives, and consultant representatives recommended increasing the dollar amount in the definition of Major/Minor Change of plans from \$10,000 to \$20,000. The increase is reflective of the current bidding threshold of \$20,000.

In accordance with 720 ILCS 5/33E-9, all change orders or series of change orders that authorize a net increase or decrease in the cost of a local agency contract by a total of \$10,000 or more, or an increase or decrease in the time of completion by 30 days or more, still must contain one of the following written determinations depending upon the circumstances of the change:

- The undersigned has determined that the circumstances that necessitate this change were not reasonably foreseeable at the time the contract was signed.
- The undersigned has determined that the circumstances that necessitate are germane to the original contract.
- The undersigned has determined that this change is in the best interest of the local agency and is authorized by law.

Please contact Kevin Burke of this office at kevin.burkeiii@illinois.gov with any questions.

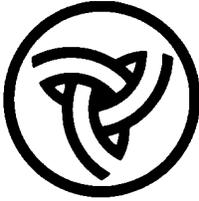
Charles J. Dingersoll

Engineer of Local Roads and Streets

KB/kb

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2009-01
SUBJECT: CATEGORICAL EXCLUSIONS AND DESIGN APPROVAL
ISSUED DATE: March 6, 2009
EFFECTIVE DATE: March 6, 2009

This memorandum replaces Chapter 19 dated January 2006 and revises Section 22-2 dated June 2006 of the Bureau of Local Roads and Streets Manual.

A process review team consisting of representatives of the Federal Highway Administration (FHWA) and the Illinois Department of Transportation (IDOT) recommended an effort to update IDOT's Categorical Exclusion (CE) policies and the FHWA/IDOT agreement where revisions are necessary for clarification, streamlining, or bringing consistency with each other and with current laws and regulations. Based on the results of this process review and the proposal to require design approval for all projects requiring a Project Development Report, revisions have been incorporated into the Bureau of Local Roads and Streets Manual.

CE Group I actions (actions that do not involve the possibility of unusual circumstances) have been updated in Chapter 19 as recommended by the process review team. Also updated in Chapter 19 is clarification regarding which CE Group I projects would require a Project Development Report (PDR) using form BLR 22211. If a PDR is not required for CE Group I actions use form BLR 19100. For CE Group II actions, use form BLR 22210 (formerly form BLR 22110).

All projects requiring a Project Development Report will now require design approval. The districts will have design approval authority for certain CE Group I projects and the Central Office will have design approval authority for all CE Group II projects.

Please contact Gary Galecki at 217.785.8564 or gary.galecki@illinois.gov of this office with any questions.

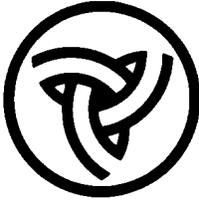
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Acting Engineer of Local Roads and Streets

GJG/kb

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2009-02
SUBJECT: HIGHWAY LIGHTING PLAN REVIEW
ISSUED DATE: April 7, 2009
EFFECTIVE DATE: April 10, 2009

This memorandum revises Section 11-2 dated July 2006, Section 11-7 dated January 2006, and Section 23-7 dated January 2006 of the Bureau of Local Roads & Streets Manual.

The department recently reviewed the highway lighting plan approval for both MFT and federal projects. Based on the review, the department has made revisions to the highway lighting plan approval policy.

For both MFT and federal local projects, only highway lighting improvements that impact a State highway will require a pre-final plan review and final plan approval by the department. If requested by the local agency, the department will perform a review on any highway lighting improvement; however, the local agency must comply with any recommended changes as a result of the requested review. Region 1 District 1 will handle reviews and approvals of highway lighting plans within District 1. Central Bureau of Design & Environment's (BDE) Electrical and Mechanical Unit will handle reviews and approvals of highway lighting plans within Districts 2 – 9.

In order to ensure highway lighting plans meet existing lighting standards, all highway lighting plans will require the seal of the professional engineer responsible for the lighting plans.

Please contact the Local Policy & Technology Unit of this office at DOT.LocalPolicy@illinois.gov with any questions.

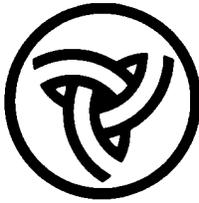
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Acting Engineer of Local Roads and Streets

KB/kb

Attachments

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2009-03
SUBJECT: EMERALD ASH BORER
ISSUED DATE: September 11, 2009
EFFECTIVE DATE: October 01, 2009

This memorandum revises Section 41-10 dated January 2006 of the Bureau of Local Roads & Streets Manual.

The Emerald Ash Borer (EAB) is an exotic Asian beetle that was first found in Detroit, MI in 2002. Since its introduction, the EAB has spread to Illinois, Indiana, Ohio, Pennsylvania, Maryland, Virginia, West Virginia and Wisconsin as of November 2008. The EAB larvae feed on the inner bark and disrupt the tree's ability to transport water and nutrients resulting in mortality.

The United States Department of Agriculture (USDA) has established a quarantine zone that prohibits the moving of ash firewood across state lines and prohibits the intrastate movement of regulated articles. The Illinois Department of Agriculture (IDOA) prohibits intrastate movement of the following items:

- the emerald ash borer in any living stage of development;
- ash trees of any size;
- ash limbs and branches;
- any cut, non-coniferous firewood;
- bark from ash trees and wood chips larger than one inch from ash trees;
- ash logs and lumber with either the bark or the outer one inch of sapwood, or both, attached;
- any item made from or containing the wood of the ash tree that is capable of spreading the emerald ash borer; and
- any other article, product or means of conveyance determined by the Illinois Department of Agriculture to present a risk of spreading the beetle infestation.

Due to the federal and state EAB quarantine, agencies shall not include any species of ash tree (*Fraxinus spp.*) in highway plans. Design plans should be reviewed. Any pay items for ash trees shall be removed and replaced with different trees. While the EAB is currently only a problem in Districts 1, 2, 3, 4, and 5, it is very likely that the EAB will continue to spread. Continuing to plant ash trees only serves to provide future food and breeding sites for this insect.

BLRS Procedure Memo 2009-03
September 11, 2009
Page 2 of 2

The IDOA has established a web site to assist and educate individuals about EAB. For the most recent information about confirmed locations, please visit www.agr.state.il.us/eab/.

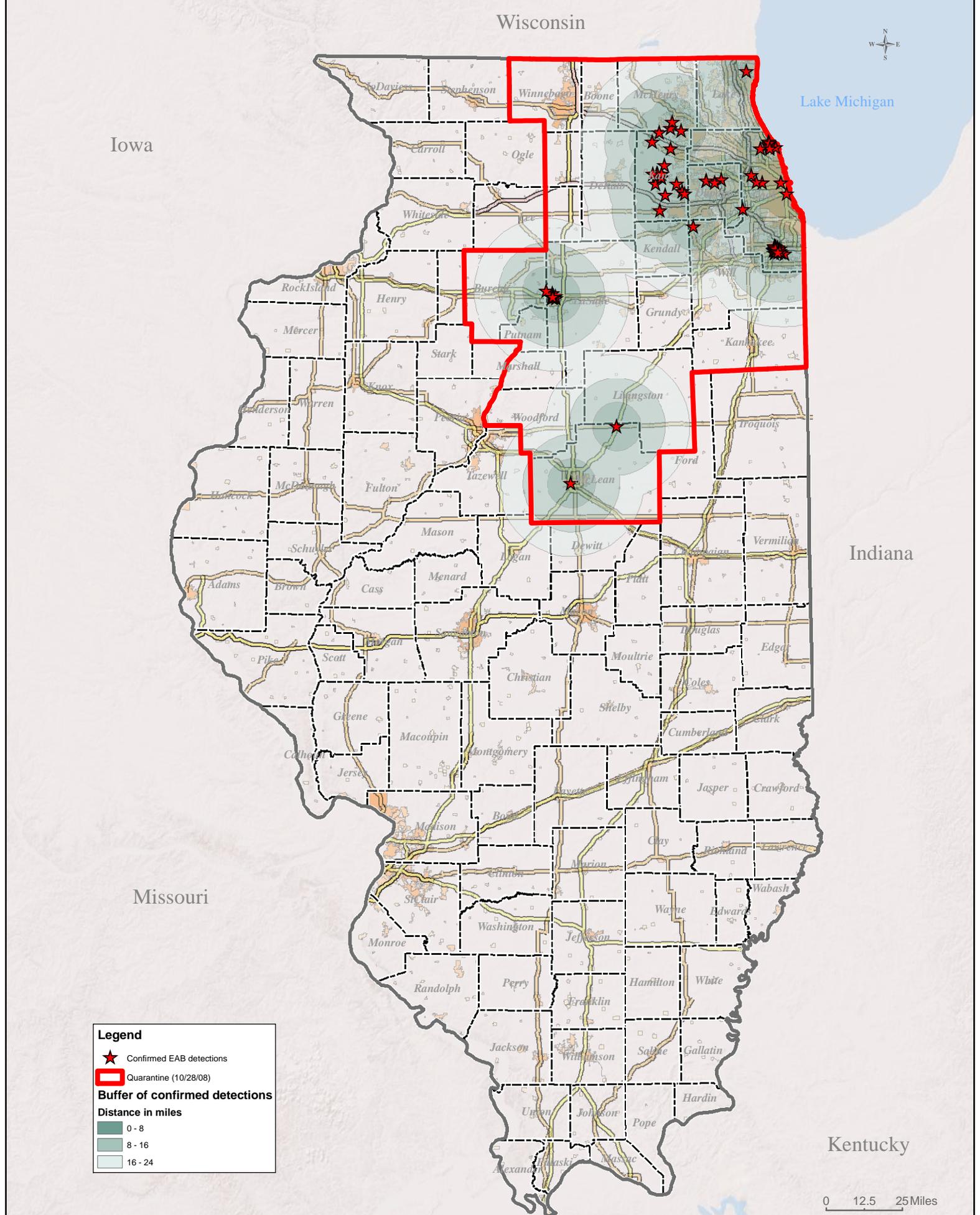
Please contact the Local Policy & Technology Unit at IDOT.LocalPolicy@illinois.gov with any questions.

A handwritten signature in black ink that reads "Darrell Lewis". The signature is written in a cursive, flowing style.

Acting Engineer of Local Roads and Streets

KB/kb

Attachments



Legend

- ★ Confirmed EAB detections
- ▭ Quarantine (10/28/08)

Buffer of confirmed detections

Distance in miles

- 0 - 8
- 8 - 16
- 16 - 24

0 12.5 25 Miles

Illinois Department of Agriculture

EMERALD ASH BORER COMPLIANCE AGREEMENT

Nursery, Nursery Dealer, Landscape Waste, Tree & Shrub Maintenance, Tree Pruning & Removal, Firewood

Company Name: Contact Name: Mr./Ms.

Mailing Address: Street City/Town State Zip code

Telephone: Fax: E-mail:

County

Disposal or Processing Yard Location (if different than mailing address above): Street

City/Town Zipcode County

Applicable to State or Federal Cooperative Domestic Quarantines for the Emerald Ash Borer (Agrilus planipennis) pursuant to the Insect Pest and Plant Disease Act (505 Illinois Compiled Statutes 90/1 et seq.)

I acknowledge State and Federal regulations governing the Emerald Ash Borer (EAB) and "regulated articles"*. When working within and near EAB quarantine zone(s), I agree to supply records that may be required for inspection. I agree to comply with the procedures listed in this agreement or with other procedures as required by the Director of the Illinois Department of Agriculture as follows:

- 1. Regulated articles shall not be moved out of quarantine zone(s) at any time unless: a) the regulated articles have been chipped/processed to a size measuring less than 1.0 inch in two dimensions; or b) the bark and outer 1/4 inch of sapwood has been removed;
2. From April 30 to September 1, regulated articles originating from EAB-infested areas shall only be transported within the quarantine zone(s) if: a) the regulated articles are transported in an enclosed vehicle or a vehicle completely enclosed by a covering, such as canvas, plastic or other tightly woven cloth, adequate to prevent the passage of the Emerald Ash Borer to the environment; and b) upon arrival at the final destination, the regulated articles are immediately processed to compliance standards;
3. All ash stumps will be ground to eight inches (8") below the soil surface and covered with soil;
4. Employers will inform their employees about the EAB quarantine zone(s) borders and about EAB quarantine regulations. Employers will also instruct employees how to identify the EAB and its signs;
5. The Illinois Department of Agriculture will be informed of any suspected EAB infestation;
6. A copy of this compliance agreement will be carried by employees working within EAB quarantine zone(s);
7. Per this agreement, ash products, ash nursery stock and/or live ash trees that originate from or are brought into a quarantine zone may not be removed from the zone, and may be subject to immediate processing to compliance standards, confiscation, and destruction; and
8. Movement of ALL deciduous (non-coniferous) firewood out of or through the quarantine zone(s) is prohibited, regardless of initial origin unless the firewood has been treated compliant with one of the following: a) USDA-APHIS-PPQ Kiln Sterilization Standard T404-b-4; b) USDA-APHIS_PPQ Fumigation Treatment Standard T404-b-1-1; USDA-APHIS-PPQ Heat Treatment Standard T314-a; or d) all bark and the outer 1/4 inch of sapwood has been completely removed.

*"Regulated Articles" are hereby defined as the following:

- 1) The Emerald Ash Borer (Agrilus planipennis Fairmaire) in any living stage of development;
2) Ash trees (Fraxinus spp.) of any size;
3) Ash limbs and branches;
4) Any cut non-coniferous firewood;
5) Bark from ash trees and wood chips larger than one inch in two dimensions from ash trees;
6) Ash logs and lumber with either the bark or the outer one-half-inch of sapwood or both, attached;
7) Any item made from or containing the wood of the ash tree which is capable of spreading the emerald ash borer;
8) Any other article, product, or means of conveyance when it is determined by the Director of Agriculture that it presents the risk of spread of the Emerald Ash Borer in any stage of development.

Affixing of the signatures below will validate this agreement which shall remain in effect until cancelled. This document may be revised as necessary or revoked for noncompliance by the Department.

Signature/Title Date Signed

State Agency Official Signature Compliance Agreement No:

Illinois Department of Agriculture
2280 Bethany Road, Suite B
DeKalb, Illinois 60115
Phone: 815-787-5476
Fax: 815-787-5488



Illinois Department of Agriculture
P.O. Box 19281
Springfield, Illinois 62794-9281
Phone: 217-785-2427
Fax 217-524-4882

One original signed agreement to be maintained at the Illinois Dept. of Agriculture and a second original signed agreement to be maintained at the company office. For up-to-date information on EAB please go to: www.IllinoisEAB.com or www.state.il.us/EAB. [12/12/2008, EABComplianceAgreement V.doc]

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You Can Help...

Do Not Move Firewood!



Photo: Canadian Food Inspection Agency

- Emerald ash borer can easily be transported in ash logs.
- Purchase firewood locally from a known source.
- Be sure to use all of the firewood in the cold months so that no hidden emerald ash borer larvae or adults can survive on logs left through the spring.
- Monitor the health of ash trees. Look for dead and dying branches at the top of the tree's crown.

If You Think You Have Emerald Ash Borer:

- For assistance in identifying suspect insects visit www.emeraldashborer.info/ or www.na.fs.fed.us/fhp/eab/
- Call the national EAB hotline 866-EAB-4512
- Contact Illinois Department of Agriculture's Pesticide Hotline at 800-641-3934 or in the Chicago area use 312-74BEETL (312-742-3385)
- Contact your city or village forester or arborist for assistance.
- Contact the University of Illinois Extension Service office in your county. Find a nearby office at <http://web.extension.uiuc.edu/cie2/offices/findoffice.cfm> or by calling 217-333-5900
- Contact a certified arborist. You may find one nearby at www.isa-arbor.com/findArborist/findarborist.aspx
- Or contact The Morton Arboretum Plant Clinic at 630-719-2424



For more information about The Morton Arboretum
visit www.mortonarb.org
The Morton Arboretum
4100 Illinois Route 53, Lisle, IL 60532-1293



*Stop the Borer,
Save Ash Trees*



Emerald Ash Borer

Emerald Ash Borer

The emerald ash borer, (*Agrilus planipennis* Fairmaire) is a small (1/2 inch long, 1/8 inch wide) metallic green beetle native to Asia. Though it was first found in Michigan in 2002, it was likely that a beetle population had been established in the Detroit area for many years prior. More than 15 million ash trees have been killed. It has been also detected in Ohio, Indiana, Virginia, Maryland, and Ontario, Canada.



Actual size

Biology

The adult emerald ash borer emerges in May – July and the female lays numerous eggs in bark crevices and between layers of bark.

The eggs hatch in 7 – 10 days and larvae bore into the tree where they chew the inner bark and phloem creating serpentine galleries as they feed. This cuts off the flow of water and nutrients in the tree, causing dieback and death.



Larva

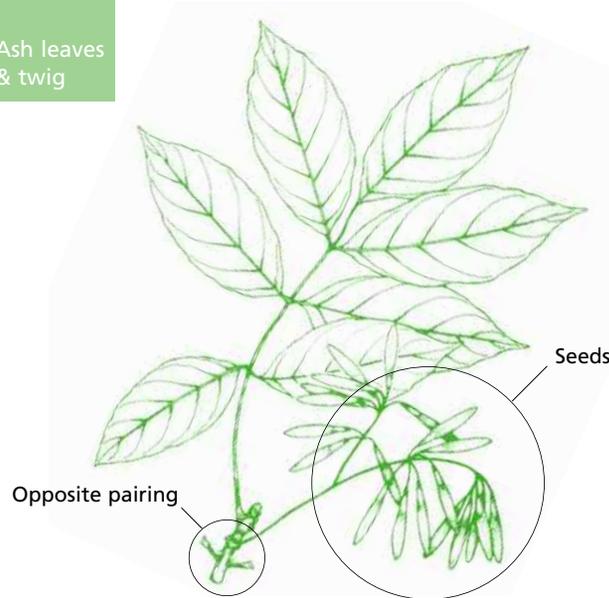


S-shaped galleries

Ash Trees

Ash trees are very common in landscapes and most species, namely white ash (*Fraxinus americana*) and green ash (*F. pennsylvanica*) are native to Illinois forests. It is estimated that as much as 20% of street trees in the Chicago area are ash.

Ash leaves & twig



Opposite pairing

Seeds

Characteristics of ash:

- Compound leaves made up of small, glossy green leaflets.
- Leaves, twigs and branches grow in opposite pairs.
- Bark of mature trees is gray and furrowed, often appearing in a diamond pattern.
- Some ash trees will produce small canoe paddle-shaped seeds.
- Seedless ash trees may develop ash flower galls that turn from green to brown and may persist in the crown throughout the year.



Dieback



Epicormic branching or suckers



Bark slits



Emergence hole - Shown actual size of 1/8" and D-shaped

Signs and Symptoms

The most visible sign of infestation is crown dieback, which appears after the first year. Branches at the top of the crown will die and more branches will die in subsequent years. Typically, the tree will be completely dead in about three years, though suckers will sprout from the base of the tree and on the trunk. The bark may also split vertically and woodpeckers may feed on the beetle leaving visible damage on the bark. Treatments with insecticides are being studied. However, all ash trees proximate to any new infestation will be lost.

Adult beetles emerging from trees will leave a very small, 1/8 inch diameter distinctly "D" shaped exit hole that may appear anywhere on the trunk or upper branches.

Other Stressors:

Ash trees may suffer from a large number of pest and disease problems that cause similar symptoms. Native borers also attack ash trees, though they leave larger exit holes up to a 1/4 inch in diameter that are usually circular or oval in shape.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2009-04
SUBJECT: MAINTENANCE PERIOD AND MAINTENANCE GROUP DEFINITIONS
ISSUED DATE: October 13, 2009
EFFECTIVE DATE: October 26, 2009

This memorandum revises Section 5-5 dated July 2006, Section 11-7 dated April 2009, Section 12-2 dated April 2007, Section 14-2 dated January 2006 and Section 14-3 dated January 2006 of the Bureau of Local Roads & Streets Manual.

The Motor Fuel Tax Streamlining Workgroup composed of department staff, municipal representatives, county representatives, and consultant engineering representatives recommended allowing a 24-month general maintenance period and reducing approval requirements for certain routine general maintenance items.

Local highway agencies shall establish either a 12 or 24-month general maintenance period. Maintenance resolutions, engineering agreements, estimates, and expenditure statements will be submitted only once per maintenance period.

Contract proposals involving lighting maintenance, signal maintenance, or any other maintenance project that only involves contractor equipment and/or labor may be awarded for a period not exceeding 3 years. Material proposals for the purchase of salt or other ice control measures may be for an entire winter period even if it extends over two maintenance periods. All other contract or material proposals must be completed within the maintenance period.

General maintenance group definitions have been modified and approval requirements for general maintenance groups have been revised. Maintenance items that are not required to be competitively bid and routine maintenance operations will not need department's approval of plans, specifications, and estimates and approval of proposal prior to the letting. While using department standard forms is still recommended, local agencies are not required to use department standard forms on proposals that do not require department review and approval.

All MFT funded projects will still require compliance with prevailing wage, apprenticeship and training certification, and all other applicable regulations, laws, and MFT policies. Any MFT funded project that does not comply with the applicable regulations, laws, and MFT policies will not be eligible for MFT funding. All MFT funded projects subject to competitive bidding must be advertised in the department's Notice to Contractor's Bulletin.

Please contact the BLRS Local Policy & Technology Unit at DOT.LocalPolicy@illinois.gov with any questions.

A handwritten signature in black ink that reads "Danell Lewis". The signature is written in a cursive, flowing style.

Acting Engineer of Local Roads and Streets

KB/kb

Attachments



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2009-05
SUBJECT: ASSET MANAGEMENT
ISSUED DATE: December 28, 2009
EFFECTIVE DATE: January 1, 2010

This memorandum revises Section 4-1 dated October 2007 and Section 4-3 dated January 2006 of the Bureau of Local Roads & Streets Manual.

Asset management is a business process and a decision-making framework that covers an extended time horizon, draws from economics as well as engineering, and considers a broad range of assets. The asset management approach incorporates the economic assessment of trade-offs among alternative investment options and uses this information to help make cost-effective investment decisions.

Local agencies may use federal funds to participate in the costs incurred for management systems related to the development, establishment, and implementation of a system for managing certain assets located on and off Federal-aid highways. Local agencies may also use Motor Fuel Tax (MFT) funds for asset management, if the assets are eligible to be constructed or maintained with MFT funds. Asset management may be performed by consulting engineers or local agency staff using paper or electronic methods.

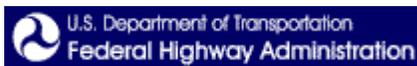
Please contact the BLRS Local Policy & Technology Unit at DOT.LocalPolicy@illinois.gov with any questions.

A handwritten signature in cursive script that reads "Darrell Lewis".

Acting Engineer of Local Roads and Streets

KB/kb

Attachments

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Planning

FHWA > HEP > Planning



Memorandum

U.S. Department of Transportation
Federal Highway Administration

Subject: **INFORMATION:** Treatment of Management Systems Cost

Date: **May 6, 2009**

From: Robert Ritter, Acting Director, Office of Planning
Butch Wlaschin, Director, Office of Asset Management

Reply to HEPP-20/ HIAM-10
Attn. of :

To: Division Administrators
Directors of Field Services

In accordance with Section 303, Title 23, United States Code (U.S.C.) Federal funds may participate in the costs incurred by States for management systems. The purpose of this memorandum is to clarify the eligibility of costs related to the State development, establishment, and implementation of a system for managing each of the following:

- Highway pavement of Federal-aid highways
- Bridges on and off Federal-aid highways
- Highway safety
- Traffic congestion
- Public transportation facilities and equipment
- Intermodal transportation facilities and systems

As each State carries out the continuing, cooperative, and comprehensive transportation planning process that provides for consideration and implementation of projects, strategies, and services that will address efficient system management and emphasize preservation of the existing systems, Surface Transportation Program (STP), National Highway System Program (NHS), Highway Bridge Program (HBP), and Congestion Mitigation and Air Quality Program (CMAQ) funds may be used for development of an integrated management system and linking management systems as a decision-making tool. Furthermore, 23 U.S.C. 505(a)(3) states that State Planning and Research (SPR) funds are also eligible to support the development and implementation of management systems in 23 U.S.C. 303.

The management systems listed above and the data collection and data management that support these systems are funded as a direct project cost¹. To further clarify, costs associated with on- or off-system data, as appropriate, pertaining to the comprehensive transportation network system that benefits or that is part of the transportation planning process may also be considered as a direct project cost.

Costs associated with updating data components may be considered necessary expenses associated with running a functioning management system, but in implementing the management system, it may be necessary to augment the system data with updated annual or biennial data collection. In such case, the State may fund this as a direct project cost at its discretion.

As the management systems mature, the allocable portion of necessary costs associated with running them, including costs of utilities, insurance, security, servicing, normal repairs and alterations, and the like is allowable as indirect costs to the extent that they keep such management systems in an efficient operating condition and do not add to the permanent value of the system nor appreciably prolong its intended life. They are allowable as an indirect cost provided the State has an approved indirect cost rate and may also be eligible for Federal funding (see May 5, 2004 memo – "Clarification of Policy on Indirect Costs of State and Local Governments: <http://www.fhwa.dot.gov/legsregs/directives/policy/indirectcost.htm>). After the implementation of the management systems, we anticipate such general or routine costs will be treated as indirect costs, in accordance with Title 2, Code of Federal Regulations, Part 225, "Cost Principles for State, Local, and Indian Tribal Governments." Once the systems are fully operational and fully utilized, such indirect costs may either be paid with State funds, or through equitable distribution to all benefiting cost objectives via an approved indirect cost allocation plan. It should be noted

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that costs for major management system upgrades, including integration of management systems as support to the transportation planning process, may be eligible as a direct project cost if such upgrades add to the permanent value of the system or appreciably prolong its intended life.

The management systems as provided for in 23 U.S.C. 303 and 505, are eligible to be charged to the project as a direct cost as follows:

- Pavement Management System, as it pertains to Federal-aid system is eligible for SPR, NHS, and STP funds.
- Bridge Management (NBIS) System is eligible (see 23 U.S.C. 151) for SPR, NHS, STP, and HBP funds.
- Safety Management System (now called the Strategic Highway Safety Plan) is funded under the Highway Safety Improvement Program (23 U.S.C. 148) but can also use SPR, STP, and NHS funds.
- Congestion Management Program (formerly CMS) is eligible for SPR, PL, NHS, STP, and CMAQ funds.
- Public Transportation and Facilities is eligible for Federal Transit Administration funding.
- Intermodal Transportation Facilities Management System is eligible for SPR, NHS, and STP funds.
- Integration and upgrading of management systems, as support to the transportation planning process, is eligible for SPR, NHS, and STP funds; however, general maintenance must be treated as an indirect cost.
- Data collection, data management, and updating data components that support management systems are eligible and funded as a direct project cost.
- Administrative or financial management information systems are not eligible for use with Federal funds as a direct project cost. A State's administrative or financial system can be funded entirely with State funds or with State funds and the applicable annual depreciation cost allocated to all benefiting cost objectives identified in the State's indirect cost allocation plan.

If you have any questions regarding this information or would like to discuss this further, please contact Kenneth Petty at kenneth.petty@dot.gov or (202) 366-6654 or Lorrie Lau at lorrie.lau@dot.gov or (415) 744-2628 in the Office of Planning or Nastaran Saadatmand at nastaran.saadatmand@dot.gov or (202) 366-1337 in the Office of Asset Management.

¹ Pursuant to 2 CFR 225, Appendix A, (C)(1)(b), the portion of the allocable cost for general computers that is for the management systems development and implementation are funded as a direct cost. The computer cost for the other portion may be charged to eligible funds as an indirect cost under an approved indirect cost allocation plan.

To provide feedback, suggestions or comments for this web page about its appearance, navigation, or operation, please contact Kenneth Petty at kenneth.petty@dot.gov.

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United States Department of Transportation - **Federal Highway Administration**

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2009-06
SUBJECT: 96TH ILLINOIS GENERAL ASSEMBLY'S
2009 SESSION CHANGES
ISSUED DATE: December 29, 2009
EFFECTIVE DATE: January 1, 2010

This memorandum revises various sections of the Bureau of Local Roads & Streets Manual.

This memorandum supersedes sections 3-2 dated December 2006, 4-2 dated January 2006, 9-2 dated January 2006, 12-1 dated April 2007 and Figure 4-3A dated January 2006.

P.A. 96-0034 (HB 0255) amended the Illinois Vehicle Code by increasing a vehicle load to 80,000 on non-designated highways. The BLRS Manual's section 3-2.05(a) was revised to reflect this change. The law is effective 1/1/2010.

P.A. 96-0366 (HB 0641) amended the Illinois Highway Code by increasing a lapse period to 48 months (4 years) for the Township Bridge Program funds. Subsequently, the changes were made to the BLRS Manual's following sections 4-2.02(a), 4-2.03, 9-2.01(c), and 9-2.02. The law is effective 1/1/2010.

P.A. 96-0034 (HB 0255) amended the Motor Fuel Tax Law by increasing the monthly amount to be transferred to the Grade Crossing Protection Fund to \$3,500,000 (previously \$2,250,000). The amount to be used for the construction or reconstruction of rail highway grade separation structures was increased to \$12,000,000 (previously \$6,000,000) annually. Such increase is reflected in the BLRS Manual's section 4-2.04 and Figure 4-3A. The law is effective 7/1/2009.

P.A. 96-0170 (HB 0585) amended the Counties Code by increasing a competitive bidding requirement threshold for counties with fewer than 2 million inhabitants to \$30,000 (previously \$20,000). As a result, the changes were made to the BLRS Manual's sections 12-1.02(a) and 12-1.02(b). The law is effective 1/1/2010.

All public acts may be viewed at the Illinois General Assembly's official website at <http://www.ilga.gov>.

Sincerely,

A handwritten signature in cursive script that reads "Darrell Lewis".

Darrell W. Lewis, P.E.
Acting Engineer of Local Roads and Streets



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2010-01
SUBJECT: HIGHWAY-RAIL GRADE CROSSING APPROACH
GEOMETRIC DESIGN
ISSUED DATE: April 16, 2010
EFFECTIVE DATE: April 19, 2010

This memorandum replaces Figure 33-3B in Section 33-3 of the BLRS Manual dated January 2006

The Bureau of Local Roads and Streets and the Illinois Commerce Commission have reviewed the geometric design guidelines for approaches on highway-rail grade crossings using Motor Fuel Tax Funds, Grade Crossing Protection Funds, or other State Funds. Reconstruction of existing highway-rail grade crossing approaches should be designed according to Chapter 33 of the BLRS Manual. On figure 33-3B, new footnotes modifying the design speed and travelled way width has been added to the 250 and 400 ADT columns for highway-rail grade crossing approaches on the road district system.

Please contact dot.localpolicy@illinois.gov with any questions.

A handwritten signature in cursive script that reads "Darrell Lewis".

Acting Engineer of Local Roads and Streets

KB/kb

Attachment



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2010-02
SUBJECT: Unsignalized Pedestrian Crosswalk Signs
ISSUED DATE: August 27, 2010
EFFECTIVE DATE: September 1, 2010

This memorandum revises Section 39-2 of the Bureau of Local Roads & Streets Manual dated October 2008

Public Act 096-1165 effective July 22, 2010 amends 625 ILCS 5/11-1002. The statute now requires when traffic control signals are not in place or not in operation the driver of a vehicle shall stop and yield the right-of-way, to a pedestrian crossing the roadway within a crosswalk.

Section 2B.11 and Section 2B.12 of the 2009 Manual on Uniform Traffic Control Devices outline the requirements for unsignalized pedestrian crosswalk sign series. The STOP HERE FOR PEDESTRIAN signs (R1-5b and R1-5c) and the STOP FOR PEDESTRIAN signs (R1-6a and R1-9a) shall only be used where state law specifically requires that a driver must stop for a pedestrian in a crosswalk. Therefore, signs using the yield symbol or yield text (R1-5, R1-5a, R1-6, or R1-9) shall not be used at unsignalized pedestrian crosswalks.

Please contact the Local Policy & Technology Unit at DOT.LocalPolicy@illinois.gov with any questions.

A handwritten signature in cursive script that reads "Darrell Lewis".

Acting Engineer of Local Roads and Streets

KB/kb

Attachments

AN ACT concerning transportation.

**Be it enacted by the People of the State of Illinois,
represented in the General Assembly:**

Section 5. The Illinois Vehicle Code is amended by changing Sections 11-1002 and 11-1002.5 as follows:

(625 ILCS 5/11-1002) (from Ch. 95 1/2, par. 11-1002)

Sec. 11-1002. Pedestrians' right-of-way at crosswalks. (a) When traffic control signals are not in place or not in operation the driver of a vehicle shall stop and yield the right-of-way, ~~slowing down or stopping if need be to so yield,~~ to a pedestrian crossing the roadway within a crosswalk when the pedestrian is upon the half of the roadway upon which the vehicle is traveling, or when the pedestrian is approaching so closely from the opposite half of the roadway as to be in danger.

(b) No pedestrian shall suddenly leave a curb or other place of safety and walk or run into the path of a moving vehicle which is so close as to constitute an immediate hazard.

(c) Paragraph (a) shall not apply under the condition stated in Section 11-1003 (b).

(d) Whenever any vehicle is stopped at a marked crosswalk or at any unmarked crosswalk at an intersection to permit a pedestrian to cross the roadway, the driver of any other

vehicle approaching from the rear shall not overtake and pass such stopped vehicle.

(e) Whenever stop signs or flashing red signals are in place at an intersection or at a plainly marked crosswalk between intersections, drivers shall yield right-of-way to pedestrians as set forth in Section 11-904 of this Chapter.

(Source: P.A. 79-857.)

(625 ILCS 5/11-1002.5)

Sec. 11-1002.5. Pedestrians' right-of-way at crosswalks; school zones.

(a) For the purpose of this Section, "school" has the meaning ascribed to that term in Section 11-605.

On a school day when school children are present and so close thereto that a potential hazard exists because of the close proximity of the motorized traffic and when traffic control signals are not in place or not in operation, the driver of a vehicle shall stop and yield the right-of-way, ~~slowing down or stopping if need be to so yield,~~ to a pedestrian crossing the roadway within a crosswalk when the pedestrian is upon the half of the roadway upon which the vehicle is traveling, or when the pedestrian is approaching so closely from the opposite half of the roadway as to be in danger.

For the purpose of this Section, a school day shall begin at seven ante meridian and shall conclude at four post

meridian.

This Section shall not be applicable unless appropriate signs are posted in accordance with Section 11-605.

(b) A first violation of this Section is a petty offense with a minimum fine of \$150. A second or subsequent violation of this Section is a petty offense with a minimum fine of \$300.

(c) When a fine for a violation of subsection (a) is \$150 or greater, the person who violates subsection (a) shall be charged an additional \$50 to be paid to the unit school district where the violation occurred for school safety purposes. If the violation occurred in a dual school district, \$25 of the surcharge shall be paid to the elementary school district for school safety purposes and \$25 of the surcharge shall be paid to the high school district for school safety purposes. Notwithstanding any other provision of law, the entire \$50 surcharge shall be paid to the appropriate school district or districts.

For purposes of this subsection (c), "school safety purposes" has the meaning ascribed to that term in Section 11-605.

(Source: P.A. 95-302, eff. 1-1-08.)

Section 99. Effective date. This Act takes effect upon becoming law.

Support:

- 10 Figure 2A-3 shows examples of some typical placements of STOP signs and YIELD signs.
- 11 Section 2A.16 contains additional information about separate and combined mounting of other signs with STOP or YIELD signs.

Guidance:

- 12 *Stop lines that are used to supplement a STOP sign should be located as described in Section 3B.16. Yield lines that are used to supplement a YIELD sign should be located as described in Section 3B.16.*
- 13 *Where there is a marked crosswalk at the intersection, the STOP sign should be installed in advance of the crosswalk line nearest to the approaching traffic.*
- 14 *Except at roundabouts, where there is a marked crosswalk at the intersection, the YIELD sign should be installed in advance of the crosswalk line nearest to the approaching traffic.*
- 15 *Where two roads intersect at an acute angle, the STOP or YIELD sign should be positioned at an angle, or shielded, so that the legend is out of view of traffic to which it does not apply.*
- 16 *If a raised splitter island is available on the left-hand side of a multi-lane roundabout approach, an additional YIELD sign should be placed on the left-hand side of the approach.*

Option:

- 17 If a raised splitter island is available on the left-hand side of a single lane roundabout approach, an additional YIELD sign may be placed on the left-hand side of the approach.
- 18 At wide-throat intersections or where two or more approach lanes of traffic exist on the signed approach, observance of the right-of-way control may be improved by the installation of an additional STOP or YIELD sign on the left-hand side of the road and/or the use of a stop or yield line. At channelized intersections or at divided roadways separated by a median, the additional STOP or YIELD sign may be placed on a channelizing island or in the median. An additional STOP or YIELD sign may also be placed overhead facing the approach at the intersection to improve observance of the right-of-way control.

Standard:

- 19 **More than one STOP sign or more than one YIELD sign shall not be placed on the same support facing in the same direction.**

Option:

- 20 For a yield-controlled channelized right-turn movement onto a roadway without an acceleration lane and for an entrance ramp onto a freeway or expressway without an acceleration lane, a NO MERGE AREA (W4-5P) supplemental plaque (see Section 2C.40) may be mounted below a Yield Ahead (W3-2) sign and/or below a YIELD (R1-2) sign when engineering judgment indicates that road users would expect an acceleration lane to be present.

Section 2B.11 Yield Here To Pedestrians Signs and Stop Here For Pedestrians Signs (R1-5 Series)**Standard:**

- 01 **Yield Here To (Stop Here For) Pedestrians (R1-5, R1-5a, R1-5b, or R1-5c) signs (see Figure 2B-2) shall be used if yield (stop) lines are used in advance of a marked crosswalk that crosses an uncontrolled multi-lane approach. The Stop Here for Pedestrians signs shall only be used where the law specifically requires that a driver must stop for a pedestrian in a crosswalk. The legend STATE LAW may be displayed at the top of the R1-5, R1-5a, R1-5b, and R1-5c signs, if applicable.**

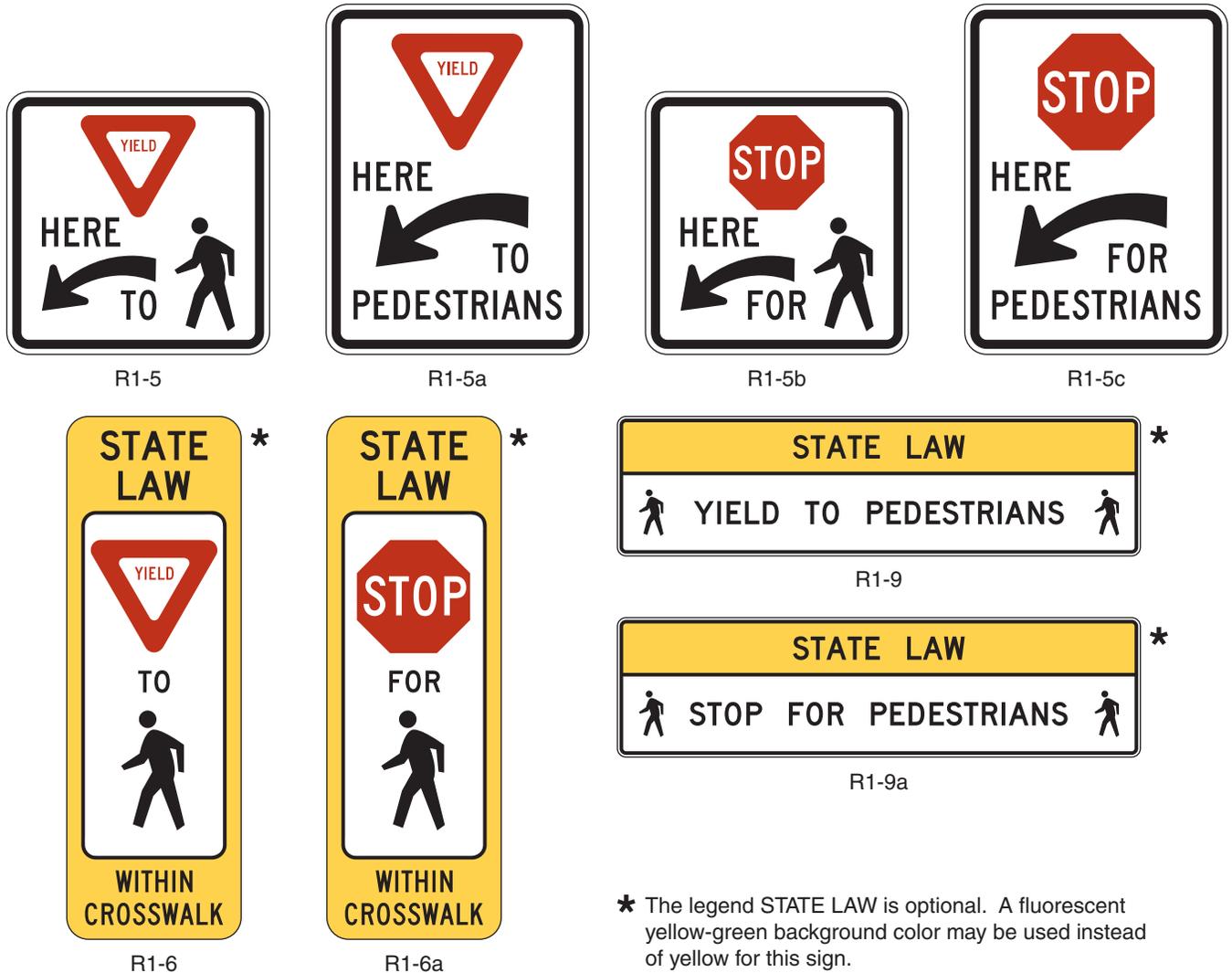
Guidance:

- 02 *If yield (stop) lines and Yield Here To (Stop Here For) Pedestrians signs are used in advance of a crosswalk that crosses an uncontrolled multi-lane approach, they should be placed 20 to 50 feet in advance of the nearest crosswalk line (see Section 3B.16 and Figure 3B-17), and parking should be prohibited in the area between the yield (stop) line and the crosswalk.*
- 03 *Yield (stop) lines and Yield Here To (Stop Here For) Pedestrians signs should not be used in advance of crosswalks that cross an approach to or departure from a roundabout.*

Option:

- 04 Yield Here To (Stop Here For) Pedestrians signs may be used in advance of a crosswalk that crosses an uncontrolled multi-lane approach to indicate to road users where to yield (stop) even if yield (stop) lines are not used.

Figure 2B-2. Unsignalized Pedestrian Crosswalk Signs



* The legend STATE LAW is optional. A fluorescent yellow-green background color may be used instead of yellow for this sign.

05 A Pedestrian Crossing (W11-2) warning sign may be placed overhead or may be post-mounted with a diagonal downward pointing arrow (W16-7P) plaque at the crosswalk location where Yield Here To (Stop Here For) Pedestrians signs have been installed in advance of the crosswalk.

Standard:

06 **If a W11-2 sign has been post-mounted at the crosswalk location where a Yield Here To (Stop Here For) Pedestrians sign is used on the approach, the Yield Here To (Stop Here For) Pedestrians sign shall not be placed on the same post as or block the road user’s view of the W11-2 sign.**

Option:

07 An advance Pedestrian Crossing (W11-2) warning sign with an AHEAD or a distance supplemental plaque may be used in conjunction with a Yield Here To (Stop Here For) Pedestrians sign on the approach to the same crosswalk.

08 In-Street Pedestrian Crossing signs and Yield Here To (Stop Here For) Pedestrians signs may be used together at the same crosswalk.

Section 2B.12 In-Street and Overhead Pedestrian Crossing Signs (R1-6, R1-6a, R1-9, and R1-9a)

Option:

01 The In-Street Pedestrian Crossing (R1-6 or R1-6a) sign (see Figure 2B-2) or the Overhead Pedestrian Crossing (R1-9 or R1-9a) sign (see Figure 2B-2) may be used to remind road users of laws regarding right-of-way at an unsignalized pedestrian crosswalk. The legend STATE LAW may be displayed at the top of the R1-6, R1-6a, R1-9, and R1-9a signs, if applicable. On the R1-6 and R1-6a signs, the legends STOP or YIELD may be used instead of the appropriate STOP sign or YIELD sign symbol.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2011-01

SUBJECT: PAVEMENT MAINTENANCE, REHABILITATION AND DESIGN POLICIES

ISSUED DATE: November 23, 2011

EFFECTIVE DATE: January 1, 2012

This memorandum:

- Revises Sections 14-1.02;
- Moves Section 33-4 into a new Chapter as Section 46-3, Sections 37-1 through 37-7 into a new chapter as Sections 44-1 through 44-7, Section 37-8 into a new chapter as Section 46-4, and Section 37-9 into a new chapter as Section 44-8;
- Deletes Section 33-5 and 33-6; and
- Creates Section 46-5, 46-6, and 46-7

In 2010, the Bureau of Local Roads & Streets in cooperation with local agencies, consultants, and industry conducted a review of the various pavement policies contained in the Bureau of Local Roads & Streets (BLRS) Manual. Based on this review several sections of the BLRS Manual have been revised.

All pavement maintenance, rehabilitation, and construction projects will need to comply with accessibility standards. Resurfacing projects are considered alterations for curb ramp accessibility; therefore, curb ramps shall be reviewed for compliance with accessibility standards whenever resurfacing projects under Chapter 14, 44, or 46 are performed. Non-compliant curb ramps shall be addressed as part of the project unless the agency's transition plan provides for an alternative.

Following is a summary of changes:

Chapter 14

- Maintenance with Hot-Mix Asphalt (HMA) was revised to allow a maximum 2 inch overlay for all surface types. Warm Mix Asphalt (WMA) was also included. If pavement is milled, milled thickness plus 2 inches of HMA/WMA may be placed as a maintenance project. Allows single lane width HMA/WMA maintenance projects. Clarified drainage improvements that are allowed under HMA/WMA maintenance projects.

Chapter 33

- Section 33-4 LAPP Policy was moved to Section 46-3. The LAPP Policy has been re-titled as Local Agency Function Overlay (LAFO) Policy since the policy did not adequately cover existing pavement preservation concepts. Form BLR 33410 has been re-numbered as BLR 46300 and has been revised to accommodate additional projects (see attached).
- Section 33-5 Special Maintenance was deleted due to lack of use and additional flexibility allowed under HMA/WMA Maintenance in Chapter 14.
- Section 33-6 was a place holder for intermittent resurfacing policy. The concepts of intermittent resurfacing were included into HMA/WMA Maintenance in Chapter 14.

Chapter 37

- Chapter 37 was split between Chapter 44 Pavement Design and Chapter 46 Pavement Rehabilitation; therefore, Chapter 37 is now reserved for future use.

Chapter 44

- Chapter 44 Pavement Design incorporates Section 37-1 through Section 37-7 and Section 37-9 into the new chapter.
- Traffic factors for 73,280 pound designs have been eliminated due to changes in state law that made 80,000 pound weight limit the legal load for all highways in Illinois.
- PG Binder selection tables were modified slightly to provide better information on PG Binder selection impact on pavement design.
- Traffic factors and design algorithms will be reviewed this winter to update the design procedures.

Chapter 46

- Section 46-2 incorporates Sections 37-8.01 through 37-8.04.
- Section 46-3 incorporates Section 33-4 LAPP Policy as the new Local Agency Function Overlay (LAFO) Policy. LAFO allows maximum HMA lift thickness of 3.75 inches. Projects may receive multiple LAFO treatments if certain geometric conditions are met.
- Section 46-4 incorporates Sections 37-8.06 through 37-8.09.
- Section 46-5 establishes the design policy for PCC Inlay/Overlay on Existing HMA Surfaces. This design is based on Illinois Center for Transportation research project R27-3 "Design and Concrete Material Requirements for Ultra-Thin Whitetopping Procedures".

- Section 46-6.02 establishes the policy for Hot In-Place Recycling (HIR). HIR has three different methods:
 - HIR - Surface Recycling is also known as Heater Scarification. This process requires an HMA/WMA Overlay. LR400-3 should be used for this process (see attached).
 - HIR – Remixing and HIR – Repaving are new concepts that will require experimental features.
- Section 46-6.03 establishes the policy for Cold In-Place Recycling (CIR) and Section 46-6.04 establishes the policy for Full Depth Reclamation (FDR). Designs and specifications are being developed based on Illinois Center for Transportation research project R27-12 “Cold In-Place Recycling with Asphalt Products (CIRwAP)”. Until designs and specifications are finalized agencies should continue to coordinate projects with the District BLRS using criteria documented in the research report.
- Section 46-7 refers to the Rubblization section in the Bureau of Design & Environment Manual.

Please contact the Local Policy & Technology Unit at dot.LocalPolicy@illinois.gov with any questions.



Acting Engineer of Local Roads and Streets

Attachments

KB/kb



County _____
Local Agency _____
Section Number _____
Project Number _____
Funding Type _____

Route/Location (attach location map) _____

Termini Description _____

Project Length _____ Number of Lanes _____ Cost Estimate _____
Current ADT _____ DHV _____ Truck % _____

Pavement: Existing Type _____ Existing Width _____ Proposed Type _____
Shoulder: Existing Type _____ Shoulder Width/C&G Type _____ Proposed Type _____

[] LAFO: HMA Overlay Thickness (including level binder) _____ or
Cold Mix/ Aggregate Base Course Thickness _____

[] LAPP: Treatment Type _____ Condition Rating _____
Primary Distress _____ Secondary Distress _____

If Yes is checked for any of the following, attachment may be necessary for explanation:

Table with 4 columns: Yes, No, Yes, No. Rows include: Variances (attach justification), Curb Repairs at Intersections, Storm Sewer Inlets Repaired / Replaced, Overlay of Structure Proposed, Existing Parking Lanes, Pavement Flooding Exists, Roto Milling of Old Surface Proposed, Curb Repairs / Replacement, Handicap Ramps Proposed, Sidewalk Construction or Maintenance Proposed, Reflective Crack Control Proposed, Drainage Problems Exist.

Estimated % Patching _____ Estimated % Base Repair _____

Number of intersections that may require improvements within 8 years _____

The following structures are within the project termini (attach current sufficiency rating and inspection report):

[] Categorical Exclusion Concurrence }
[] Design Approval }
[] Design Variance Approval
[] Bridge Deck Resurfacing Approval
Appropriate Local Official Date
Regional Engineer Date
Bureau of Local Roads and Streets Date
Bureau of Bridges and Structures Date

State of Illinois
DEPARTMENT OF TRANSPORTATION
Bureau of Local Roads & Streets

SPECIAL PROVISION
FOR
HOT IN-PLACE RECYCLING (HIR) – SURFACE RECYCLING

Effective: January 1, 2012

All references to Sections and Articles in this Special Provision shall be construed to mean specific Sections and Articles in the Standard Specifications for Road and Bridge Construction adopted by the Department of Transportation.

Description. This work shall consist of in-place rehabilitation of hot-mix asphalt (HMA) pavement by heating, scarifying, rejuvenating, and reshaping the surface followed by the addition of a new HMA surface course according to the thickness specified on the plans.

Materials. Materials shall be according to the following.

<u>Item</u>	<u>Article/Section</u>
(a) Rejuvenating Agent (Note 1)	
(b) Hot-Mix Asphalt	1030

Note 1. The rejuvenating agent shall have a minimum Aged Penetration Retention of 90% when tested according to the following test procedure:

- a. Determine the penetration¹ of an unaged standard PG 58-22 asphalt binder.
- b. Age² the asphalt binder in the Rolling Thin Film Oven (RTFO).
- c. Determine the penetration¹ of the aged binder (A).
- d. Add the rejuvenating agent or rejuvenating agent residue³ at the percentage recommended by the manufacturer (maximum 20% by weight) to the aged binder. Blend uniformly.
- e. Determine the penetration¹ of the rejuvenating agent / aged binder mixture. The penetration of this mixture shall be essentially equivalent to the penetration of the unaged PG 58-22.
- f. Age² the rejuvenating agent / aged binder mixture in the RTFO.
- g. Determine the penetration¹ of the aged rejuvenating agent / aged binder mixture (B).
- h. Determine the Aged Penetration Retention according to the following formula:

Aged Penetration Retention, % = (B/A)x100

¹ AASHTO T 49 at 77°F (25°C).
² AASHTO T 240 aged for 5 hours at 325°F (163°C).
³ If the rejuvenating agent is an emulsion, obtain the residue according to the test procedure "Emulsified Asphalt Residue by Evaporation" located in AASHTO T 59.

Equipment. Equipment shall be according to the following.

<u>Item</u>	<u>Article/Section</u>
(a) Rollers.....	1101.01
(b) Pre-heater (Note 1)	
(c) Heater-Scarifier (Note 2)	

Note 1. The pre-heater shall be a separate independently self-propelled heating unit.

Note 2. The heater-scarifier shall be self-contained, power propelled unit capable of heating, scarifying, adding rejuvenating agent, mixing, and screeding the scarified asphalt surface.

The heating system shall use propane, fuel oil, or butane as fuel, capable of being turned on or off instantly and have a range of width to heat 4-inches beyond each side of the lane width. Heating of the asphalt pavement surface shall be accomplished in such a manner that adequate heat penetration is provided without excessive oxidation, or direct flame contact with the asphalt street. The heaters shall have an enclosed or shielded hood and allow for the pavement to be scarified to the specified depth with the surface temperature of the old pavement not exceeding 375°F (190°C). The machine shall be equipped with a minimum of two rows of spring-mounted scarification teeth. Teeth shall be evenly spaced with the rows offset by an amount equal to one-half of the tooth spacing. Teeth shall be capable of vertical movement, such that the rows of the teeth will follow any contours in the street profile to scarify to the required depth regardless of depression or high areas. Self-regulating controls shall be used to exert pressure from the weight of the machine onto the tooth mounting system, and to control the depth of scarification. The aggregate shall be dislodged, but not fractured, to the specified depth.

The machine shall be capable of adding rejuvenating agent uniformly over the area to be scarified at a uniform rate per distance traveled.

The machine shall be capable of lateral movement of the scarified materials as required, by using a reversible auger and/or adjustable blades. This system shall be capable of maintaining a uniform supply of scarified material distributed as required across the face if the spreader screed.

The heater-scarifier shall be equipped with an automatic electronic grade control device. The device shall be effective in leveling depressions. The device shall be capable of controlling the elevation of the screed relative to either a preset grade control string line or a grade reference device traveling on the adjacent pavement surface. The traveling grade reference device shall be not less than 30 ft (9 m) in length.

The screed or strike off assembly shall effectively produce a finished surface of the required evenness and texture without tearing, shoving or gouging the mixture.

CONSTRUCTION REQUIREMENTS

General. The entire surface to be rehabilitated shall be free of water, soil, vegetation, and foreign material. All base failures shall be repaired prior to the heating scarifying process according to Section 358. Rehabilitation work shall be performed only when the air temperature in the shade is at least 45 °F (7 °C) and the forecast is for rising temperatures.

The surface of the existing pavement shall be heated with a continuously moving heater to allow the pavement to be scarified to a 0.75 to 1.5 in (20 to 38 mm) average depth with the surface temperature of the old pavement not to exceed 375 °F (190 °C). Heat shall be applied under an enclosed or shielded hood and shall extend at least 4 in. (100 mm) beyond the width of scarification on both sides. Scarifying shall be accomplished with pressure scarifiers. The scarifying unit shall be equipped to scarify and move material away from the gutter flags for a depth of 1/2 in. (13 mm) by 4 in. (100 mm) wide. The heating-scarifying operation shall not exceed 30 ft (10 m) per minute. When a repaving pass is being made adjacent to a previously placed mat, the longitudinal repaving seam shall extend at least 2 in. (50 mm) into the previously placed mat.

Immediately after the scarifying operation, the rejuvenating agent shall be applied at the maximum rate of 0.20 gal/sq yd (0.5 L/sq m). The actual rate will be determined by the Contractor based on pavement condition, rejuvenating agent, and pavement samples. The Contractor will provide the Engineer with the application rate prior to construction. The application rate should not vary by more than ± 0.03 gal/sq yd (± 0.1 L/sq m) unless existing pavement conditions change. Any modification of the application rate shall be approved by the Engineer. The surface shall then be leveled by distributing the heated, scarified and treated (HST) material over the width being processed so as to produce a uniform cross section. The minimum temperature of the HST material after leveling shall be 175 °F (80 °C). The HST material shall be compacted before the temperature of the mix drops below 150 °F (65 °C).

Compaction shall be accomplished by performing a growth curve within the first half mile of production. If an adjustment is made to the rejuvenating agent's application rate, the Engineer reserves the right to request an additional growth curve. The growth curve, consisting of a plot of lb/cu ft (kg/cu m) vs. number of passes with the project breakdown roller, shall be developed. Roller speed during the growth curve testing shall be the same as the normal paving operation. This curve shall be established by use of a nuclear gauge. Tests shall be taken after each pass until the highest lb/cu ft (kg/cu m) is obtained. This value shall be the target density.

A new growth curve is required if the breakdown roller used on the growth curve is replaced with a new roller during production. The target density shall apply only to the specific gauge used. If additional gauges are to be used to determine density specification compliance, the Contractor shall establish a unique minimum allowable target density from the growth curve location for each gauge.

TABLE 1 - MINIMUM ROLLER REQUIREMENTS FOR HIR – SURFACE RECYCLING			
Breakdown Roller (one of the following) ¹	Intermediate Roller	Final Roller (one or more of the following) ¹	Density Requirement
V _D , P	--	V _S , T _B , T _F	95 - 102 percent of the target density obtained on the growth curve

^{1/} Equipment definitions in Table 1 of Article 406.07.

Within 48 hours of the HST operation, a HMA surface course specified in the plans shall be placed according to Section 406.

Method of Measurement.

- (a) **Contract Quantities.** The requirement for use of contract quantities shall be according to Article 202.07(a).
- (b) **Measured Quantities.** The hot in-place recycling – surface recycling will be measured for payment in place and the area computed in square yards (square meters). The rejuvenating agent will be measured for payment in gallons (liters) according to Article 1032.02. The HMA surface will be measured for payment in tons (metric tons) according to Article 406.13.

Basis of Payment. This work will be paid for at the contract unit price per square yard (square meter) for HOT IN-PLACE RECYCLING – SURFACE RECYCLING, and per gallon (liter) for REJUVENATING AGENT.

The HMA surface will be paid for according to Article 406.14

If provided as a pay item, the preparation of the base will be paid for according to Article 358.07. If not provided as a pay item, preparation of the base, including additional material required, shall be considered as included in the contract unit price bid for hot in-place recycling, and no additional compensation will be allowed.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2011-02
SUBJECT: LOCAL AGENCY PAVEMENT PRESERVATION POLICY
ISSUED DATE: November 23, 2011
EFFECTIVE DATE: January 1, 2012

This memorandum creates Chapter 45 of the Bureau of Local Roads & Streets Manual.

The Local Agency Pavement Preservation Policy has been issued to allow local agencies to implement a pavement preservation program using federal, state, and/or motor fuel tax funds. For all roads being considered for pavement preservation, an agency shall have a pavement management system, condition rating, and 10-year pavement preservation program. All treatments should use standard specifications or department approved special provisions. Some treatments may still need to follow the experimental feature process.

The District Local Roads Engineer and Central Engineer of Local Roads & Streets shall approve an agency to participate in pavement preservation. Form BLR 45300 should be used to request approval to participate in pavement preservation. The District Local Roads Engineer shall approve the multi-year pavement preservation program. Form BLR 45310 should be used to request approval of the multi-year pavement preservation estimate.

Individual project submittal should follow the approval procedures for the funding type used. Form BLR 46300 should be used for individual pavement preservation project approval. All projects performed under a pavement preservation program should use the PP section number.

Please contact the Local Policy & Technology Unit at dot.LocalPolicy@illinois.gov with any questions.

A handwritten signature in cursive script that reads "Darrell Lewis".

Darrell W. Lewis
Acting Engineer of Local Roads and Streets

Attachments

KB/kb

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County _____

Local Agency _____

Pavement Management System Used _____

Condition Rating System Used _____

Rating Scale _____ (poor) to _____ (excellent)

Program Estimate Start Date _____

Program Estimate End Date _____

Attached is a location map showing project locations for year 1 and year 2, estimated pavement preservation project costs planned for year 1 and year 2 of the pavement preservation program, one site photo showing typical pavement condition for each type of pavement for year 1 and year 2, and estimated annual treatment cost for year 3 to year 10 of the pavement preservation program.

- Estimates are provided on BLR 45320.
- Estimates are provided on a report from the pavement management system.

Prepared by: _____

Name Title Date

Submitted by: _____

Name Title Date

Approved by: _____

District Local Roads Engineer Date

Submit 3 originals to the District



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2011-03
SUBJECT: HIGHWAY SIGNING
ISSUED DATE: November 28, 2011
EFFECTIVE DATE: December 1, 2012

This memorandum revises Chapter 39 of the Bureau of Local Roads & Streets Manual.

The Department adopted the 2009 National Manual on Uniform Traffic Control Devices (MUTCD) along with the Illinois Supplement as the official manual for traffic control devices for use in the state on all roads open to public travel on March 10, 2011. The MUTCD and the Illinois Supplement are available on the IDOT Internet Site (www.dot.il.gov/mutcd/utcdmanual.html). Due to changes in the 2009 MUTCD and recent Illinois legislation impacting highway signs, the following revisions have been made to Chapter 39.

Stop Signs

- ALL WAY (R1-3P) Supplemental Plaque shall be mounted below each STOP (R1-1) sign at intersections where all approaches are controlled by a STOP sign.
- Supplemental warning plaques (W4-4aP or W4-4bP) should be used at intersections where STOP signs control all but one approach to the intersection.

Horizontal Alignment Signs

- Incorporated Table 2C-5 from the MUTCD.
- Revised language to mirror MUTCD.

School Area Signs

- Incorporated new MUTCD requirements
- Provide guidance on CELL PHONE USE PROHIBITED (R2-I110) sign based on Public Act 096-131.

Park Zone Signs

- Revised to comply with 2009 MUTCD requirements for REDUCED SPEED LIMIT AHEAD (W3-5) sign.

Street Name Signs

- Revised to limit sign background color per the 2009 MUTCD.
- Revised to require mixed case lettering.

Tourist Oriented Directional Signs

- Updated to reference Illinois Administrative Code for state maintained highways that are outside the urban areas.

Non-Highway Vehicle Signs

- Incorporated sign policy for non-highway vehicles per 625 ILCS 5/11-1426.1.
- Authorized by ordinance or resolution on all local highways.
- Sign not required

Low-Speed Vehicle Signs

- Incorporated sign policy for low-speed vehicles per 625 ILCS 5/11-1426.2.
- Allowed unless prohibited on highways where the posted speed limit is 30 mph or less.
- R5-1107 sign shall be installed if prohibiting.
- Authorized by ordinance or resolution on highways where the posted speed limit is more than 30 mph but not greater than 35 mph.

Community Wayfinding Signs

- Incorporates guidance from Section 2D.50 of the MUTCD
- Establishes the District Operations Manager as the primary contact for installation of these signs on state highways.

Please contact the Local Policy Unit at dot.LocalPolicy@illinois.gov with any questions.



Darrell W. Lewis
Acting Engineer of Local Roads and Streets

Attachments

KB/kb

AN ACT concerning transportation.

**Be it enacted by the People of the State of Illinois,
represented in the General Assembly:**

Section 5. The Illinois Vehicle Code is amended by changing Section 12-610.1 as follows:

(625 ILCS 5/12-610.1)

Sec. 12-610.1. Wireless telephones.

(a) As used in this Section, "wireless telephone" means a device that is capable of transmitting or receiving telephonic communications without a wire connecting the device to the telephone network.

(b) A person under the age of 19 years who holds an instruction permit issued under Section 6-105 or 6-107.1, or a person under the age of 19 years who holds a graduated license issued under Section 6-107, may not drive a vehicle on a roadway while using a wireless phone.

(c) This Section does not apply to a person under the age of 19 years using a wireless telephone for emergency purposes, including, but not limited to, an emergency call to a law enforcement agency, health care provider, fire department, or other emergency services agency or entity.

(d) If a graduated driver's license holder over the age of 18 committed an offense against traffic regulations governing

the movement of vehicles or any violation of Section 6-107 or Section 12-603.1 of this Code in the 6 months prior to the graduated driver's license holder's 18th birthday, and was subsequently convicted of the violation, the provisions of paragraph (b) shall continue to apply until such time as a period of 6 consecutive months has elapsed without an additional violation and subsequent conviction of an offense against traffic regulations governing the movement of vehicles or any violation of Section 6-107 or Section 12-603.1 of this Code.

(e) A person, regardless of age, may not use a wireless telephone at any time while operating a motor vehicle on a roadway in a school speed zone established under Section 11-605, or on a highway in a construction or maintenance speed zone established under Section 11-605.1. This subsection (e) does not apply to (i) a person engaged in a highway construction or maintenance project for which a construction or maintenance speed zone has been established under Section 11-605.1, (ii) a person using a wireless telephone for emergency purposes, including, but not limited to, law enforcement agency, health care provider, fire department, or other emergency services agency or entity, (iii) a law enforcement officer or operator of an emergency vehicle when performing the officer's or operator's official duties, or (iv) to a person using a wireless telephone in voice-activated mode.

(Source: P.A. 94-240, eff. 7-15-05; 95-310, eff. 1-1-08;

Public Act 096-0131

HB0072 Enrolled

LRB096 02955 AJT 12969 b

95-338, eff. 1-1-08; 95-876, eff. 8-21-08.)

(625 ILCS 5/11-1426.1)

Sec. 11-1426.1. Operation of non-highway vehicles on streets, roads, and highways.

(a) As used in this Section, "non-highway vehicle" means a motor vehicle not specifically designed to be used on a public highway, including:

- (1) an all-terrain vehicle, as defined by Section 1-101.8 of this Code;
- (2) a golf cart, as defined by Section 1-123.9;
- (3) an off-highway motorcycle, as defined by Section 1-153.1; and
- (4) a recreational off-highway vehicle, as defined by Section 1-168.8.

(b) Except as otherwise provided in this Section, it is unlawful for any person to drive or operate a non-highway vehicle upon any street, highway, or roadway in this State. If the operation of a non-highway vehicle is authorized under subsection (d), the non-highway vehicle may be operated only on streets where the posted speed limit is 35 miles per hour or less. This subsection (b) does not prohibit a non-highway vehicle from crossing a road or street at an intersection where the road or street has a posted speed limit of more than 35 miles per hour.

(b-5) A person may not operate a non-highway vehicle upon any street, highway, or roadway in this State unless he or she has a valid driver's license issued in his or her name by the Secretary of State or by a foreign jurisdiction.

(c) Except as otherwise provided in subsection (c-5), no person operating a non-highway vehicle shall make a direct crossing upon or across any highway under the jurisdiction of the State, tollroad, interstate highway, or controlled access highway in this State.

(c-5) A person may make a direct crossing at an intersection controlled by a traffic light or 4-way stop sign upon or across a highway under the jurisdiction of the State if the speed limit on the highway is 35 miles per hour or less at the place of crossing.

(d) A municipality, township, county, or other unit of local government may authorize, by ordinance or resolution, the operation of non-highway vehicles on roadways under its jurisdiction if the unit of local government determines that the public safety will not be jeopardized. The Department may authorize the operation of non-highway vehicles on the roadways under its jurisdiction if the Department determines that the public safety will not be jeopardized. The unit of local government or the Department may restrict the types of non-highway vehicles that are authorized to be used on its streets.

Before permitting the operation of non-highway vehicles on its roadways, a municipality, township, county, other unit of local government, or the Department must consider the volume,

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speed, and character of traffic on the roadway and determine whether non-highway vehicles may safely travel on or cross the roadway. Upon determining that non-highway vehicles may safely operate on a roadway and the adoption of an ordinance or resolution by a municipality, township, county, or other unit of local government, or authorization by the Department, appropriate signs shall be posted.

If a roadway is under the jurisdiction of more than one unit of government, non-highway vehicles may not be operated on the roadway unless each unit of government agrees and takes action as provided in this subsection.

(e) No non-highway vehicle may be operated on a roadway unless, at a minimum, it has the following: brakes, a steering apparatus, tires, a rearview mirror, red reflectorized warning devices in the front and rear, a slow moving emblem (as required of other vehicles in Section 12-709 of this Code) on the rear of the non-highway vehicle, a headlight that emits a white light visible from a distance of 500 feet to the front, a tail lamp that emits a red light visible from at least 100 feet from the rear, brake lights, and turn signals. When operated on a roadway, a non-highway vehicle shall have its headlight and tail lamps lighted as required by Section 12-201 of this Code.

(f) A person who drives or is in actual physical control of a non-highway vehicle on a roadway while under the influence is subject to Sections 11-500 through 11-502 of this Code.

(g) Any person who operates a non-highway vehicle on a street, highway, or roadway shall be subject to the mandatory insurance requirements under Article VI of Chapter 7 of this Code.

(h) It shall not be unlawful for any person to drive or operate a non-highway vehicle, as defined in paragraphs (1) and (4) of subsection (a) of this Section, on a county roadway or township roadway for the purpose of conducting farming operations to and from the home, farm, farm buildings, and any adjacent or nearby farm land.

Non-highway vehicles, as used in this subsection (h), shall not be subject to subsections (e) and (g) of this Section. However, if the non-highway vehicle, as used in this Section, is not covered under a motor vehicle insurance policy pursuant to subsection (g) of this Section, the vehicle must be covered under a farm, home, or non-highway vehicle insurance policy issued with coverage amounts no less than the minimum amounts set for bodily injury or death and for destruction of property under Section 7-203 of this Code. Non-highway vehicles operated on a county or township roadway at any time between one-half hour before sunset and one-half hour after sunrise must be equipped with head lamps and tail lamps, and the head lamps and tail lamps must be lighted.

Non-highway vehicles, as used in this subsection (h), shall not make a direct crossing upon or across any tollroad, interstate highway, or controlled access highway in this

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State.

Non-highway vehicles, as used in this subsection (h), shall be allowed to cross a State highway, municipal street, county highway, or road district highway if the operator of the non-highway vehicle makes a direct crossing provided:

(1) the crossing is made at an angle of approximately 90 degrees to the direction of the street, road or highway and at a place where no obstruction prevents a quick and safe crossing;

(2) the non-highway vehicle is brought to a complete stop before attempting a crossing;

(3) the operator of the non-highway vehicle yields the right of way to all pedestrian and vehicular traffic which constitutes a hazard; and

(4) that when crossing a divided highway, the crossing is made only at an intersection of the highway with another public street, road, or highway.

(i) No action taken by a unit of local government under this Section designates the operation of a non-highway vehicle as an intended or permitted use of property with respect to Section 3-102 of the Local Governmental and Governmental Employees Tort Immunity Act.

(Source: P.A. 96-279, eff. 1-1-10; 96-1434, eff. 8-11-10; 97-144, eff. 7-14-11.)

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625 ILCS 5/11-1426.2)

Sec. 11-1426.2. Operation of low-speed vehicles on streets.

(a) Except as otherwise provided in this Section, it is lawful for any person to drive or operate a low-speed vehicle upon any street in this State where the posted speed limit is 30 miles per hour or less.

(b) Low-speed vehicles may cross a street at an intersection where the street being crossed has a posted speed limit of not more than 45 miles per hour. Low-speed vehicles may not cross a street with a speed limit in excess of 45 miles per hour unless the crossing is at an intersection controlled by a traffic light or 4-way stop sign.

(c) The Department of Transportation or a municipality, township, county, or other unit of local government may prohibit, by regulation, ordinance, or resolution, the operation of low-speed vehicles on streets under its jurisdiction where the posted speed limit is 30 miles per hour or less if the Department of Transportation or unit of local government determines that the public safety would be jeopardized.

(d) Upon determining that low-speed vehicles may not safely operate on a street, and upon the adoption of an ordinance or resolution by a unit of local government, or regulation by the Department of Transportation, the operation of low-speed vehicles may be prohibited. The unit of local government or the Department of Transportation may prohibit the operation of low-speed vehicles on any and all streets under its jurisdiction. Appropriate signs shall be posted in conformance with the State Manual on Uniform Traffic Control Devices adopted pursuant to Section 11-301 of this Code.

(e) If a street is under the jurisdiction of more than one unit of local government, or under the jurisdiction of the Department of Transportation and one or more units of local government, low-speed vehicles may be operated on the street unless each unit of local government and the Department of Transportation agree and take action to prohibit such operation as provided in this Section.

(e-5) A unit of local government may, by ordinance or resolution, authorize the operation of low-speed vehicles on one or more streets under its jurisdiction that have a speed limit of more than 30 miles per hour but not greater than 35 miles per hour.

Before authorizing the operation of low-speed vehicles on any street under this subsection (e-5), the unit of local government must consider the volume, speed, and character of traffic on the street and determine whether low-speed vehicles may travel safely on that street.

If a street is under the jurisdiction of more than one unit of government, low-speed vehicles may not be operated on the street under this subsection (e-5) unless each unit of government agrees and takes action as provided in this subsection.

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Upon the adoption of an ordinance authorizing low-speed vehicles under this subsection (e-5), appropriate signs shall be posted.

(f) No low-speed vehicle may be operated on any street unless, at a minimum, it has the following: brakes, a steering apparatus, tires, a rearview mirror, red reflectorized warning devices in the front and rear, a headlight that emits a white light visible from a distance of 500 feet to the front, a tail lamp that emits a red light visible from at least 100 feet from the rear, brake lights, and turn signals. When operated on a street, a low-speed vehicle shall have its headlight and tail lamps lighted as required by Section 12-201 of this Code.

(g) A person may not operate a low-speed vehicle upon any street in this State unless he or she has a valid driver's license issued in his or her name by the Secretary of State or a foreign jurisdiction.

(h) The operation of a low-speed vehicle upon any street is subject to the provisions of Chapter 11 of this Code concerning the Rules of the Road, and applicable local ordinances.

(i) Every owner of a low-speed vehicle is subject to the mandatory insurance requirements specified in Article VI of Chapter 7 of this Code.

(j) Any person engaged in the retail sale of low-speed vehicles are required to comply with the motor vehicle dealer licensing, registration, and bonding laws of this State, as specified in Sections 5-101 and 5-102 of this Code.

(k) No action taken by a unit of local government under this Section designates the operation of a low-speed vehicle as an intended or permitted use of property with respect to Section 3-102 of the Local Governmental and Governmental Employees Tort Immunity Act.

(Source: P.A. 96-653, eff. 1-1-10; 96-1434, eff. 8-11-10; 97-144, eff. 7-14-11.)

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2011-04
SUBJECT: MAINTENANCE GROUPS
ISSUED DATE: November 28, 2011
EFFECTIVE DATE: January 1, 2012

This memorandum revises Section 5-5 and Section 14-2 of the Bureau of Local Roads & Streets Manual.

The Bureau of Local Roads & Streets has clarified the group definitions for maintenance with Motor Fuel Tax (MFT) funds and has modified the engineering fees associated with hiring consultants for preliminary and construction engineering services on MFT maintenance projects.

The value of the maintenance program for engineering base fee has been increased to \$20,000 to align with the current bidding threshold for municipalities and townships. Therefore, the base fee allowed for maintenance engineering has also been increased to \$1,250. An engineering inspection fee for Group IIA items will be allowed at a maximum of 1% for maintenance items in this group that require inspection and/or acceptance.

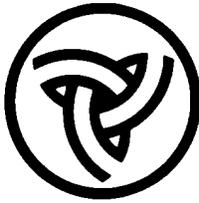
Please contact the Local Policy Unit at dot.LocalPolicy@illinois.gov with any questions.

A handwritten signature in cursive script that reads "Darrell Lewis".

Darrell W. Lewis
Acting Engineer of Local Roads and Streets

Attachments

KB/kb



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2012-01

SUBJECT: CONSTRUCTION SUPERVISION FOR FEDERAL AID PROJECTS

ISSUED DATE: January 6, 2012

EFFECTIVE DATE: April 1, 2012

This memorandum revises Section 25-1.02(c) of the Bureau of Local Roads & Streets Manual dated January 2006.

According to 23 CFR 635.105, the state transportation department (STD) has responsibility for the construction of all Federal-aid projects, and is not relieved of such responsibility by authorizing performance of the work by a local public agency (LPA) or other Federal agency. When a project is located on a street or highway over which the STD does not have legal jurisdiction, or when special conditions warrant, the STD, while not relieved of overall project responsibility, may arrange for the LPA having jurisdiction over such street or highway to perform the work with its own forces or by contract; provided certain conditions are met and the Federal Highways' Division Administrator approves the arrangements in advance.

For all federally funded LPA projects let after April 1, 2012, the LPA will provide a full time LPA employee to be in responsible charge of the project. The full time LPA employee in responsible charge does not need to be an engineer. This requirement applies even when consultants are providing construction engineering services. This LPA employee in responsible charge should be expected to be able to perform the following duties and functions:

- Administers inherently governmental project activities, including those dealing with cost, time, adherence to contract requirements, construction quality and scope of Federal-aid projects;
- Maintains familiarity of day to day project operations, including project safety issues;
- Makes or participates in decisions about changed conditions or scope changes that require change orders or supplemental agreements;
- Visits and reviews the project on a frequency that is commensurate with the magnitude and complexity of the project;
- Reviews financial processes, transactions and documentation to ensure that safeguards are in place to minimize fraud, waste, and abuse;
- Directs project staff, agency or consultant, to carry out project administration and contract oversight, including proper documentation; and

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- Is aware of the qualifications, assignments and on-the-job performance of the agency and consultant staff at all stages of the project.

The selection and Regional Engineer approval of the resident construction supervisor and/or the full-time LPA employee to be in responsible charge of the project will be completed prior to the start of construction. During the pre-construction meeting, the local public agency should identify the resident construction supervisor and the full-time LPA employee to be in responsible charge of the project according to the following:

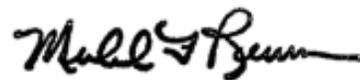
- Preferably, if the county engineer, municipal engineer, or a full-time publicly employed registered professional engineer is named the resident construction supervisor for the project and will be in responsible charge, the minutes of the pre-construction meeting should reflect the name and position of the resident construction supervisor.
- If this is not possible, the LPA should name a qualified full-time publicly-employed individual to serve as resident construction supervisor and to be in responsible charge. The approved Form BC 775 will be included as an attachment to the pre-construction meeting minutes.
- In those instances where a LPA elects to use a consultant engineering firm employee as a resident construction supervisor, the consultant engineering firm shall be prequalified in Construction Inspection and the consultant engineering firm's employee shall be Documentation of Contract Quantities certified. A full time LPA employee will remain in responsible charge. The approved Form BC 775 will be included as an attachment to the pre-construction meeting minutes.

The resident construction supervisor (and employee in responsible charge if resident construction supervisor is a consultant) will approve any construction inspector on Form BC 776. All consultants approved on Form BC 776 shall be Documentation of Contract Quantities certified. The LPA will attach approved Form BC 775 and/or Form BC 776 to the appropriate local agency/consultant agreement form.

Please contact the Local Policy Unit at dot.LocalPolicy@illinois.gov with any questions.



Acting Engineer of Local Roads
and Streets



Acting Engineer of Construction

KB/kb

Attachment

Federal Highway Administration, DOT

§ 635.105

minor components of the overall contract.

State transportation department (STD) means that department, commission, board, or official of any State charged by its laws with the responsibility for highway construction. The term "State" should be considered equivalent to "State transportation department" if the context so implies.

Workday means a calendar day during which construction operations could proceed for a major part of a shift, normally excluding Saturdays, Sundays, and State-recognized legal holidays.

[62 FR 6873, Feb. 14, 1997, as amended at 67 FR 75924, Dec. 10, 2002]

§ 635.103 Applicability.

The policies, requirements, and procedures prescribed in this subpart shall apply to all Federal-aid highway projects.

[69 FR 7118, Feb. 13, 2004]

§ 635.104 Method of construction.

(a) Actual construction work shall be performed by contract awarded by competitive bidding; unless, as provided in §635.104(b), the STD demonstrates to the satisfaction of the Division Administrator that some other method is more cost effective or that an emergency exists. The STD shall assure opportunity for free, open, and competitive bidding, including adequate publicity of the advertisements or calls for bids. The advertising or calling for bids and the award of contracts shall comply with the procedures and requirements set forth in §§ 635.112 and 635.114.

(b) Approval by the Division Administrator for construction by a method other than competitive bidding shall be requested by the State in accordance with subpart B of part 635 of this chapter. Before such finding is made, the STD shall determine that the organization to undertake the work is so staffed and equipped as to perform such work satisfactorily and cost effectively.

(c) In the case of a design-build project, the requirements of 23 CFR part 636 and the appropriate provisions pertaining to design-build contracting in this part will apply. However, no

justification of cost effectiveness is necessary in selecting projects for the design-build delivery method.

[56 FR 37004, Aug. 2, 1991, as amended at 67 FR 75925, Dec. 10, 2002]

§ 635.105 Supervising agency.

(a) The STD has responsibility for the construction of all Federal-aid projects, and is not relieved of such responsibility by authorizing performance of the work by a local public agency or other Federal agency. The STD shall be responsible for insuring that such projects receive adequate supervision and inspection to insure that projects are completed in conformance with approved plans and specifications.

(b) Although the STD may employ a consultant to provide construction engineering services, such as inspection or survey work on a project, the STD shall provide a full-time employed State engineer to be in responsible charge of the project.

(c) When a project is located on a street or highway over which the STD does not have legal jurisdiction, or when special conditions warrant, the STD, while not relieved of overall project responsibility, may arrange for the local public agency having jurisdiction over such street or highway to perform the work with its own forces or by contract; provided the following conditions are met and the Division Administrator approves the arrangements in advance.

(1) In the case of force account work, there is full compliance with subpart B of this part.

(2) When the work is to be performed under a contract awarded by a local public agency, all Federal requirements including those prescribed in this subpart shall be met.

(3) The local public agency is adequately staffed and suitably equipped to undertake and satisfactorily complete the work; and

(4) In those instances where a local public agency elects to use consultants for construction engineering services, the local public agency shall provide a full-time employee of the agency to be in responsible charge of the project.



U.S. Department
of Transportation
Federal Highway
Administration

Memorandum

Subject: **INFORMATION**: “Responsible Charge”

Date: August 4, 2011

David A. Nicol

From: David A. Nicol
Director, Office of Program Administration

In Reply Refer To:
HIPA-10

To: Director of Field-Service
Federal Lands Highway Division Engineers
Division Administrators

The issue of “responsible charge” of Federal-aid construction projects has been raised on several occasions; most recently as it relates to Federal-aid projects that are administered by local public agencies. The following attachment provides guidance on the requirements and duties of the person designated to be in “responsible charge”.

If you have any questions about the memorandum and attachment, please contact Mr. Bob Wright as Robert.wright@dot.gov.

Attachment

HARD COPIES UNCONTROLLED

Defining “Responsible Charge” in the Federal-aid Highway Program

Regulation:

The key regulatory provision, 23 CFR 635.105 – *Supervising Agency*, provides that the State Transportation Agency (STA) is responsible for construction of Federal-aid projects, whether it or a local public agency (LPA) performs the work. The regulation provides that the STA and LPA must provide a full time employee to be in “responsible charge” of the project.

Requirements of Position:

For projects administered by the STA, the regulation requires that the person in “responsible charge” be a full-time employed state engineer. This requirement applies even when consultants are providing construction engineering services.

For locally administered projects, the regulation requires that the person in “responsible charge” be a full time employee of the LPA. The regulation is silent about engineering credentials. Thus, the person in “responsible charge” of LPA administered projects need not be an engineer. This requirement applies even when consultants are providing construction engineering services.

Duties:

Regardless of whether the project is administered by the STA or another agency, the person designated as being in "responsible charge" is expected to be a public employee who is accountable for a project. This person should be expected to be able to perform the following duties and functions:

- Administers inherently governmental project activities, including those dealing with cost, time, adherence to contract requirements, construction quality and scope of Federal-aid projects;
- Maintains familiarity of day to day project operations, including project safety issues;
- Makes or participates in decisions about changed conditions or scope changes that require change orders or supplemental agreements;
- Visits and reviews the project on a frequency that is commensurate with the magnitude and complexity of the project;
- Reviews financial processes, transactions and documentation to ensure that safeguards are in place to minimize fraud, waste, and abuse; and
- Directs project staff, agency or consultant, to carry out project administration and contract oversight, including proper documentation.
- Is aware of the qualifications, assignments and on-the-job performance of the agency and consultant staff at all stages of the project.

The regulations do not restrict an agency’s organizational authority over the person designated in “responsible charge," and the regulations do not preclude sharing of these

Attachment

duties and functions among a number of public agency employees. The regulations also do not preclude one employee from having responsible charge of several projects and directing project managers assigned to specific projects.

Affect on Laws Regulating Licensure:

The term “responsible charge” is used here in the context intended by the above regulation. It may or may not correspond to its usage in state laws regulating licensure of professional engineers.



Local Public Agency Resident Construction Supervisor/ In Responsible Charge

Deputy Director Division of Highways
Regional Engineer
Department of Transportation

, Illinois

County _____
Municipality _____
Section _____
Route _____
Contract No. _____
Job No. _____
Project _____

- I recommend the following individual as a local public agency employee qualified to be resident construction supervisor and to be in responsible charge of this construction project.
- I certify that I am in responsible charge as defined by the department of this construction project. Since the local public agency does not have a local public agency employee qualified to be the resident construction supervisor, I am recommending a consulting engineer to serve as resident construction supervisor.

Date Signature and Title (for the Local Public Agency)

Applicants Name (Type or Print)

The following describes my educational background, experience and other qualifications to be resident construction supervisor of this construction project for the Local Public Agency.

For Consultants: I certify that my firm is prequalified in Construction Inspection and my Documentation of Contract Quantities certificate number is _____.

Date Signature of Applicant Job Title of Applicant

Based on the above information and my knowledge of the applicant's experience and training, it is my opinion that the applicant is qualified to serve as the resident construction supervisor on this construction project.

Approved _____
Date Deputy Director Division of Highways Regional Engineer

cc: Engineer of Local Roads and Streets, Central Bureau of Local Roads and Streets
Engineer of Construction, Central Bureau of Construction
Resident Construction Supervisor
Local Public Agency

Instructions for Preparation of Form BC 775

23 CFR 635.105 requires that the state transportation department (STD) has responsibility for the construction of all Federal-aid projects, and is not relieved of such responsibility by authorizing performance of the work by a local public agency or other Federal agency.

When a project is located on a street or highway over which the STD does not have legal jurisdiction, or when special conditions warrant, the STD, while not relieved of overall project responsibility, may arrange for the local public agency having jurisdiction over such street or highway to perform the work with its own forces or by contract. In those instances where a local public agency elects to use consultants for construction engineering services, the local public agency shall provide a full-time employee of the agency to be in responsible charge of the project.

The full-time local public agency employee in responsible charge of the project shall perform the following duties and functions:

- Administer inherently governmental project activities, including those dealing with cost, time, adherence to contract requirements, construction quality and scope of projects;
- Maintain familiarity of day to day project operations, including project safety issues;
- Make or participate in decisions about changed conditions or scope changes that require change orders or supplemental agreements;
- Visit and review the project on a frequency that is commensurate with the magnitude and complexity of the project;
- Review financial processes, transactions and documentation to ensure that safeguards are in place to minimize fraud, waste, and abuse;
- Direct project staff, agency or consultant, to carry out project administration and contract oversight, including proper documentation; and
- Aware of the qualifications, assignments and on-the-job performance of the agency and consultant staff at all stages of the project.

The Department of Transportation, in accordance with the requirements, requires the local public agency to identify the local public agency employee who will be in responsible charge of each Federal-Aid project which will be constructed under the supervision of the county, municipality or other public agency. County Engineers, Municipal Engineers, and full-time local public agency employees registered as a professional engineer should be identified in the pre-construction meeting minutes. All other resident construction supervisors must submit their qualifications on this form for approval by the department. Resident construction supervisors who are consultants shall be certified in Documentation of Contract Quantities and their firm shall be prequalified in Construction Inspection.

This form will be completed by the applicant, endorsed by a representative of the local public agency, and submitted to the Deputy Director Division of Highways, Regional Engineer prior to the start of construction. This signatory for the local public agency should be the County Superintendent of Highways or Municipal Engineer, as applicable. In the event a municipality does not have a Municipal Engineer, the applicant will be recommended by the appropriate municipal authority.

If a consultant is named on this form, the approved form will be included as an attachment to the appropriate construction engineering consultant agreement.

This document should be discussed as part of the preconstruction conference and, when required, a copy of the approved form retained with the preconstruction meeting minutes.



**Illinois Department
of Transportation**

**Local Public Agency
Construction Inspector**

Deputy Director Division of Highways
Regional Engineer
Department of Transportation

, Illinois

County _____
Municipality _____
Section _____
Route _____
Contract No. _____
Job No. _____
Project _____

I consider the following individual to be qualified as a local public agency construction inspector. In addition, I certify that adequate instruction has been given this individual concerning the requirements of the contract, specifications and construction manual which pertain to the work which he/she will inspect. This individual has been instructed on the proper procedures for any necessary tests. Furthermore, if a consultant, this individual has a valid Documentation of Contract Quantities certification.

Approved _____
Date _____ Signature and Title of Resident Construction Supervisor _____

Applicants Name (Type or Print)

The following describes the educational background, experience and other qualifications of the named applicant to serve as an inspector on this project.

For Consultants Employees: Documentation of Contract Quantities certificate number is _____.

If the Resident from BC-775 is a consultant, the local public agency employee in responsible charge must also approve this individual.

Approved _____
Date _____ Signature and Title of In Responsible Charge from BC-775 _____

Instructions for Preparation of Form BC 776

23 CFR 635.105 requires that the state transportation department (STD) has responsibility for the construction of all Federal-aid projects, and is not relieved of such responsibility by authorizing performance of the work by a local public agency or other Federal agency.

A consultant may be utilized for periodic examination and consultation or for full-time technical inspection of construction. However, the prime responsibility for general supervision of the construction must remain with the state. The state (or county or municipality under agreement with the state) cannot be relieved of its responsibility to ensure that the work is performed in accordance with the approved project plans, specifications and estimate.

Therefore, the Department of Transportation requires the local public agency to submit the qualifications of all personnel who will be assigned to construction layout and inspection duties on each Federal-Aid project which will be constructed under the supervision of the county, municipality or other local public agency. This form will be approved by the resident construction supervisor. If the resident construction supervisor is a consultant, this form will also be approved by the local public agency employee in responsible charge.

If a consultant is named on this form, the approved form will be included as an attachment to the construction engineering consultant agreement.

The approved form will be submitted to the Deputy Director Division of Highways, Regional Engineer prior to the start of construction. This form should be discussed as part of the preconstruction conference and, when required, a copy of the approved form retained with the preconstruction meeting minutes.

Municipality	L O C A L A G E N C Y	 Illinois Department of Transportation Preliminary/Construction Engineering Services Agreement For Motor Fuel Tax Funds	C O N S U L T A N T	Name
Township				Address
County				City
Section				State

THIS AGREEMENT is made and entered into this _____ day of _____, _____ between the above Local Agency (LA) and Consultant (ENGINEER) and covers certain professional engineering services in connection with the improvement of the above PROJECT. Motor Fuel Tax Funds, allotted to the LA by the State of Illinois under the general supervision of the State Department of Transportation, hereinafter called the "DEPARTMENT", will be used entirely or in part to finance ENGINEERING services as described under AGREEMENT PROVISIONS.

WHEREVER IN THIS AGREEMENT or attached exhibits the following terms are used, they shall be interpreted to mean:

- Regional Engineer** Deputy Director Division of Highways, Regional Engineer, Department of Transportation
- Resident Construction Supervisor** Authorized representative of the LA in immediate charge of the engineering details of the PROJECT
- Contractor** Company or Companies to which the construction contract was awarded

Section Description

Name _____ Route _____ Length _____ miles Structure No. _____

Termini _____

Description _____

Agreement Provisions

The Engineer Agrees,

1. To perform or be responsible for the performance of the following engineering services for the LA in connection with the proposed improvement herein before described, and checked below:
 - a. Make such detailed surveys as are necessary for the preparation of detailed roadway plans.
 - b. Make stream and flood plain hydraulic surveys and gather high water data and flood histories for the preparation of detailed bridge plans.
 - c. Make or cause to be made such soil surveys or subsurface investigations including borings and soil profiles and analyses thereof as may be required to furnish sufficient data for the design of the proposed improvement. Such investigations are to be made in accordance with the current requirements of the DEPARTMENT.
 - d. Make or cause to be made such traffic studies and counts and special intersection studies as may be required to furnish sufficient data for the design of the proposed improvement.

- e. Prepare Army Corps of Engineers Permit, Division of Water Resources Permit, Bridge waterway sketch and/or Channel Change sketch, Utility plan and locations and Railroad Crossing work agreements.
- f. Prepare Preliminary Bridge Design and Hydraulic Report, (including economic analysis of bridge or culvert types) and high water effects on roadway overflows and bridge approaches.

NOTE Four copies to be submitted to the Regional Engineer

- g. Make complete general and detailed plans, special provisions, proposals and estimates of cost and furnish the LA with five (5) copies of the plans, special provisions, proposals and estimates. Additional copies of any or all documents, if required shall be furnished to the LA by the ENGINEER at his actual cost for reproduction.
- h. Furnish the LA with survey and drafts in quadruplicate of all necessary right-of-way dedications, construction easements and borrow pit and channel change agreements including prints of the corresponding plats and staking as required.
- i. Assist the LA in the receipt and evaluation of proposals and the awarding of the construction contract.
- j. Furnish or cause to be furnished:
 - (1) Proportioning and testing of concrete mixtures in accordance with the "Manual of Instructions for Concrete Proportioning and Testing" issued by the Bureau of Materials and Physical Research, of the DEPARTMENT and promptly submit reports on forms prepared by said Bureau.
 - (2) Proportioning and testing of bituminous mixtures (including extracting test) in accordance with the "Manual of Instructions for Bituminous Proportioning and Testing" issued by the Bureau of Materials and Physical Research, of the DEPARTMENT, and promptly submit reports on forms prepared by said Bureau.
 - (3) All compaction tests as required by the specifications and report promptly the same on forms prepared by the Bureau of Materials and Physical Research.
 - (4) Quality and sieve analyses on local aggregates to see that they comply with the specifications contained in the contract.
 - (5) Inspection of all materials when inspection is not provided at the sources by the Bureau of Materials and Physical Research, of the DEPARTMENT and submit inspection reports to the LA and the DEPARTMENT in accordance with the policies of the said DEPARTMENT.
- k. Furnish or cause to be furnished
 - (1) A resident construction supervisor, inspectors, and other technical personnel to perform the following work: (The number of such inspectors and other technical personnel required shall be subject to the approval of the LA.)
 - a. Continuous observation of the work and the contractor's operations for compliance with the plans and specifications as construction proceeds, but the ENGINEER does not guarantee the performance of the contract by the contractor.
 - b. Establishment and setting of lines and grades.
 - c. Maintain a daily record of the contractor's activities throughout construction including sufficient information to permit verification of the nature and cost of changes in plans and authorized extra work.
 - d. Supervision of inspectors, proportioning engineers and other technical personnel and the taking and submitting of material samples.
 - e. Revision of contract drawings to reflect as built conditions.
 - f. Preparation and submission to the LA in the required form and number of copies, all partial and final payment estimates, change orders, records and reports required by the LA and the DEPARTMENT.

NOTE: *When Federal funds are used for construction and the ENGINEER or the ENGINEER's assigned staff is named as resident construction supervisor, the ENGINEER is required to be prequalified with the STATE in Construction Inspection. The onsite resident construction supervisor and project inspectors shall possess valid Documentation of Contract Quantities certification.*

2. That all reports, plans, plats and special provisions to be furnished by the ENGINEER pursuant to this agreement will be in accordance with the current standard specifications and policies of the DEPARTMENT, it being understood that all such reports, plats, plans and drafts shall before being finally accepted, be subject to approval by the LA and the said DEPARTMENT.
3. To attend conferences at any reasonable time when requested to do so by the LA or representatives of the DEPARTMENT.
4. In the event plans, surveys or construction staking are found to be in error during the construction of the PROJECT and revisions of the plans or survey or construction staking corrections are necessary, the ENGINEER agrees that he will perform such work without expense to the LA, even though final payment has been received by him. He shall give immediate attention to these changes so there will be a minimum delay to the contractor.
5. The basic survey notes and sketches, charts, computations and other data prepared or obtained by the ENGINEER pursuant to this agreement will be made available upon request to the LA or the DEPARTMENT without cost and without restriction or limitations as to their use.
6. To make such changes in working plans, including all necessary preliminary surveys and investigations, as may be required after the award of the construction contract and during the construction of the improvement.
7. That all plans and other documents furnished by the ENGINEER pursuant to the AGREEMENT will be endorsed by him and will show his professional seal where such is required by law.
8. To submit, upon request by the LA or the DEPARTMENT a list of the personnel and the equipment he/she proposes to use in fulfilling the requirements of this AGREEMENT.

The LA Agrees,

1. To pay the Engineer as compensation for all services performed as stipulated in paragraphs 1a, 1g, 1i, 2, 3, 5 and 6 in accordance with one of the following methods indicated by a check mark:
 - a. A sum of money equal to _____ percent of the awarded contract cost of the proposed improvement as approved by the DEPARTMENT.
 - b. A sum of money equal to the percentage of the awarded contract cost for the proposed improvement as approved by the DEPARTMENT based on the following schedule:

Schedule for Percentages Based on Awarded Contract Cost

Awarded Cost	Percentage Fees	
Under \$50,000	_____	(see note)
	_____	%
	_____	%
	_____	%
	_____	%
	_____	%

Note: Not necessarily a percentage. Could use per diem, cost-plus or lump sum.

2. To pay for services stipulated in paragraphs 1b, 1c, 1d, 1e, 1f, 1h, 1j and 1k of THE ENGINEER AGREES at the hourly rates stipulated below for personnel assigned to this PROJECT as payment in full to the ENGINEER for the actual time spent in providing these services the hourly rates to include profit, overhead, readiness to serve, insurance, social security and retirement deductions. Traveling and other out-of-pocket expenses will be reimbursed to the ENGINEER at his actual cost. Subject to the approval of the LA, the ENGINEER may sublet all or part of the services provided under paragraphs 1b, 1c, 1d, 1e, 1f, 1j and 1k of THE ENGINEER AGREES. If the ENGINEER sublets all or a part of this work, the LA will pay the cost to the ENGINEER plus a five (5) percent service charge. "Cost to ENGINEER" to be verified by furnishing the LA and the DEPARTMENT copies of invoices from the party doing the work. The classifications of the employees used in the work should be consistent with the employee classifications for the services performed. If the personnel of the firm including the Principal Engineer perform routine services that should normally be performed by lesser-salaried personnel, the wage rate billed for such services shall be commensurate with the work performed.

Grade Classification of Employee	Hourly Rate
Principal Engineer	_____
Resident Construction Supervisor	_____
Chief of Party	_____
Instrument Man	_____
Rodmen	_____
Inspectors	_____
_____	_____
_____	_____
_____	_____
_____	_____

The hourly rates itemized above shall be effective the date the parties, hereunto entering this AGREEMENT, have affixed their hands and seals and shall remain in effect until _____. In event the services of the ENGINEER extend beyond _____, the hourly rates will be adjusted yearly by addendum to this AGREEMENT to compensate for increases or decreases in the salary structure of the ENGINEER that are in effect at that time.

3. That payments due the ENGINEER for services rendered pursuant to this AGREEMENT will be made as soon as practicable after the services have been performed, in accordance with the following schedule:
 - a. Upon completion of detailed plans, special provisions, proposals and estimate of cost - being the work required by paragraphs 1a through 1g under THE ENGINEER AGREES - to the satisfaction of the LA and their approval by the DEPARTMENT, 90 percent of the total fee based on the above fee schedule and the approved estimate of cost.
 - b. Upon award of the contract for the improvement by the LA and its approval by the DEPARTMENT, 100 percent of the total fee (excluding any fees paragraphs 1j and 1k of the ENGINEER AGREES), based on the above fee schedule and the awarded contract cost, less any previous payment.
 - c. Upon completion of the construction of the improvement, 90 percent of the fee due for services stipulated in paragraphs 1j and 1k.
 - d. Upon completion of all final reports required by the LA and the DEPARTMENT and acceptance of the improvement by the DEPARTMENT, 100 percent of the total fees due under this AGREEMENT, less any amounts previously paid.

By mutual agreement, partial payments, not to exceed 90 percent of the amount earned, may be made from time to time as the work progresses.

4. That should the improvements be abandoned at any time after the ENGINEER has performed any part of the services provided for in paragraphs 1a and 1g, and prior to the completion of such services the LA shall reimburse the ENGINEER for his actual costs plus _____ percent incurred up to the time he is notified in writing of such abandonment "actual cost" being defined as material costs plus actual payrolls, insurance, social security and retirement deductions. Traveling and other out-of-pocket expenses will be reimbursed to the ENGINEER at his actual cost.
5. That should the LA require changes in any of the detailed plans, specifications or estimates (except for those required pursuant to paragraph 4 of THE ENGINEER AGREES) after they have been approved by the DEPARTMENT, the LA will pay the ENGINEER for such changes on the basis of actual cost plus _____ percent to cover profit, overhead and readiness to serve - "actual cost" being defined as in paragraph 4 above. It is understood that "changes" as used in this paragraph shall in no way relieve the ENGINEER of his responsibility to prepare a complete and adequate set of plans.
6. That should the LA extend completion of the improvement beyond the time limit given in the contract, the LA will pay the ENGINEER, in addition to the fees provided herein, his actual cost incurred beyond such time limit - "actual cost" being defined as in paragraph 4 above.
7. To submit approved forms BC 775 and BC 776 with this AGREEMENT when federal funds are used for construction.

It is Mutually Agreed,

1. That any difference between the ENGINEER and the LA concerning the interpretation of the provisions of this AGREEMENT shall be referred to a committee of disinterested parties consisting of one member appointed by the

ENGINEER one member appointed by the LA and a third member appointed by the two other members for disposition and that the committee's decision shall be final.

2. This AGREEMENT may be terminated by the LA upon giving notice in writing to the ENGINEER at his last known post office address. Upon such termination, the ENGINEER shall cause to be delivered to the LA all drawings, specifications, partial and completed estimates and data if any from traffic studies and soil survey and subsurface investigations with the understanding that all such material becomes the property of the LA. The ENGINEER shall be paid for any services completed and any services partially completed in accordance with Section 4 of THE LA AGREES.
3. That if the contract for construction has not been awarded one year after the acceptance of the plans by the LA and their approval by the DEPARTMENT, the LA will pay the ENGINEER the balance of the engineering fee due to make 100 percent of the total fees due under the AGREEMENT, based on the estimate of cost as prepared by the ENGINEER and approved by the LA and the DEPARTMENT.
4. That the ENGINEER warrants that he/she has not employed or retained any company or person, other than a bona fide employee working solely for the ENGINEER, to solicit or secure this contract and that he/she has not paid or agreed to pay any company or person, other than a bona fide employee working solely for the ENGINEER, any fee, commission, percentage, brokerage fee, gifts or any other consideration contingent upon or resulting from the award or making of this contract. For breach or violation of this warranty the LA shall have the right to annul this contract without liability.

IN WITNESS WHEREOF, the parties have caused this AGREEMENT to be executed in quadruplicate counterparts, each of which shall be considered as an original by their duly authorized offices.

Executed by the LA:

_____ of the
(Municipality/Township/County)

ATTEST:

State of Illinois, acting by and through its

By _____,

_____ ,

Clerk

By _____

(Seal)

Title:

Executed by the ENGINEER:

ATTEST:

By _____

Title:

Title:

Approved

Date
Department of Transportation

Regional Engineer

Local Agency	L O C A L A G E N C Y	 Illinois Department of Transportation Construction Engineering Services Agreement For Federal Participation	C O N S U L T A N T	Consultant
County				Address
Section				City
Project No.				State
Job No.				Zip Code
Contact Name/Phone/E-mail Address				Contact Name/Phone/E-mail Address

THIS AGREEMENT is made and entered into this _____ day of _____, _____ between the above Local Agency (LA) and Consultant (ENGINEER) and covers certain professional engineering services in connection with the PROJECT described herein. Federal-aid funds allotted to the LA by the state of Illinois under the general supervision of the Illinois Department of Transportation (STATE) will be used entirely or in part to finance engineering services as described under AGREEMENT PROVISIONS.

WHEREVER IN THIS AGREEMENT or attached exhibits the following terms are used, they shall be interpreted to mean:

Regional Engineer	Deputy Director Division of Highways, Regional Engineer, Department of Transportation
Resident Construction Supervisor	Authorized representative of the LA in immediate charge of the engineering details of the PROJECT
In Responsible Charge	A full time LA employee authorized to administer inherently governmental PROJECT activities
Contractor	Company or Companies to which the construction contract was awarded

Project Description

Name _____ Route _____ Length _____ Structure No. _____

Termini _____

Description:

Agreement Provisions

I. THE ENGINEER AGREES,

1. To perform or be responsible for the performance of the engineering services for the LA, in connection with the PROJECT hereinbefore described and checked below:
 - a. Proportion concrete according to applicable STATE Bureau of Materials and Physical Research (BMPR) Quality Control/Quality Assurance (QC/QA) training documents or contract requirements and obtain samples and perform testing as noted below.
 - b. Proportion hot mix asphalt according to applicable STATE BMPR QC/QA training documents and obtain samples and perform testing as noted below.
 - c. For soils, to obtain samples and perform testing as noted below.
 - d. For aggregates, to obtain samples and perform testing as noted below.

NOTE: For 1a. through 1d. the ENGINEER is to obtain samples for testing according to the STATE BMPR "Project Procedures Guide", or as indicated in the specifications, or as attached herein by the LA; test according to the STATE BMPR "Manual of Test Procedures for Materials", submit STATE BMPR inspection reports; and verify compliance with contract specifications.

- e. Inspection of all materials when inspection is not provided at the sources by the STATE BMPR, and submit inspection reports to the LA and the STATE in accordance with the STATE BMPR "Project Procedures Guide" and the policies of the STATE.
 - f. For Quality Assurance services, provide personnel who have completed the appropriate STATE BMPR QC/QA trained technician classes.
 - g. Inspect, document and inform the LA employee In Responsible Charge of the adequacy of the establishment and maintenance of the traffic control.
 - h. Geometric control including all construction staking and construction layouts.
 - i. Quality control of the construction work in progress and the enforcement of the contract provisions in accordance with the STATE Construction Manual.
 - j. Measurement and computation of pay items.
 - k. Maintain a daily record of the contractor's activities throughout construction including sufficient information to permit verification of the nature and cost of changes in plans and authorized extra work.
 - l. Preparation and submission to the LA by the required form and number of copies, all partial and final payment estimates, change orders, records, documentation and reports required by the LA and the STATE.
 - m. Revision of contract drawings to reflect as built conditions.
 - n. Act as resident construction supervisor and coordinate with the LA employee In Responsible Charge.
2. Engineering services shall include all equipment, instruments, supplies, transportation and personnel required to perform the duties of the ENGINEER in connection with the AGREEMENT.
 3. To furnish the services as required herein within twenty-four hours of notification by the LA employee In Responsible Charge.
 4. To attend meetings and visit the site of the work at any reasonable time when requested to do so by representatives of the LA or STATE.
 5. That none of the services to be furnished by the ENGINEER shall be sublet, assigned or transferred to any other party or parties without the written consent of the LA. The consent to sublet, assign or otherwise transfer any portion of the services to be furnished by the ENGINEER shall not be construed to relieve the ENGINEER of any responsibility for the fulfillment of this AGREEMENT.
 6. The ENGINEER shall submit invoices, based on the ENGINEER's progress reports, to the LA employee In Responsible Charge, no more than once a month for partial payment on account for the ENGINEER's work completed to date. Such invoices shall represent the value, to the LA of the partially completed work, based on the sum of the actual costs incurred, plus a percentage (equal to the percentage of the construction engineering completed) of the fixed fee for the fully completed work.
 7. That the ENGINEER is qualified technically and is entirely conversant with the design standards and policies applicable to improvement of the SECTION; and that the ENGINEER has sufficient properly trained, organized and experienced personnel to perform the services enumerated herein.
 8. That the ENGINEER shall be responsible for the accuracy of the ENGINEER's work and correction of any errors, omissions or ambiguities due to the ENGINEER'S negligence which may occur either during prosecution or after acceptance by the LA. Should any damage to persons or property result from the ENGINEER's error, omission or negligent act, the ENGINEER shall indemnify the LA, the STATE and their employees from all accrued claims or liability and assume all restitution and repair costs arising from such negligence. The ENGINEER shall give immediate attention to any remedial changes so there will be minimal delay to the contractor and prepare such data as necessary to effectuate corrections, in consultation with and without further compensation from the LA.
 9. That the ENGINEER will comply with applicable federal statutes, state of Illinois statutes, and local laws or ordinances of the LA.
 10. The undersigned certifies neither the ENGINEER nor I have:
 - a) employed or retained for commission, percentage, brokerage, contingent fee or other considerations, any firm or person (other than a bona fide employee working solely for me or the above ENGINEER) to solicit or secure this AGREEMENT;

- b) agreed, as an express or implied condition for obtaining this AGREEMENT, to employ or retain the services of any firm or person in connection with carrying out the AGREEMENT or
 - c) paid, or agreed to pay any firm, organization or person (other than a bona fide employee working solely for me or the above ENGINEER) any fee, contribution, donation or consideration of any kind for, or in connection with, procuring or carrying out the AGREEMENT.
 - d) are not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from covered transactions by any Federal department or agency;
 - e) have not within a three-year period preceding the AGREEMENT been convicted of or had a civil judgment rendered against them for commission of fraud or criminal offense in connection with obtaining, attempting to obtain or performing a public (Federal, State or local) transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements or receiving stolen property;
 - f) are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (e) of this certification; and
 - g) have not within a three-year period preceding this AGREEMENT had one or more public transactions (Federal, State or local) terminated for cause or default.
11. To pay its subconsultants for satisfactory performance no later than 30 days from receipt of each payment from the LA.
 12. To submit all invoices to the LA within one year of the completion of the work called for in this AGREEMENT or any subsequent Amendment or Supplement.
 13. To submit BLR 05613, Engineering Payment Report, to the STATE upon completion of the work called for in the AGREEMENT.
 14. To be prequalified with the STATE in Construction Inspection when the ENGINEER or the ENGINEER's assigned staff is named as resident construction supervisor. The onsite resident construction supervisor shall have a valid Documentation of Contract Quantities certification.
 15. Will provide, as required, project inspectors that have a valid Documentation of Contract Quantities certification.

II. THE LA AGREES,

1. To furnish a full time LA employee to be In Responsible Charge authorized to administer inherently governmental PROJECT activities.
2. To furnish the necessary plans and specifications.
3. To notify the ENGINEER at least 24 hours in advance of the need for personnel or services.
4. To pay the ENGINEER as compensation for all services rendered in accordance with this AGREEMENT, on the basis of the following compensation formulas:

Cost Plus Fixed Fee Formulas

- $FF = 14.5\%[DL + R(DL) + OH(DL) + IHDC]$, or
- $FF = 14.5\%[(2.3 + R)DL + IHDC]$

Where: DL = Direct Labor
 IHDC = In House Direct Costs
 OH = Consultant Firm's Actual Overhead Factor
 R = Complexity Factor
 FF=Fixed Fee
 SBO = Services by Others

Total Compensation = DL +IHDC+OH+FF+SBO

Specific Rate (Pay per element)

Lump Sum _____

5. To pay the ENGINEER using one of the following methods as required by 49 CFR part 26 and 605 ILCS 5/5-409:

With Retainage

- a) **For the first 50% of completed work**, and upon receipt of monthly invoices from the ENGINEER and the approval thereof by the LA, monthly payments for the work performed shall be due and payable to the ENGINEER, such payments to be equal to 90% of the value of the partially completed work minus all previous partial payments made to the ENGINEER.
- b) **After 50% of the work is completed**, and upon receipt of monthly invoices from the ENGINEER and the approval thereof by the LA, monthly payments covering work performed shall be due and payable to the ENGINEER, such payments to be equal to 95% of the value of the partially completed work minus all previous partial payments made to the ENGINEER.
- c) **Final Payment** – Upon approval of the work by the LA but not later than 60 days after the work is completed and reports have been made and accepted by the LA and the STATE, a sum of money equal to the basic fee as determined in this AGREEMENT less the total of the amounts of partial payments previously paid to the ENGINEER shall be due and payable to the ENGINEER.

Without Retainage

- a) **For progressive payments** – Upon receipt of monthly invoices from the ENGINEER and the approval thereof by the LA, monthly payments for the work performed shall be due and payable to the ENGINEER, such payments to be equal to the value of the partially completed work minus all previous partial payments made to the ENGINEER.
 - b) **Final Payment** – Upon approval of the work by the LA but not later than 60 days after the work is completed and reports have been made and accepted by the LA and STATE, a sum of money equal to the basic fee as determined in this AGREEMENT less the total of the amounts of partial payments previously paid to the ENGINEER shall be due and payable to the ENGINEER.
6. The recipient shall not discriminate on the basis on the basis of race, color, national origin or sex in the award and performance of any DOT-assisted contract or in the administration of its DBE program or the requirements of 49 CFR part 26. The recipient shall take all necessary and reasonable steps under 49 CFR part 26 to ensure nondiscrimination in the award and administration of DOT-assisted contracts. The recipient's DBE program, as required by 49 CFR part 26 and as approved by DOT, is incorporated by reference in this agreement. Implementation of this program is a legal obligation and failure to carry out its terms shall be treated as violation of this agreement. Upon notification to the recipient of its failure to carry out its approved program, the Department may impose sanctions as provided for under part 26 and may, in appropriate cases, refer the matter for enforcement under 18 U.S.C. 1001 and/or the Program Fraud Civil Remedies Act of 1986 (31U.S.C. 3801 et seq.).
7. To submit approved form BC 775 (Exhibit C) and BC 776 (Exhibit D) with this AGREEMENT.

III. It is Mutually Agreed,

1. That the ENGINEER and the ENGINEER's subcontractors will maintain all books, documents, papers, accounting records and other evidence pertaining to cost incurred and to make such materials available at their respective offices at all reasonable times during the AGREEMENT period and for three years from the date of final payment under this AGREEMENT, for inspection by the STATE, Federal Highway Administration or any authorized representatives of the federal government and copies thereof shall be furnished if requested.
2. That all services are to be furnished as required by construction progress and as determined by the LA employee In Responsible Charge. The ENGINEER shall complete all services specified herein within a time considered reasonable to the LA, after the CONTRACTOR has completed the construction contract.
3. That all field notes, test records and reports shall be turned over to and become the property of the LA and that during the performance of the engineering services herein provided for, the ENGINEER shall be responsible for any loss or damage to the documents herein enumerated while they are in the ENGINEER's possession and any such loss or damage shall be restored at the ENGINEER's expense.
4. That this AGREEMENT may be terminated by the LA upon written notice to the ENGINEER, at the ENGINEER's last known address, with the understanding that should the AGREEMENT be terminated by the LA, the ENGINEER shall be paid for any services completed and any services partially completed. The percentage of the total services which have been rendered by the ENGINEER shall be mutually agreed by the parties hereto. The fixed fee stipulated in numbered paragraph 4d of Section II shall be multiplied by this percentage and added to the ENGINEER's actual costs to obtain the earned value of work performed. All field notes, test records and reports completed or partially completed at the time of termination shall become the property of, and be delivered to, the LA.
5. That any differences between the ENGINEER and the LA concerning the interpretation of the provisions of this AGREEMENT shall be referred to a committee of disinterested parties consisting of one member appointed by the ENGINEER, one member appointed by the LA, and a third member appointed by the two other members for disposition and that the committee's decision shall be final.
6. That in the event the engineering and inspection services to be furnished and performed by the LA (including personnel furnished by the ENGINEER) shall, in the opinion of the STATE be incompetent or inadequate, the STATE shall have the right to supplement the engineering and inspection force or to replace the engineers or inspectors employed on such work at the expense of the LA.

7. That the ENGINEER has not been retained or compensated to provide design and construction review services relating to the contractor's safety precautions, except as provided in numbered paragraph 1f of Section I.
8. This certification is required by the Drug Free Workplace Act (30ILCS 580). The Drug Free Workplace Act requires that no grantee or contractor shall receive a grant or be considered for the purpose of being awarded a contract for the procurement of any property or service from the State unless that grantee or contractor will provide a drug free workplace. False certification or violation of the certification may result in sanctions including, but not limited to, suspension of contract or grant payments, termination of a contract or grant and debarment of contracting or grant opportunities with the State for at least one (1) year but no more than five (5) years.

For the purpose of this certification, "grantee" or "contractor" means a corporation, partnership or other entity with twenty-five (25) or more employees at the time of issuing the grant, or a department, division or other unit thereof, directly responsible for the specific performance under a contract or grant of \$5,000 or more from the State, as defined in the Act.

The contractor/grantee certifies and agrees that it will provide a drug free workplace by:

- (a) Publishing a statement:
 - (1) Notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance, including cannabis, is prohibited in the grantee's or contractor's workplace.
 - (2) Specifying the actions that will be taken against employees for violations of such prohibition.
 - (3) Notifying the employee that, as a condition of employment on such contract or grant, the employee will:
 - (A) abide by the terms of the statement; and
 - (B) notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five (5) days after such conviction.
 - (b) Establishing a drug free awareness program to inform employees about:
 - (1) the dangers of drug abuse in the workplace;
 - (2) the grantee's or contractor's policy of maintaining a drug free workplace;
 - (3) any available drug counseling, rehabilitation and employee assistance program; and
 - (4) the penalties that may be imposed upon an employee for drug violations.
 - (c) Providing a copy of the statement required by subparagraph (a) to each employee engaged in the performance of the contract or grant and to post the statement in a prominent place in the workplace.
 - (d) Notifying the contracting or granting agency within ten (10) days after receiving notice under part (B) of paragraph (3) of subsection (a) above from an employee or otherwise receiving actual notice of such conviction.
 - (e) Imposing a sanction on, or requiring the satisfactory participation in a drug abuse assistance or rehabilitation program by, any employee who is convicted, as required by section S of the Drug Free Workplace Act.
 - (f) Assisting employees in selecting a course of action in the event drug counseling, treatment and rehabilitation is required and indicating that a trained referral team is in place.
 - (g) Making a good faith effort to continue to maintain a drug free workplace through implementation of the Drug Free Workplace Act.
9. The ENGINEER or subconsultant shall not discriminate on the basis of race, color, national origin or sex in the performance of this AGREEMENT. The ENGINEER shall carry out applicable requirements of 49 CFR part 26 in the administration of DOT-assisted contracts. Failure by the ENGINEER to carry out these requirements is a material breach of this AGREEMENT, which may result in the termination this AGREEMENT or such other remedy as the LA deems appropriate.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2012-02
SUBJECT: COLD IN-PLACE RECYCLING AND FULL DEPTH RECLAMATION
ISSUED DATE: March 30, 2012
EFFECTIVE DATE: April 1, 2012

This memorandum revises Section 46-6 of the Bureau of Local Roads & Streets Manual issued effective January 2012.

The Bureau of Local Roads & Streets in cooperation with local agencies, consultants, academia, and industry has established policies and specifications for cold in-place recycling (CIR) and full depth reclamation (FDR) to be used by local agency highway departments. Designs and specifications were developed based on Illinois Center for Transportation research project R27-12 "Cold In-Place Recycling with Asphalt Products (CIRwAP)" (research report available at <http://ict.illinois.edu/publications/>). These projects are eligible for Federal, State, and Motor Fuel Tax funding.

CIR is an on-site, in-place rehabilitation method which consists of cold milling or pulverizing, mixing with emulsified asphalt or foamed asphalt, placing, and compacting 2 to 6 in of the existing bituminous pavement layer(s). Either LR400-5 or LR400-6 should be used depending on bituminous material selected for stabilization. LR1000-1 establishes the mix design procedures for the contractor to follow. These special provisions are attached to this procedure memorandum.

FDR is an on-site, in-place rehabilitation method which consists of uniformly pulverizing, mixing with emulsified asphalt or foamed asphalt, placing, and compacting the full thickness (maximum depth of 10 in) of the existing bituminous pavement and/or underlying granular. Either LR400-4 or LR400-7 should be used depending on bituminous material selected for stabilization. LR1000-2 establishes the mix design procedures for the contractor to follow. Please contact the Local Policy & Technology Unit for copies of these special provisions.

Both CIR and FDR projects require a surface course (hot-mix asphalt overlay or surface treatment) to be applied. If the surface course thickness is less than or equal to 1.5 in, LR403-1 may be used to improve ride quality of final surface. This special provision is attached to this procedure memorandum.

Please contact the Local Policy & Technology Unit at dot.LocalPolicy@illinois.gov with any questions.



Acting Engineer of Local Roads and Streets

Attachments

KB/kb

cc: Dave Lippert Attn: Amy Schutzbach
Norm Stoner Attn: Brian Pfeifer

State of Illinois
Department of Transportation
Bureau of Local Roads and Streets

SPECIAL PROVISION
FOR
FULL DEPTH RECLAMATION (FDR) WITH EMULSIFIED ASPHALT

Effective: April 1, 2012

All references to Divisions, Sections and Articles in this Special Provision shall be construed to mean specific Divisions, Sections and Articles in the Standard Specifications for Road and Bridge Construction adopted by the Department of Transportation.

Description. This work shall consist of cold milling and pulverizing all of the existing bituminous layers and/or portions of the aggregate base material to a specified depth and maximum size, mixing an emulsified asphalt, water and additives with the reclaimed material, and spreading and compacting the mixture.

Materials. Materials shall be according to the following Articles of Division 1000 – Materials:

Item	Article/Section
(a) Portland Cement (Note 1)	1001
(b) Water.....	1002
(c) Fine Aggregate (Note 2).....	1003
(d) Coarse Aggregate (Note 2)	1004
(e) Fly Ash (Note 1)	1010.02
(f) Lime Slurry (Note 1).....	1012.04
(g) Reclaimed Asphalt Pavement (Note 3)	1031
(h) Emulsified Asphalt (Note 4).....	1032.06
(i) Cold Pulverized Material (Note 5)	
(j) Mix Design (Note 6)	

Note 1 If necessary, the mix design may require additional additives to increase fines in the mix. The type and allowable usage percentage will be described in the mix design.

Note 2. The mix design will specify gradation and quality of any additional aggregate. Any additional fine aggregate shall meet Class B quality as a minimum. Any additional coarse aggregate shall meet Class C quality as a minimum.

Note 3. The Engineer may allow reclaimed asphalt pavement (RAP) from Conglomerate "D" Quality or better RAP stockpiles as specified in Article 1031.02 or from millings of the existing highway. The RAP material shall not exceed the maximum size requirement of the cold pulverized material, and when blended with the cold pulverized material shall produce a product which meets the specifications of the mix design.

Note 4. The CIR-FDR emulsified asphalt shall be selected for the project by the emulsified asphalt supplier based on the Contractor's mixture design. The penetration of the supplied emulsified asphalt shall be within $\pm 25\%$ of the penetration of the design emulsified asphalt. A representative from the emulsified asphalt supplier will be on the job site at the beginning of the project to monitor the characteristics and performance of the emulsified asphalt. Throughout the job, the representative will be available to check on the project and make adjustments to the emulsified asphalt formulation as required. The emulsified asphalt shall be received on the job site at a temperature no greater than 120°F.

The CIR-FDR emulsified asphalt shall meet the following requirements:

CIR-FDR EMULSIFIED ASPHALT MATERIAL SPECIFICATION			
Test	Procedure	Minimum	Maximum
Viscosity, Saybolt Furol, at 77°F (25°C), SFS	AASHTO T 59	20	100
Sieve Test, No. 20 (850 μ m), retained on sieve, %	AASHTO T 59		0.10
Storage Stability Test, 24 hr, %	AASHTO T 59		1.0
Distillation Test, Residue from distillation to 177°C, %	AASHTO T 59 ¹	64.0	
Oil distillate by volume, %	AASHTO T 59		1.0
Penetration, 25°C, 100 g, 5 s, dmm	AASHTO T 49	75	200

Note: 1. Modified AASHTO T 59 procedure – distillation temperature of 177°C with a 20 minute hold.

Note 5. Prior to the addition of the emulsified asphalt, the gradation of the cold pulverized material shall meet the following:

COLD PULVERIZED MATERIAL GRADATIONS		
Grad No.	Sieve Size and Percent Passing	
	1 ¼ in (31.5 mm)	1 in (25 mm)
PM 1	100	
PM 2		100

PM 2 should only be used when a finer gradation of RAP is required by the mix design.

Note 6. A mix design for each distinct section shall be submitted to the Department prior to construction using actual materials (in-situ sampled by the Contractor and new materials from the Contractor's material suppliers) proposed for the project. The job mix formula shall meet the following criteria and be approved by the Engineer.

FDR with EMULSIFIED ASPHALT MIX DESIGN REQUIREMENTS			
Test Method	FDR Type 1 ¹	FDR Type 2 ¹	Test Purpose
Gradation for Design Millings, AASHTO T 27	Report	Report	
Sand Equivalent, ASTM D2419, Method B	Report	Report	
Modified Proctor, ASTM D1557, Method C	Report	Report	Optimum Moisture Content for Density and Compaction
Design Moisture Content	Report	Report	Dispersion of Emulsion
Superpave Gyrotory Compaction, 1.25° angle, 600 kPa	30 gyrations at 6 in (150 mm)	30 gyrations at 6 in (150 mm)	Laboratory Density Indicator
Short Term Strength (STS), ASTM D 1560, Part 13, 175 g/25 mm of width	175 minimum	150 minimum	Stability Indicator
Bulk Specific Gravity (Density), ASTM D 6752 or ASTM D2726	Report	Report	Laboratory Density Indicator
Rice (Maximum Theoretical) Specific Gravity, ASTM D2041	Report	Report	Laboratory Density Indicator
Air Voids, Modified	Report	Report	Laboratory Density Indicator
Indirect Tensile Strength, ASTM D 4867, psi	40 minimum	35 minimum	Strength Indicator
Conditioned Indirect Tensile Strength, ASTM D 4867, psi	25 minimum	20 minimum	
Additional Additive(s) ² Coarse Aggregate Fine Aggregate RAP Fly Ash Cement	Report Report Report Report 1.0% maximum	Report Report Report Report 1.0% maximum	
Emulsified Asphalt ² Distillation Residue, % Residue Penetration, dmm Optimum Emulsion Content, % Residual Asphalt to Cement Content Ratio	Report Report Report 3:1 minimum	Report Report Report 3:1 minimum	

Notes: 1. FDR Type 1 mixtures contain < 8% passing No. 200. FDR Type 2 mixtures contain ≥ 8% passing No. 200 or for all granular mixtures.

2. Report shall include type/gradation and producer/supplier.

Equipment. Equipment shall be according to the following Articles of Division 1100 – Equipment:

- (a) Self-Propelled Pneumatic-Tired Rollers (Note 1) 1101.01(c)
- (b) Vibratory Roller (Note 2) 1101.01(g)
- (c) Mechanical Sweeper 1101.03
- (d) Motor Grader 1101.05
- (e) Self-Propelled Milling Machine 1101.16(a)
- (f) Self-Propelled Vibratory Padfoot Roller (Note 3)
- (g) Self-Propelled Reclaimer (Note 4)
- (h) Water Truck (Note 5)

- Note 1. The self-propelled pneumatic-tired roller shall have a gross weight (mass) of not less than 25 tons (23 metric tons).
- Note 2. The double drum vibratory steel roller shall weigh a minimum of 10 tons (9 metric tons).
- Note 3. The self-propelled vibratory pad foot roller shall have 84 in (2133 mm) wide drums and weigh a minimum of 10 tons (9 metric tons). A front mounted blade is recommended for back-dragging. A self-propelled vibratory pad foot roller shall be required for each self-propelled reclaimer.
- Note 4. The self-propelled reclaimer shall be capable of fully pulverizing the existing pavement to the depth required, incorporate the emulsified asphalt and water, and mix the materials to produce a homogeneous material. The minimum power of the self-propelled reclaimer shall be 500 hp (373 kW). The self-propelled reclaimer shall be capable of reclaiming not less than 8 ft (2.4 m) wide and up to 12 in (305 mm) deep in each pass. The self-propelled reclaimer shall have a system for adding emulsified asphalt with a full width spray bar consisting of a positive displacement pump interlocked to the self-propelled reclaimer's ground speed so that the amount of emulsion being added is automatically adjusted with changes to the self-propelled reclaimer's ground speed. The additive system shall be capable of incorporating up to 7 gal/yd² (31.7 L/m²) of emulsified asphalt. Individual valves on the spray bar shall be capable of being turned off as necessary to minimize emulsion overlap on subsequent passes.
- Note 5. Water trucks shall be set up for a controlled spray.

CONSTRUCTION REQUIREMENTS

Weather Limitations. This work shall be performed when atmospheric temperature in the shade and away from artificial heat is 50°F (10°C) and rising. Also, the weather shall not be foggy or rainy. The weather forecast shall not call for freezing temperature within 7 days with after placement of any portion of the project and the annual average low temperature within 7 days of the end of the project shall be greater than 32°F (0°C). The Engineer may restrict work when the heat index is greater than 100°F (38°C).

Pre-pulverization and Initial Shaping. The existing pavement shall be pre-pulverized by the self-propelled reclaimer and/or shaped by the motor grader to correct for profile, crown, and contour, according to the plans, before the addition of the emulsified asphalt. Water, coarse aggregate, RAP Material, or other additives required may be added during this operation. The pre-pulverized and shaped material shall be compacted with a vibratory roller in static mode to support equipment and/or traffic and to provide depth control during processing. Depth of pre-pulverization and shaping shall be 1 in (25 mm) to 2 in (50 mm) less than the depth of final processing.

Processing. Moisture content shall be within $\pm 1.0\%$ from the mix design. If the moisture content is too low, water shall be added directly to the mixing chamber of the reclaimer by a water truck connected to the reclaimer. The emulsified asphalt shall be applied at the percentage recommended in the mix design. The required depth of reclamation shall be monitored regularly. Prior to spreading and compacting, the processed material shall have a gradation meeting the mix design.

Compaction. The reclaimed material shall be compacted according to the following:

- (a) Growth Curve. Compaction shall be accomplished by performing a growth curve within the first half mile of production. If an adjustment is made to the emulsified asphalt application rate or recycled depth, the Engineer reserves the right to request an additional growth curve. The growth curve, consisting of a plot of lb/cu ft (kg/cu m) vs. number of passes with the project breakdown roller, shall be developed. Roller speed during the growth curve testing shall be the same as the normal paving operation. This curve shall be established by use of a nuclear gauge. Tests shall be taken after each pass until the highest lb/cu ft (kg/cu m) is obtained. This value shall be the target density.

A new growth curve is required if the rollers used on the growth curve are replaced with a new roller during production. The target density shall apply only to the specific gauge used. If additional gauges are to be used to determine density specification compliance, the Contractor shall establish a unique minimum allowable target density from the growth curve location for each gauge.

- (b) Rollers. Immediately after processing and final shaping the reclaimed material shall be compacted with equipment meeting the following requirements:

MINIMUM ROLLER REQUIREMENTS FOR FDR			
Breakdown Roller (one of the following)	Intermediate Roller ¹	Final Roller (one or more of the following) ¹	Density Requirement
P ¹ , PF ²	P, V _D	P, V _S	95 - 102 percent of the target density obtained on the growth curve

^{1/} Equipment definitions in Table 1 of Article 406.07.

^{2/} PF - Self-propelled vibratory padfoot roller for breakdown rolling.

- (c) Rolling. The breakdown roller shall be 500 ft (152 m) or less behind all self-propelled reclaimer units. The reclaimed material shall be compacted by the padfoot roller, applying high amplitude and low frequency, or the pneumatic roller. Breakdown rolling shall be performed until the breakdown roller walks out of the material. Walking out for the padfoot roller is defined as light being clearly evident between all of the pads at the material–padfoot drum interface and being no more than 3/16 inch deep. Walking out for the pneumatic roller is defined as no significant wheel impressions being left on the surface.

After the completion of breakdown rolling, the motor grader shall be used to cut the reclaimed material no deeper than necessary to remove breakdown roller marks from the initial compaction and to achieve desired cross slope.

The bladed reclaimed material shall be compacted by the intermediate and final rollers. The number of passes and order of rollers may be altered to meet compaction requirements. Finish rolling shall not be done in vibratory mode. Water may be lightly sprayed by a water truck to aid in improving final density and appearance. A second water truck is required if water is also being added at the reclaimer. After the first day of the emulsion addition, the reclaimed base shall not be shaped as chunking may result.

Opening to Traffic. The compacted reclaimed pavement shall be proof rolled with the type of truck traffic expected on the road. If permanent deformation does not occur, moving truck traffic may be allowed on the reclaimed pavement. If permanent deformation greater than 0.25 in (6 mm) occurs, truck traffic shall be kept off until the reclaimed pavement is firm enough to support expected traffic with minimal deformation.

Curing. Before placing any surfacing, the reclaimed pavement shall be allowed to cure until the moisture content of the reclaimed pavement is less than 2.5% or less than 50% of the optimum moisture content as determined during the mix design process, or at the discretion of the Engineer. The reclaimed pavement shall be surfaced before November 1.

Surface Test. The completed reclaimed pavement will be tested for smoothness in the wheel paths with a 16 ft (5 m) straightedge.

For each variation in the reclaimed pavement that exceeds 3/8 in (10 mm), the entire area affected shall be corrected by a self-propelled milling machine. The reclaimed pavement shall be swept by a mechanical broom to remove all loose material from the reclaimed pavement before opening to traffic.

The Contractor shall furnish a 16 ft (5 m) straightedge and shall provide for its jobsite transportation at no additional cost to the Department.

Quality Control/ Quality Assurance (QC/QA).

- (a) Quality Control by the Contractor. The Contractor shall perform or have performed the inspection and tests required to assure conformance to contract requirements. Control includes the recognition of obvious defects and their immediate correction. This may require increased testing, communication of test results to the job site, modification of operations, suspension of the work, or other actions as appropriate.

The Engineer shall be immediately notified of any failing tests and subsequent remedial action. Passing tests shall be reported to the Engineer no later than the start of the next work day.

- (b) Quality Assurance by the Engineer. The Engineer will conduct independent assurance tests on split samples taken by the Contractor for quality control testing. In addition, the Engineer will witness the sampling and splitting of these samples and will immediately retain witnessed split samples for quality assurance testing.

- (c) Tests Methods and Frequency.

- (1) Depth of Pulverization (Milling). The nominal depth at the centerline shall be required. Anytime depth changes are made or equipment is idle, a depth check is will be taken.
- (2) Pulverized Material Sizing and Gradation. A sample shall be obtained before emulsified asphalt addition and screened using a 1.5 in. (37.5mm) sieve (or smaller sieve if required) to determine if meeting the maximum particle size requirement. Gradations shall be performed each day on the moist millings using the following sieves: 1.5 inch, 1.0 inch, ¾ inch, ½ inch, 3/8 inch, No.4, No.8, No.16, and No.30. The resulting gradation shall be compared to the mix design gradations to determine any necessary changes to emulsion content.

Sampling procedures shall generally be in accordance with ASTM D979 or AASHTO T168. When the Engineer determines the location for a gradation sample, the contractor will be notified to turn off the emulsified asphalt and mark the location continuing to pulverize the existing pavement until the Engineer is satisfied with the length of material pulverized without the addition of the emulsified asphalt. The maximum length of pulverization without the addition of the emulsified asphalt shall not exceed 100 feet. After the Contractor collects the gradation sample, the machine will be backed up to the location where the emulsified asphalt was turned off then re-pulverize this material adding the required amount of emulsified asphalt to the pulverized material.

- (3) Emulsified Asphalt Content. The Engineer shall be notified any time emulsified asphalt content is changed. The emulsified asphalt content shall be checked and recorded for each segment in which the percentage is changed. Emulsified asphalt content changes shall be made based upon mix design recommendations, which are based upon different mix designs for road segments of varying construction. The emulsified asphalt content shall be checked from the belt scale totalizer or asphalt pump totalizer.
- (4) Water Content. The Engineer shall be notified any time the water content is changed. Water content at the milling head shall be checked and recorded for each segment in which the percentage is changed. This information shall be gathered from the water metering device, which can be checked from the belt scale totalizer to verify daily quantities used. Water content changes shall be made based on mixture consistency, coating, and dispersion of the recycled materials.
- (5) Compacted Density. A wet density shall be determined using a nuclear moisture-density gauge generally following the procedures for ASTM D2950, backscatter measurement. This measurement shall be compared to the target density obtained by the growth curve.
- (6) Frequency. The following table provides the minimum frequency for tests; however, the Engineer may increase the testing frequency if the construction process is experiencing problems or unknown conditions are encountered.

QC/QA TESTING FREQUENCY		
Test	QC Frequency ¹	QA Frequency ¹
Depth of Pulverization	1 per 500 feet	1 per 1000 feet
Pulverized Material Gradation	1 per ½ day production	1 per day
Emulsified Asphalt Content	1 per 500 ft	1 per 1000 ft
Water Content	1 per 500 ft	1 per 1000 ft
Compacted Density	1 per ¼ mile	1 per mile

Note(s): 1. The Contractor shall perform all quality control tests within the first 500 ft (75 m) after startup or any change in the mix. The Department will also run the split samples at these locations.

Method of Measurement.

Bituminous materials will be measured for payment as specified in Section 1032.

Coarse aggregate will be measured by the square yard (square meter).

Full-depth reclamation will be measured by the square yard (square meter) of the recycled pavement.

Basis of Payment.

The bituminous material will be paid for at the contract unit price per gallon (liter) for CIR-FDR EMULSIFIED ASPHALT.

The coarse aggregate will be paid for at the contract unit price per sq yd (meter) for ADD ROCK.

The full-depth reclamation will be paid at the contract unit price per square yard (square meter) for FULL-DEPTH RECLAMATION, of the thickness specified.

State of Illinois
Department of Transportation
Bureau of Local Roads and Streets

SPECIAL PROVISION
FOR
COLD IN-PLACE RECYCLING (CIR) WITH EMULSIFIED ASPHALT

Effective: April 1, 2012

All references to Divisions, Sections and Articles in this Special Provision shall be construed to mean specific Divisions, Sections and Articles in the Standard Specifications for Road and Bridge Construction adopted by the Department of Transportation.

Description. This work shall consist of cold milling and pulverizing existing bituminous layers to a specified depth and maximum size, mixing an emulsified asphalt, water and additives with the recycled material, and spreading and compacting the mixture.

Materials. Materials shall be according to the following Articles of Division 1000 – Materials:

<u>Item</u>	<u>Article/Section</u>
(a) Portland Cement (Note 1)	1001
(b) Water.....	1002
(c) Fine Aggregate (Note 2).....	1003
(d) Coarse Aggregate (Note 2).....	1004
(e) Fly Ash (Note 1)	1010.02
(f) Lime Slurry (Note 1).....	1012.04
(g) Reclaimed Asphalt Pavement (Note 3)	1031
(h) Emulsified Asphalt (Note 4).....	1032.06
(i) Cold Pulverized Material (Note 5)	
(j) Mix Design (Note 6)	

Note 1. If necessary, the mix design may require additional additives to increase fines in the mix. The type and allowable usage percentage will be described in the mix design.

Note 2. The mix design will specify gradation and quality of any additional aggregate. Any additional fine aggregate shall meet Class B quality as a minimum. Any additional coarse aggregate shall meet Class C quality as a minimum.

Note 3. The Engineer may allow reclaimed asphalt pavement (RAP) from Conglomerate "D" Quality or better RAP stockpiles as specified in Article 1031.02 or from millings of the existing highway. The RAP material shall not exceed the maximum size requirement of the cold pulverized material, and when blended with the cold pulverized material shall produce a product which meets the specifications of the mix design.

Note 4. The CIR-FDR emulsified asphalt shall be selected for the project by the emulsified asphalt supplier based on the Contractor's mixture design. The penetration of the supplied emulsified asphalt shall be within $\pm 25\%$ of the penetration of the design emulsified asphalt. A representative from the emulsified asphalt supplier will be on the job site at the beginning of the project to monitor the characteristics and performance of the emulsified asphalt. Throughout the job, the representative will be available to check on the project and make adjustments to the emulsified asphalt formulation as required. The emulsified asphalt shall be received on the job site at a temperature no greater than 120°F.

The CIR-FDR emulsified asphalt shall meet the following requirements:

CIR-FDR EMULSIFIED ASPHALT MATERIAL SPECIFICATION			
Test	Procedure	Minimum	Maximum
Viscosity, Saybolt Furol, at 77°F (25°C), SFS	AASHTO T 59	20	100
Sieve Test, No. 20 (850 μ m), retained on sieve, %	AASHTO T 59		0.10
Storage Stability Test, 24 hr, %	AASHTO T 59		1.0
Distillation Test, Residue from distillation to 177°C, %	AASHTO T 59 ¹	64.0	
Oil distillate by volume, %	AASHTO T 59		1.0
Penetration, 25°C, 100 g, 5 s, dmm	AASHTO T 49	75	200

Note: 1. Modified AASHTO T 59 procedure – distillation temperature of 177°C with a 20 minute hold.

Note 5. Prior to the addition of the emulsified asphalt, the gradation of the cold pulverized material shall meet the following:

COLD PULVERIZED MATERIAL GRADATIONS		
Grad No.	Sieve Size and Percent Passing	
	1 ½ in (37.5 mm)	1 in (25 mm)
PM 1	100	
PM 2 ¹		100

PM 2 should only be used when a finer gradation of RAP is required by the mix design.

Note 6. A mix design for each distinct section shall be submitted to the Department prior to construction using actual materials (in-situ sampled by the Contractor and new materials from the Contractor's material suppliers) proposed for the project. The job mix formula shall meet the following criteria and be approved by the Engineer.

CIR with EMULSIFIED ASPHALT MIX DESIGN REQUIREMENTS		
Test Method	CIR	Test Purpose
Gradation for Design Millings, AASHTO T 27	Report	
Design Moisture Content	Report	Dispersion of Emulsion
Superpave Gyrotory Compaction, 1.25° angle, 600 kPa	30 gyrations at 4 in (100 mm) ¹	Laboratory Density Indicator
Bulk Specific Gravity (Density), ASTM D 6752 or ASTM D2726	Report	Laboratory Density Indicator
Rice (Maximum Theoretical) Specific Gravity, ASTM D2041	Report	Laboratory Density Indicator
Air Voids	Report	Laboratory Density Indicator
Marshall Stability, ASTM D 1559, lbs	1,250 minimum ¹	Stability Indicator
Retained Stability	70% minimum	Moisture Damage Resistance
Raveling Test, 10°C and 50% humidity	2% maximum	Raveling Resistance
Additional Additive(s) ² Coarse Aggregate Fine Aggregate RAP Fly Ash Cement	Report Report Report Report 1.0% maximum	
Emulsified Asphalt ² Distillation Residue, % Residue Penetration, dmm Optimum Emulsion Content, % Residual Asphalt to Cement Content Ratio	Report Report Report 3:1 minimum	

Notes: 1. 6 in (150 mm) samples may be used; however, if 6 in (150 mm) samples are used, the Marshall Stability is required to be 2,500 lbs minimum.

2. Report shall include type/gradation and producer/supplier.

Equipment. Equipment shall be according to the following Articles of Division 1100 – Equipment:

<u>Item</u>	<u>Article/Section</u>
(a) Self-Propelled Pneumatic-Tired Rollers (Note 1)	1101.01(c)
(b) Steel Wheel Tandem Rollers	1101.01(e)
(c) Vibratory Roller (Note 2)	1101.01(g)
(d) Mechanical Sweeper	1101.03
(e) Self-Propelled Milling Machine	1101.16(a)
(f) Spreading and Finishing Machine	1102.03
(g) Multi-unit Recycling Train (Note 3, 5)	
(h) Single-unit Recycler (Note 4, 5)	
(i) Pick Up Machine (Note 6)	

- Note 1. The self-propelled pneumatic-tired roller shall have a gross weight (mass) of not less than 25 tons (23 metric tons).
- Note 2. The double drum vibratory rollers shall have a gross operating weight of not less than 10 tons (9 metric tons) and a width of 78 in (1980 mm).
- Note 3. The multi-unit recycling train shall contain:
- a. A self-propelled cold milling machine that is capable of pulverizing the existing bituminous material in a single pass to the depth shown on the plans and to a minimum width of not less than 12.5 feet (3.8 m). The machine shall have automatic depth controls to maintain the cutting depth to within $\pm \frac{1}{4}$ in (6 mm) of that shown on the plans, and shall have a positive means for controlling cross slope elevations. The use of a heating device to soften the pavement will not be permitted.
 - b. A material sizing unit having screening and crushing capabilities to reduce the cold pulverized material to the appropriate size. The screening and crushing unit shall have a closed circuit system capable of continuously returning oversized material to the crusher. All of the pulverized material (100%) shall be processed to the maximum size requirements as specified.
 - c. A mixing unit equipped with a belt scale for the continuous weighing of the pulverized and sized bituminous material and a coupled/interlocked computer controlled liquid metering device. The mixing unit shall be an on-board completely self-contained pugmill. The liquid metering device shall be capable of automatically adjusting the flow of emulsified asphalt to compensate for any variation in the weight of pulverized material coming into the mixer. The metering device shall deliver the amount of emulsified asphalt to within ± 0.2 percent of the required amount by weight of pulverized bituminous material (for example, if the design requires 3.0 percent, the metering device shall maintain between 2.8 percent to 3.2 percent). The emulsified asphalt pump should be of sufficient capacity to allow emulsion contents up to 3.5% by weight of pulverized bituminous material. Also, automatic digital readings will be displayed for both the flow rate and total amount of pulverized bituminous material and emulsified asphalt in appropriate units of weight and time.
- Note 4. The single unit recycler shall be a self-propelled cold milling machine/cold recycling machine with a down cutting cutter head capable of pulverizing and recycling the existing hot-mix asphalt pavement to a maximum depth of 5 in (125 mm), incorporate the emulsified asphalt and water, and mix the materials to produce a homogeneous material. The minimum power of this machine is 900 hp. The machine shall be capable of pulverizing and recycling not less than 12.5 ft (3.8 m) wide in each pass. The machine shall have two systems for adding emulsified asphalt and water with each system having a full width spray bar with a positive displacement pump interlocked to the machine's ground speed to insure that the amount of emulsified asphalt and water being added is automatically adjusted with changes to the machine's ground speed. Each additive system shall have its own spray bar equipped with 2 nozzles per foot of spray bar and be capable of incorporating up to 7 gallons per square yard of emulsified asphalt and/or water. Individual valves on the spray bar shall be capable of being turned off as necessary to minimize emulsion and water overlap on subsequent passes.

- Note 5. Any additives such as water, lime slurry, etc. added by the recycling equipment at the mill head or mixing unit shall be controlled through liquid metering devices capable of automatically adjusting for the variation in the weight of the pulverized material going into the mixing unit. The metering devices shall be capable of delivering the amount of additive to within ± 0.2 percent of the required amount by weight of the pulverized bituminous material. A capability of adding up to 5% water by weight of the pulverized bituminous material, if necessary based on environmental and material requirements, is mandatory. It will not be required to meter the water added at the milling machine to control dust in the screens, belts, or crusher/material sizing unit.
- Note 6. The pick-up machine shall be capable of removing the entire windrow down to the remaining underlying material.

CONSTRUCTION REQUIREMENTS

Weather Limitations. This work shall be performed when atmospheric temperature in the shade and away from artificial heat is 50°F (10°C) and rising. Also, the weather shall not be foggy or rainy. The weather forecast shall not call for freezing temperature within 48 hours after placement of any portion of the project. The Engineer may restrict work when the heat index is greater than 100°F (38°C).

Preparation of Existing Pavement. Grass and other vegetation shall be removed from the edge of the existing pavement to prevent contamination of the pulverized bituminous material during the milling operation.

The existing pavement shall be milled to the required depth and width as indicated on the plans. Recycling shall be in a manner that does not disturb the underlying material in the existing roadway. The milling operation shall be conducted so that the amount of fines occurring along the vertical faces of the cut will not prevent bonding of the cold recycled materials. The pulverized bituminous material shall be processed to the required gradation specified. When a paving fabric is encountered during the CIR operation, the Contractor shall make the necessary adjustments in equipment or operations so that at least ninety percent (90%) of the shredded fabric in the recycled material is no more than 5 in² (3200 mm²). Additionally, no fabric piece shall have any dimension exceeding a length of 4 inches (100 mm). These changes may include, but not be limited to, adjusting the milling rate or screens in order to obtain a specification recycled material. The Contractor shall be required to waste material containing over-sized pieces of paving fabric as directed by the Engineer. When the Contractor is aware that paving fabric exists, such as indicated on the plans, the Contractor will not receive additional payment. However, if the Contractor is not made aware of the paving fabric, then the Contractor shall receive additional payment for any necessary adjustments in equipment and operations.

Mixing Operation. The pulverized material shall be produced through a mixing unit capable of processing the pulverized material, emulsified asphalt and any additives to a homogeneous recycled mixture. The emulsified asphalt shall be incorporated into the pulverized bituminous material at the initial rate determined by the mix design(s) and approved by the Engineer. Sampling and mix design may determine different levels of emulsified asphalt at various portions of the project.

Spreading and Finishing. The recycled material shall be spread using a self-propelled paver. A pick-up machine shall be used to transfer the windrowed recycled material into the spreading and finishing machine. The pickup machine must be within 150 feet (45 m) of the mixing unit. The recycled material shall be spread by a spreading and finishing machine in one continuous pass, without segregation and to the lines and grades established by the Engineer.

Compaction. The compacted recycled material shall be at a thickness 2.5 to 5.0 in (63 to 127 mm). The recycled material shall be compacted according to the following:

- (a) Growth Curve. Compaction shall be accomplished by performing a growth curve within the first half mile of production. If an adjustment is made to the emulsified asphalt application rate or recycled depth, the Engineer reserves the right to request an additional growth curve. The growth curve, consisting of a plot of lb/cu ft (kg/cu m) vs. number of passes with the project breakdown roller, shall be developed. Roller speed during the growth curve testing shall be the same as the normal paving operation. This curve shall be established by use of a nuclear gauge. Tests shall be taken after each pass until the highest lb/cu ft (kg/cu m) is obtained. This value shall be the target density.

A new growth curve is required if the rollers used on the growth curve are replaced with a new roller during production. The target density shall apply only to the specific gauge used. If additional gauges are to be used to determine density specification compliance, the Contractor shall establish a unique minimum allowable target density from the growth curve location for each gauge.

- (b) Rollers. Immediately after processing and final shaping the reclaimed material shall be compacted with equipment meeting the following requirements:

MINIMUM ROLLER REQUIREMENTS FOR CIR			
Breakdown Roller (one of the following) ¹	Intermediate Roller	Final Roller (one or more of the following) ¹	Density Requirement
V _s , V _D	P	V _S , T _F	95 - 102 percent of the target density obtained on the growth curve

Note(s): 1. Equipment definitions in Table 1 of Article 406.07.

- (c) Rolling. Breakdown rolling shall be achieved by using a vibratory roller either operating in a static or vibratory mode. Vibratory mode should only be used if it is shown to not damage the pavement. Intermediate rolling shall be completed by a self-propelled pneumatic roller(s) until no displacement is occurring or until the pneumatic roller(s) is walking out of the mixture. Final rolling to eliminate pneumatic tire marks and to achieve density shall be done by a separate double drum steel roller(s) operating in static mode.

Rolling shall start no more than 30 minutes behind the paver. Finish rolling shall be completed no more than one hour after milling is completed. When possible, rolling shall not be started or stopped on uncompacted material but with rolling patterns established so that they begin or end on previously compacted material or the existing pavement.

Opening to Traffic. After the completion of compaction of the recycled material, no traffic, including that of the contractor, shall be permitted on the completed recycled material for at least two (2) hours. After two hours rolling traffic may be permitted on the recycled material. This time may be adjusted by the Engineer to allow establishment of sufficient cure so traffic will not initiate raveling or permanent deformation. All loose particles that may develop on the pavement surface shall be removed by power brooming.

After opening to traffic, the surface of the recycled pavement shall be maintained in a condition suitable for the safe movement of traffic.

Maintenance. The contractor shall maintain the recycled pavement in a manner satisfactory to the Engineer until the wearing course has been constructed. Maintenance related to contractor construction procedures or quality of work, shall not be paid for separately.

Curing. Before placing the specified wearing course, the recycled pavement shall be allowed to cure until the moisture of the material is reduced to 2.0 percent or less, or approval of the Engineer. Unless otherwise directed by the Engineer, the specified wearing course shall be placed with 2 weeks of the recycled pavement final cure; however, shall be completed by November 1.

Surface Tests. The completed reclaimed pavement will be tested for smoothness in the wheel paths with a 16 ft (5 m) straightedge.

For each variation in the reclaimed pavement that exceeds $\frac{3}{8}$ in (10 mm), the entire area affected shall be corrected by a self-propelled milling machine. The reclaimed pavement shall be swept by a mechanical broom to remove all loose material from the reclaimed pavement before opening to traffic.

The Contractor shall furnish a 16 ft (5 m) straightedge and shall provide for its jobsite transportation at no additional cost to the Department.

Quality Assurance/ Quality Control (QC/QA).

(a) Quality Control by the Contractor. The Contractor shall perform or have performed the inspection and tests required to assure conformance to contract requirements. Control includes the recognition of obvious defects and their immediate correction. This may require increased testing, communication of test results to the job site, modification of operations, suspension of the work, or other actions as appropriate.

The Engineer shall be immediately notified of any failing tests and subsequent remedial action. Passing tests shall be reported to the Engineer no later than the start of the next work day.

(b) Quality Assurance by the Engineer. The Engineer will conduct independent assurance tests on split samples taken by the Contractor for quality control testing. In addition, the Engineer will witness the sampling and splitting of these samples and will immediately retain witnessed split samples for quality assurance testing.

(c) Tests Methods and Frequency.

(1) Depth of Pulverization (Milling). The nominal depth at the centerline shall be required. Anytime depth changes are made or equipment is idle, a depth check is will be taken.

- (2) Pulverized Material Sizing and Gradation. A sample shall be obtained before emulsified asphalt addition and screened using a 1.5 in. (37.5mm) sieve (or smaller sieve if required) to determine if meeting the maximum particle size requirement. Gradations shall be performed each day on the moist millings using the following sieves: 1.5 in, 1.0 in, ¾ in, ½ in, ⅜ in, No.4, No.8, No.16, and No.30. The resulting gradation shall be compared to the mix design gradations to determine any necessary changes to emulsion content.

Sampling procedures shall generally be in accordance with ASTM D979 or AASHTO T168. When the Engineer determines the location for a gradation sample, the contractor will be notified to turn off the emulsified asphalt and mark the location continuing to pulverize the hot-mix asphalt pavement until the Engineer is satisfied with the length of material pulverized without the addition of the emulsified asphalt. The maximum length of pulverization without the addition of the emulsified asphalt shall not exceed 100 ft (30 m). After the Contractor collects the gradation sample, the machine will be backed up to the location where the emulsified asphalt was turned off then re-pulverize this material adding the required amount of emulsified asphalt to the pulverized material.

- (3) Emulsified Asphalt Content. The Engineer shall be notified any time emulsified asphalt content is changed. The emulsified asphalt content shall be checked and recorded for each segment in which the percentage is changed. Emulsified asphalt content changes shall be made based upon mix design recommendations, which are based upon different mix designs for road segments of varying construction. The emulsified asphalt content shall be checked from the belt scale totalizer or asphalt pump totalizer.
- (4) Water Content. The Engineer shall be notified any time the water content is changed. Water content at the milling head shall be checked and recorded for each segment in which the percentage is changed. This information shall be gathered from the water metering device, which can be checked from the belt scale totalizer to verify daily quantities used. Water content changes shall be made based on mixture consistency, coating, and dispersion of the recycled materials.
- (5) Compacted Density. A wet density shall be determined using a nuclear moisture-density gauge generally following the procedures for ASTM D2950, backscatter measurement. This measurement shall be compared to the target density obtained by the growth curve.
- (6) Frequency. The following table provides the minimum frequency for tests; however, the Engineer may increase the testing frequency if the construction process is experiencing problems or unknown conditions are encountered.

QC/QA TESTING FREQUENCY		
Test	QC Frequency ¹	QA Frequency ¹
Depth of Pulverization	1 per 500 feet	1 per 1000 feet
Pulverized Material Sizing and Gradation	1 per ½ day production	1 per day
Emulsified Asphalt Content	1 per 500 ft	1 per 1000 ft
Water Content	1 per 500 ft	1 per 1000 ft
Compacted Density	1 per ¼ mile	1 per mile

Note(s): 1. The Contractor shall perform all quality control tests within the first 500 ft (75 m) after startup or any change in the mix. The Department will also run the split samples at these locations.

Method of Measurement.

Bituminous materials will be measured for payment as specified in Section 1032.

Coarse aggregate will be measured by the square yard (square meter).

The cold in-place recycling will be measured by the square yard (square meter) of the recycled pavement.

Basis of Payment.

The bituminous material will be paid for at the contract unit price per gallon (liter) for CIR-FDR EMULSIFIED ASPHALT.

The coarse aggregate will be paid for at the contract unit price per sq yd (meter) for ADD ROCK.

The cold in-place recycling will be paid for at the contract unit price per square yard (square meter) for COLD IN-PLACE RECYCLING, of the thickness specified.

State of Illinois
Department of Transportation
Bureau of Local Roads and Streets

SPECIAL PROVISION
FOR
SURFACE PROFILE MILLING OF EXISTING, RECYCLED OR RECLAIMED
FLEXIBLE PAVEMENT

Effective: April 1, 2012

All references to Divisions, Sections and Articles in this Special Provision shall be construed to mean specific Divisions, Sections and Articles in the Standard Specifications for Road and Bridge Construction adopted by the Department of Transportation.

Description. This work shall consist of surface profile milling existing, recycled or reclaimed flexible pavement prior to application of a surface treatment less than or equal to 1.5 in (37 mm) thick.

Equipment. Equipment shall be according to the following Articles of Division 1100 – Equipment:

- (a) Self-Propelled Milling Machine (Note 1)..... 1101.16

Note 1. The self-propelled milling machine shall be capable of milling an entire lane width in a single pass and have the capability of loading the millings into a truck.

The cutting drum and teeth shall be designed to produce the required surface texture. Each tooth on the cutting drum shall produce a series of discontinuous longitudinal striations. There shall be 16 to 20 striations (tooth marks) for each tooth for each 6 ft (1.8 m) in the longitudinal dimension, and each striation shall be 1.7 ± 0.2 in (43 ± 5 mm) in length after the area is planed by the moldboard. The planed length between each pair of striations shall be 2.3 ± 0.2 in (58 ± 5 mm). There shall be 80 to 96 rows of discontinuous longitudinal striations for each 5 ft (1.5 m) in the transverse dimension. The pattern of striations shall be such that a line connecting striations in adjacent rows shall form approximately a 70 degree skew angle with the roadway centerline. The areas between the striations in both the longitudinal and transverse shall be flat-topped and coplanar.

The milling machine shall be capable of accurately and automatically establishing grades by use of an automatic grade control device on one side of the machine with an automatic slope control device controlling the opposite side. It shall be equipped with a traveling grade reference (averaging ski) which shall not be less than 30 feet (9 m) in length.

CONSTRUCTION REQUIREMENTS

Surface Test. The completed recycled or reclaimed pavement will be tested for smoothness in the wheel paths with a 16 ft (5 m) straightedge.

For each variation in the recycled or reclaimed pavement that exceeds 3/16 in (5 mm), the entire area affected shall be corrected by surface profile milling. The self-propelled milling machine shall be used for surface profile milling. At any time the surface profile milling fails to produce a flat plane interspersed with the specified uniform pattern of discontinuous longitudinal striations, the surface profile milling shall be stopped until corrections are made to the equipment. The surface profile milling speed shall be limited to 60 ft/min (18 m/ft). If the Contractor demonstrates that the desired striations and ride specifications are obtained at a greater speed, the Engineer may permit the Contractor to operate at an increased speed.

After surface profile milling, the recycled or reclaimed pavement shall be swept by a mechanical broom to remove all loose material from the recycled or reclaimed pavement before opening to traffic.

The Contractor shall furnish a 16 ft (5 m) straightedge and shall provide for its jobsite transportation at no additional cost to the Department.

Method of Measurement.

The surface profile milling will be by the square yard (square meter).

Basis of Payment.

The surface profile milling will be paid for at the contract unit price per square yard (square meter) for SURFACE PROFILE MILLING.

State of Illinois
Department of Transportation
Bureau of Local Roads and Streets

SPECIAL PROVISION
FOR
COLD IN-PLACE RECYCLING (CIR) AND FULL DEPTH RECLAMATION (FDR) WITH
EMULSIFIED ASPHALT MIX DESIGN PROCEDURES

Effective: April 1, 2012

All references to Divisions, Sections and Articles in this Special Provision shall be construed to mean specific Divisions, Sections and Articles in the Standard Specifications for Road and Bridge Construction adopted by the Department of Transportation.

Sampling and Processing

A minimum sample size of 350 lb (160 kg) is needed for each mix design. Bulk samples of the recycled layer thickness shall be obtained from either test pits or cores. Each layer shall be examined to confirm thickness and material.

The bituminous layers shall be crushed. The crushed bituminous layer(s)' washed gradation (AASHTO T27) shall be performed and reported and meet the following requirement(s):

CIR Crushed Bituminous Layer Gradation			
Sieve	Fine	Medium	Coarse
1.25"	100	100	100
1.0"	100	100	85-100
¾"	95-100	85-96	75-92
No. 4	55-75	40-55	30-45
No. 30	15-35	4-14	1-7
No. 200	1-7	0.6-3	0.1-3

FDR Crushed Bituminous Layer Gradation	
Sieve	% Passing
1.25"	100
1.0"	100
¾"	95-100
No. 4	55-75
No. 30	15-35
No. 200	1-7

Washed gradation (AASHTO T27) and sand equivalent (ASTM D2419, Method B) shall be performed and reported for any granular layer. The washed gradation (AASHTO T27) of combined layers shall be performed and reported. If combined layers include aggregate layer, the sand equivalent (ASTM D2419, Method B) shall be performed and reported.

All washed gradations shall be dried at no greater than 104 °F (40 °C).

Mixing and Compaction

1. FDR with Emulsified Asphalt. Perform Modified Proctor compaction according to ASTM D 1557, Method C to determine optimum moisture content (OMC) at peak dry density. OMC shall be defined by a best-fit curve from a minimum of four points. Material containing 20% or more passing No. 200 shall be mixed with target moisture, sealed, and set aside a minimum of 12 hours. All other material shall be set aside a minimum of 3 hours. If a material contains less than 4 percent passing No. 200, then this testing is not required.

Select the water content of specimens, not including water in the emulsion, based on average annual rainfall. Sand equivalent value (SE) is from the combined materials.

For average annual rainfall ≥ 20 in:

- 60 to 75 percent of OMC if $SE \leq 30$
- 45 to 65 percent of OMC if $SE > 30$

For average annual rainfall < 20 in:

- 50 to 75 percent of OMC if $SE \leq 30$
- 40 to 65 percent of OMC if $SE > 30$

If a material contains less than 4 percent passing No. 200 or if no peak develops with the OMC curve, then fix the moisture content between 2 and 3 percent.

Specimens shall be mixed with the required amount of water before the addition of emulsion. Specimens shall be mixed with the appropriate amount of water and allowed to sit sealed according to the same guidelines as used for Modified Proctor specimens.

Samples shall have a weight before addition of water and emulsion to produce 2.75 in to 3.25 in (70 mm to 80 mm) tall compacted specimens.

Choose four emulsion contents that will bracket the design emulsion content. Recommended emulsion contents: 1.5%, 2.0%, 2.5%, 3.0%, 3.5%, 4.0%. The following specimens shall be created:

- A minimum of two specimens at each of four emulsion contents shall be produced for short-term strength testing.
- Four specimens at each of four emulsion contents shall be produced for the strength and retained strength tests.
- Two specimens shall be produced for maximum specific gravity.

A mechanical mixer shall be used that has a bowl with a diameter of 10 to 12 in (255 to 305 mm). It shall rotate on its axis at 50 to 75 revolutions per minute. A mixing paddle which makes contact with the bottom and side of the bowl shall rotate on its axis at twice the bowl rotation rate and in the opposite rotation direction as the bowl.

Aggregate material and emulsion shall be mixed at a temperature of 68 to 79 °F (20 to 26 °C). Water shall be mixed for 60 seconds. Emulsion shall be mixed for 60 seconds.

If other materials are added, such as lime or cement, then they shall be introduced in a similar manner as they will be on the project. For example, if lime is incorporated a day or more before emulsion addition, then it shall be added to the wet aggregate a day or more before mixing with emulsion. If lime is incorporated as a slurry, then it shall be incorporated as a slurry in the laboratory.

Loose specimens shall be cured individually in plastic containers of 4 to 7 in (100 to 180 mm) height and 6 in (150 mm) diameter. Specimens shall be cured at 104 °F (40 °C) for 30 ± 3 minutes. No further mixing or aeration shall occur during this time.

Specimens shall be compacted in a Superpave gyratory compactor (SGC) at a vertical pressure of 87 psi (600 kPa), an angle of 1.25°, and a mold of 6 in (150 mm) diameter for 30 gyrations. After the last gyration, 87 psi (600 kPa) pressure shall be applied for 10 seconds. The mold shall not be heated.

2. CIR with Emulsified Asphalt. The specimen size shall be the amount that will produce a 2.4 in to 2.6 in (61.0 mm to 66.0 mm) tall specimen.

Choose three emulsion contents that bracket the estimated recommended emulsion content. Recommended emulsion contents: 1.5%, 2.0%, 2.5%, 3.0%, 3.5%, 4.0%. The following specimens shall be created:

- Four per emulsion content for a total of 6 for long-term stability and 6 for moisture testing for 3 emulsion contents.
- Two specimens are required for Rice specific gravity; test at the highest emulsion content in the design and back calculate for the lower emulsion contents.

Add moisture that is expected to be added at the milling head, typically 1.5 to 2.5 percent.

If any additives are in the mixture, introduce the additives in a similar manner that they will be added during field production.

Mixing of test specimens shall be performed with a mechanical bucket mixer. Mix the CIR-RAP millings thoroughly with water first, then mix with emulsion. Mixing shall occur at ambient temperature. One specimen shall be mixed at a time. Mixing time with emulsion should not exceed 60 seconds.

Specimens shall be compacted immediately after mixing. Place paper disks on the top and bottom of the specimen before compaction.

Specimens shall be compacted with a Superpave gyratory compactor (SGC) in a 100 mm mold at 1.25° angle, 600 kPa ram pressure, and 30 gyrations. The mold shall not be heated.

Curing after Compaction

1. FDR with Emulsified Asphalt. Specimens (except STS specimens) shall be cured for 72 hours at 104 °F (40 °C). The bottom of the specimens shall rest on racks with slots or holes for air circulation. After curing, specimens for moisture conditioning shall be cooled at ambient temperature a maximum of 24 hours; specimens for dry strength shall cool at ambient temperature or 77 °F (25 °C) and be tested at the same time as moisture-conditioned specimens.

Specimens for Rice (maximum theoretical) specific gravity shall be cured at the same conditions as the compacted specimens, except they can be tested after cooling a maximum of 24 hours.

2. CIR with Emulsified Asphalt. Extrude specimens from molds immediately after compaction. Carefully remove paper disks.

Place specimens in 60°C forced draft oven with ventilation on sides and top. Place each specimen in a small container to account for material loss from the specimens.

Specimens for Rice (maximum theoretical) specific gravity should be dried to constant weight (less than 0.05% weight loss in 2 hours). Care should be taken not to over-dry the specimens.

Cure compacted specimens to constant weight but no more than 48 hours and no less than 16 hours. Constant weight is defined here as 0.05% change in weight in 2 hours. After curing, cool specimens at ambient temperature a minimum of 12 hours and a maximum of 24 hours.

Short-Term Strength (STS) Test (FDR with Emulsified Asphalt Only)

A modified Hveem cohesiometer apparatus shall be used to test early strength (1 hour). This apparatus and procedure generally conforms to ASTM D 1560 Section 13 with the following exceptions:

- It shall have the capability of testing 6 in (150 mm) diameter specimens.
- It shall have a shot flow rate of 5.95 ± 0.11 lb/min (2700 ± 50 g/min).
- Specimens shall be cured before compaction according to Section 5, and cure each specimen at each emulsion content for 60 ± 5 min at 77 °F (25 °C) and 10 to 70 percent humidity after compaction and before testing.

The following calibrations shall be made:

- The counter balance should be positioned exactly so that the hinged plate just barely remains horizontal when the top brackets and empty bucket are in place. This ensures that there is no force on the sample until shot begins to flow into the bucket.
- The gap between the bars of the switch that turns off the flow of shot should have a gap of $\frac{3}{4}$ " (18 mm) when there is 3000 g of shot in the bucket. During this adjustment the locking bolt that prevents the plate from moving is in place.

Cohesion shall be tested as follows:

1. Tare the balance with the empty bucket weight.
2. Center the specimen on the unit.
3. Place plates on top of sample and press down while adjusting the outer lower nuts up until they just contact the bottom of the plate.
4. Use a torque wrench or torque-meter to tighten the nuts on the specimen to 20 inch-pounds (maximum).
5. Gently support the bar so the unit does not move when the pin is pulled releasing the hinged plate.
6. Pull pin and push open valve to start the flow of shot.

7. After the unit shuts off the flow of shot, immediately put the locking pin in place and then record the weight of shot.
8. Loosen top nuts to remove plates and rotate specimen 90°.
9. Repeat procedure on the other axis of the specimen.
10. Calculate short-term strength as follows:

$$STS = \frac{SW}{15(0.031h + 0.0027h^2)}$$

Where:

SW = Shot Weight in grams
 h = height in cm

11. A total of two results will be obtained for each specimen at each emulsion content, and a total of four results will be obtained at each emulsion content.

Volumetric Measurements

Determine bulk specific gravity (ASTM D 6752) of the specimens. Keep specimens in bags until testing or vacuum saturation is performed. ASTM D 2726 may be used to determine bulk specific gravity if specimens' absorption is less than or equal to 2% of water by volume.

Determine Rice (maximum theoretical) specific gravity (ASTM 2041) except as noted in the Mixing, Compaction, and Curing after Compaction sections.

Determine air voids at all emulsion contents used in the design.

Mechanical Measurements

1. FDR with Emulsified Asphalt. Perform ITS testing according to ASTM D 4867. Specimens shall be conditioned at 77 °F (25 °C) for two hours before testing.
 - For average annual rainfall greater than or equal to 20 in (508 mm) per year, vacuum saturate half the specimens at each emulsion content to a minimum 55 percent of the voids filled with water. Soak for 24 hours at 77 °F (25 °C) before testing.
 - For average annual rainfall less than 20 in (508 mm) per year, soak half the specimens at all emulsion contents used in the design for 24 hours at 77 °F (25 °C) before retained strength testing.
2. CIR with Emulsified Asphalt. Determine corrected Marshall Stability (ASTM D1559) at 40°C after 2 hour temperature conditioning in a forced draft oven. This testing shall be performed at the same time that the moisture conditioned specimens are tested.

Perform same conditioning and volumetric measurements on moisture-conditioned specimens as on other specimens. Vacuum saturate to 55% to 75%; and soak in a 25°C water bath for 23 hours, followed by a one hour soak at 40°C. Determine corrected Marshall Stability. The average moisture conditioned specimen strength divided by the average dry specimen strength is referred to as retained stability.

Raveling Test (CIR with Emulsified Asphalt Only)

The apparatus used for the raveling test is a modified A-120 Hobart mixer and abrasion head (including hose) used in the Wet Track Abrasion of Slurry Surfaces Test (ISSA TB-100). The

rotation speed for the raveling test is not modified from ISSA TB-100. The ring weight is removed from the abrasion head for the raveling test below. The weight of the abrasion head and hose in contact with the specimen should be 600 g ± 15 g. The prepared sample must be able to be secured under the abrasion head, and centered for accurate result, allowing for free movement vertically of the abrasion head. The device used for securing and centering the sample must allow a minimum of 10 mm of the sample to be available for abrasion. The Hobart mixer will need to be modified to allow the sample to fit properly for abrasion. The modification may be accomplished by adjusting the abrasion head height, or the height of the secured sample. The Hobart C-100 and N-50 Models are not acceptable for this test procedure due to differences in size and speed of rotation.

1. Split out two recycled asphalt samples from the medium gradation, or field sample, to a quantity of 2700 g in mass. The 2700 g is an approximate weight to give 70 mm ± 5 mm of height after compaction.
2. The recycled asphalt sample should be placed in a container of adequate size for mixing.
3. Field or design moisture contents should be added to each of the recycled asphalt samples and mixed for 60 seconds.
4. The design emulsion content shall be added to each of the recycled asphalt samples and mixed for 60 seconds.
5. The samples shall be placed immediately into a 150 mm gyratory compaction mold and compacted to 20 gyrations. If the sample height is not 70 mm ± 5 mm, the recycled asphalt weight should be adjusted.
6. After compaction, the samples shall be removed from the compaction mold and placed on a flat pan to cure at the specified temperature and humidity (if required) for 240 minutes ± 5 minutes. The temperature shall be maintained at ± 2°C from the temperature specified and the humidity (if required) shall be maintained at ± 10% from the number specified.
7. The specimens shall be weighed after the curing, just prior to testing.
8. The specimens shall be placed on the raveling test apparatus. Care should be taken that the specimen is centered and well supported. The area of the hose in contact with the specimen should not have been previously used. It is allowable to rotate the hose to an unworn section for testing. The abrasion head (with hose) shall be free to move vertically downward a minimum of 5mm if abrasion allows.
9. The samples shall be abraded for 15 minutes and immediately weighed.
10. The Percent Raveling Loss shall be determined as follows:

$$PRL = 100 \times \frac{W_P - W_A}{W_P}$$

Where: PRL = Percent Raveling Loss
 W_P = Weight of Sample Prior to Testing
 W_A = Weight of Sample After Testing

11. The average of the two specimens shall be reported as the Percent Raveling Loss. If there is a difference of > 0.5% raveling loss between the two test specimens, the Raveling Test shall be repeated. If both of the test specimens have a Percent Raveling Loss of > 10%, the two test results shall be averaged and the maximum 0.5% difference between test specimens shall not be required.

Note: If field mix samples are taken, steps 2, 3, and 4 shall be omitted.

Emulsion Content Selection

The emulsion content selected shall result in the mixture meeting the mix design requirements of the FDR or CIR special provision.

Report

All mix design test results shall be reported to the Department. All additional additives and bituminous material shall be reported to the Department.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2012-03
SUBJECT: CHANGES IN FUNCTIONAL CLASSIFICATION
TERMINOLOGY
ISSUED DATE: August 27, 2012
EFFECTIVE DATE: September 1, 2012

This memorandum revises Section 27-3 of the Bureau of Local Roads & Streets Manual issued January 2006.

The rural and urban designation in the Functional Classification terminology has been consolidated due to Federal Highway Administration's Interim Guidance on Highway Functional Classification as a result of the 2010 Highway Performance Monitoring System Reassessment. Functional classification will be assigned based on functional criteria, rather than the location of an urban/rural boundary.

The Office of Planning & Programming (OP&P) has modified the Illinois Road Inventory System (IRIS) to handle functional classification designations. OP&P has converted former functional classification codes used in IRIS to the new functional codes; however, the urban area code will continue to be in IRIS to determine whether a highway is in a rural or urban area.

OP&P has changed documentation in IRIS to show the seven functional classes and to remove any direct relationship between the key route type and the functional classification code. OP&P has discontinued the use of the two digit functional classification code and descriptions in order to utilize the new functional classification categories in department systems, publications, GIS, internet applications, and maps.

A handwritten signature in black ink that reads "James K. Klein".

Acting Engineer of Local Roads and Streets

Attachments

cc: Rob Robinson
Travis Lobmaster
Andrew Gossrow

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Guidance for the Functional Classification of Highways (Updated)

U.S. Department of Transportation
Federal Highway Administration

Memorandum

Subject: INFORMATION: Updated Guidance for the Functional Classification of Highways

Date: October 14, 2008

From: (Original signed by)
Mary B. Phillips
Associate Administrator for Policy and Governmental Affairs
(HPL)

Reply to Attn HPPI-20
of:

To: Division Administrators
Resource Center Directors

Introduction

The Highway Performance Monitoring System (HPMS) Reassessment 2010+ resulted in recommendations for the revision of highway functional classifications. Some of the recommended revisions will require additional study in order to provide fully validated, revised functional classification guidance.

The purpose of this memorandum and attachment is to provide interim guidance which may be used in association with *Highway Functional Classification: Concepts, Criteria and Procedures*, available online at: <http://www.fhwa.dot.gov/planning/fctoc.htm>. *Highway Functional Classification* may be considered reference material, to be superseded by this memorandum and attachment where applicable. Following completion of additional studies, a complete revision of *Highway Functional Classification* will be prepared and released.

The conversion of functional classification from the existing schema to the new schema described in Section 2 of the guidance and the coding changes for ramps described in Section 5 are both due in the reporting of 2009 data submitted to Federal Highway Administration (FHWA) in 2010. The adjustment of functional classifications and urban/urbanized boundaries following the 2010 Census should be included in the reporting of 2012 HPMS data reported in 2013. Any functional classification changes resulting from the revision/rewrite of the functional classification guidance would be included in data reported in 2013 and optional for any earlier HPMS submittals.

We recognized that in many States or Metropolitan Planning Offices (MPOs), the process of updating highway functional classification is an ongoing process, with some States just now completing the updates to urban boundaries and functional classification triggered by the 2000 Census. The hope is that by 2012 the 2010 Decennial Census data will be available, and States will use this updated information as they undertake a thorough update of their highway functional classification.

The intended users of this guidance are the State Department of Transportation coordinators, planners and technicians in the areas of functional classification and HPMS, as well as appropriate FHWA staff.

Background

The functional classification of the nation's highways, roads and streets provides important inputs into the HPMS program and into the apportionment of federal funds, such as for the National Highway System (NHS) and Surface Transportation Program (STP). However, functional classification is also used for many other transportation planning and public policy purposes within the States, MPOs, and local communities.

The focus of this interim guidance is on functional classification as it is related to HPMS data reporting requirements and the apportionment process. Other aspects of functional classification will be considered in any future update of *Highway Functional Classification*. States are expected to report functional classification data consistent with HPMS data requirements. As always, States and local communities may continue to use functional classification as needed according to their specific requirements provided they do not conflict with the HPMS requirements.

HPMS Reassessment Project: Results for Highway Functional Classification

The following subjects are considered in the attachment.

1. Routes Crossing Between Rural and Urban Areas

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2. Consolidation of Rural and Urban Designations in Functional Classifications
3. Extent Analysis (mileage and vehicle-miles traveled (VMT) percentage ranges)
4. Clarification: "Future Year" and "Future Route"
5. Ramps and Other Non-mainline Roadways

If you have any comments or need additional information, please contact Paul Svercl at 202-366-5036.

Attachment

INTERIM GUIDANCE ***Highway Functional Classification: Concepts, Criteria and Procedures*** **Revisions as a Result of the 2010 HPMS Reassessment Project**

The following subjects are considered in turn.

1. Routes Crossing Between Rural and Urban Areas
2. Consolidation of Rural and Urban Designations in Functional Classifications
3. Extent Analysis (mileage and vehicle-miles traveled (VMT) percentage ranges)
4. Clarification: "Future Year" and "Future Route"
5. Ramps and Other Non-mainline Roadways

The conversion of functional classification from the existing schema to the new schema described in Section 2 and the coding changes for ramps described in Section 5 are both due in the reporting of 2009 data submitted to FHWA in 2010. The adjustment of functional classifications and urban/urbanized boundaries following the 2010 Census should be included in the reporting of 2012 HPMS data reported in 2013. Any functional classification changes resulting from the revision/rewrite of the functional classification guidance would be included in data reported in 2013 and optional for any earlier HPMS submittals.

1. Routes crossing between Rural and Urban Areas

Functional classification should not automatically change at the rural/urban boundary. In consolidating the rural and urban designations within functional classification, the urban boundary itself will remain. 23 USC 101(a)(36)-(37) provides for urban boundaries "to be fixed by responsible State and local officials in cooperation with each other." However, one of the goals of this interim guidance is to de-emphasize the urban boundary as being determinative of functional classification. That is, functional classifications should be assigned based on actual functional criteria, rather than the location of an urban/rural boundary.

States should follow the guidance provided in the 1991 Addendum of *Highway Functional Classification* wherever possible, which states:

The Highway Functional Classification provides for rural routes (other than Principal Arterials) to be upgraded to a higher classification level when they cross an urban boundary. Although the principle is sound, rigid application has presented difficulties for some States. Accordingly, this addendum [1991] to the guidelines is intended to provide greater flexibility for deciding on an appropriate place for changing the functional classification when rural routes cross an urban boundary, taking into account changes in traffic conditions, the degree of urban development and other factors. Instead of automatically upgrading the functional classification of a rural route that crosses an urban boundary, the rural classification may be continued inside the urban boundary until there is a more logical and acceptable place for a change.

As of this interim guidance, the practice of automatically upgrading the functional classification of a rural route that crosses an urban boundary should be phased out and eliminated. Upgrading due to actual change in function should be the operative criteria.

Census and Adjusted Urbanized/Small Urban Boundary

Once routes have been assigned the appropriate "rural/urban neutral" functional classification, urbanized and small urban boundaries may be determined in a separate process. States have the option of using Census-defined boundaries only, or they may *adjust* the Census-defined boundaries to be more consistent with transportation planning requirements. The adjusted urbanized/small urban boundaries should be "smoothed" to include areas which are urban in nature but lacking in population density (such as airports, industrial parks,

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regional shopping centers and other urban attractions).

2. Consolidation of Rural and Urban Designations in Functional Classifications

Existing guidance in *Highway Functional Classification* makes distinctions in all respects – concepts, criteria, and procedures – between rural and urban classifications. As of this interim guidance, the continuity and connectivity of the basic functional systems is retained and emphasized. However, through HPMS reassessment, there is a reduced emphasis on the rural/urban distinction as exemplified in the functional classification name changes (e.g., Interstate, in place of rural Interstate and urban Interstate). The review and update of urban boundaries will continue to take place, but as a separate, Census-based process (see Section 1).

The differences in the nature and intensity of development between rural and urban areas will cause roads with the same classification to have characteristics that are somewhat different, depending on whether they are in rural, small urban or urbanized areas. Thus, the qualitative narrative in *Highway Functional Classification* is useful and valid.

The consolidation of rural and urban designations means that some functional classifications that previously existed in only one area-type will now be recognized as valid in all area-types.

- a. Other Freeways and Expressways were previously identified in small urban or urbanized areas only. As of this interim guidance, this classification can be extended into rural areas, where facilities of these functional and design characteristics exist. Beginning in 2010, all existing Other Freeways and Expressways (Principal Arterials) as of December 31, 2009, should be identified and reported by the States. Additional study is needed to determine if the States are consistent in their identification of Other Freeways and Expressways and whether and how greater consistency could be achieved.
- b. Major and Minor Collectors were previously identified in rural areas only, while in small urban and urbanized areas, the corresponding classification was simply, Collectors (urban Collectors). As of this interim guidance, States may continue to classify Major and Minor Collectors in rural areas in the same manner as they have in the past. Beginning in 2010, all existing urban Collectors as of December 31, 2009 are to be reported in HPMS as Major Collectors. At their option, States may identify Minor Collectors within small urban or urbanized areas from this "pool" of existing Major Collectors*. Additional study is needed to determine what qualitative similarities and differences exist between Minor Collectors in rural areas and those in small urban or urbanized areas.
- c. Information [23 CFR 1.5 and 1.7] about whether the route is in a rural or small urban or urbanized area shall be reported separately in HPMS with a rural-urban designation as well as geo-spatially.

Based on these changes to functional classification, the following revised functional classification codes should be used beginning with the 2009 data, reported in 2010.

Revised HPMS Functional Classification Codes:

- 1 = Interstate
- 2 = Other Freeways and Expressways
- 3 = Other Principal Arterial
- 4 = Minor Arterial
- 5 = Major Collector
- 6 = Minor Collector
- 7 = Local

* The definition of Federal-Aid Highways in 23 USC 101(a)(5) is unchanged by this revision to functional classification labels. Rural Minor Collectors (or Minor Collectors located in rural areas) will remain excluded by the definition of Federal-Aid Highways (unless on the National Highway System (NHS)), while urban Minor Collectors (or Minor Collectors located in small urban or urbanized areas) will be included in the definition of Federal-Aid Highways. See Section 1 for information as to how rural and urban data will continue to be maintained.

3. Extent analysis (mileage and VMT percentage ranges)

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The consolidation of rural and urban designations in functional classifications impacts the validity of the information provided in *Highway Functional Classification* about the extent of functional systems, both in terms of mileage and VMT. While these percentages were guidelines, additional study is needed to determine how valid the existing extent guidance may be, how it may be adapted to the rural/urban neutral "world," and what, if any, different extent guidance should be provided in the future. Until additional study is completed, States should adhere to the simplified extent guidance, below, that affects the lane mileage and VMT apportionment factors:

Related to the apportionments on the Surface Transportation Program (STP) and Highway Safety Improvement Programs (HSIP):

All Arterials and Collectors combined – maximum of 35 percent of statewide route mileage. (Rural Minor Collector mileage and VMT does not contribute, but it is included here as "Collectors" because the existing extent guidance does not break out any separate guidance for them.)

All Arterials and Collectors combined – between 70 percent and 80 percent of statewide VMT.

Related to NHS apportionment:

Rural Principal Arterials – maximum of 4 percent of statewide route mileage and between 30 percent and 55 percent of statewide VMT.

Urban Principal Arterials – maximum of 10 percent of statewide route mileage and between 40 percent and 65 percent of statewide VMT.

Although rural and urban Principal Arterials will be consolidated into Principal Arterials, rural and urban data will continue to be created in the HPMS database by combining functional class and rural/urban designation codes.

Note that the extent guidance in *Highway Functional Classification* is intended to be applied on a **statewide** basis, rather than by county, or by individual urbanized or small urban area. Any future extent guidance resulting from additional study will also be provided on the premise that it is for statewide application.

4. Clarification: "Future Year" and "Future Route"

Future Year

The existing guidance, *Highway Functional Classification*, contains over 30 references to the phrase, "future year." In none of these instances does the guidance provide a range of years out to which States may project "future year" classifications, except to say that, "The base for a "future year" population should be the most recent Decennial Census" (page III-2) (or special Census). In practice, most States have used the current year for designating functional classifications. Other States have projected "future year" classifications three to five years out; some have projected out considerably longer.

A wide variability in the use of the "future year" concept has implications for HPMS data consistency across the nation, as well as for federal funding opportunities (mileage eligible for federal assistance and included in the apportionment formulas). In order to improve consistency in this area, it is recommended that States assign functional classification according to the current year.

Future Route

One of the references to a "future year" functional classification plan in *Highway Functional Classification* includes the following: "it will include, in addition to existing facilities, such projected totally new facilities as will be needed to serve "future year" land use and travel. Some of this new mileage will consist of new streets in expanding urban areas." (Page III-1) This is a reference to "future routes." The "future route" is an individual, unbuilt facility, planned to function at a specific level once built. The 1991 Addendum to *Highway Functional Classification* recognized that additional guidance was needed for "future routes," as distinct from "future year" functional classifications. As stated in the 1991 Addendum to *Highway Functional Classification*:

The manual discusses procedures for conducting a functional classification based on projected facilities and usage for some "future year"; however, the manual does not provide criteria for including future or proposed routes into a functional classification of existing facilities. Because the functional classification will support the designation of the NHS which is expected to include some

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future routes, this addendum establishes criteria for determining which future routes should be included in the functional classification of existing routes. Future routes should be functionally classified with the existing system if they are included in an approved short range improvement program and there is a good probability that the route will be under construction in the reasonably near future (up to 6 years). Where applicable, the same classification should be given to the future route and to the existing route that it will replace until the future route is constructed.

The "up to 6 years" timeframe given in the preceding paragraph mentions "an approved short range improvement program" but does not specify the Statewide Transportation Improvement Program (STIP). As of this interim guidance, the timeframe in which the "future route" is expected to be under construction should generally be consistent with the STIP timeframe of 4 years or less.

Note that the mileage of a "future route" should not be included in public road mileage or lane-miles or vehicle-miles traveled for apportionment purposes until it is built and open to traffic. In addition, for HPMS reporting purposes, only data about a "future route" which is to become part of the NHS should be reported. At their option, States may propose other "future routes" to be part of their functional classification system, i.e., routes which will be eligible for STP rather than NHS. If using this option, States would be in compliance with the above guidance.

5. Ramps and Other Non-mainline Roadways

Beginning with the reporting of 2009 HPMS data in 2010, data for ramps and other non-mainline roadways **should be reported** for those meeting the ramp criteria described below. As noted, data for these roadways should include functional classification. Additional data requirements for ramps will be specified in the final HPMS Reassessment Report and revised *HPMS Field Manual*.

Ramps

- Associated with grade-separated interchanges
- Turning movement facility that moves traffic between two or more (functionally classified) facilities; may include collector-distributor (CD) roads
- Assigned same functional classification as the highest facility served within the interchange

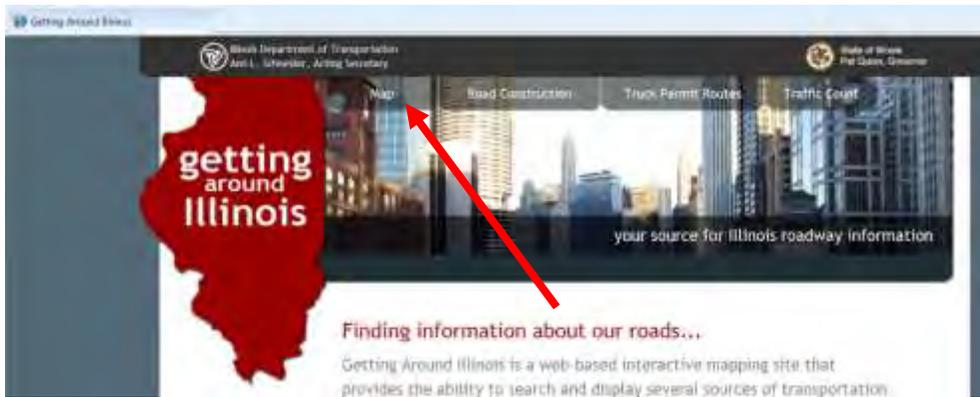
Note that at this time, there is no change to the status of ramps with respect to public road mileage or lane mileage or vehicle-miles traveled for apportionment purposes; they are not considered mainline and are not included in those public road mileage inventories.

Other Non-mainline Roadways

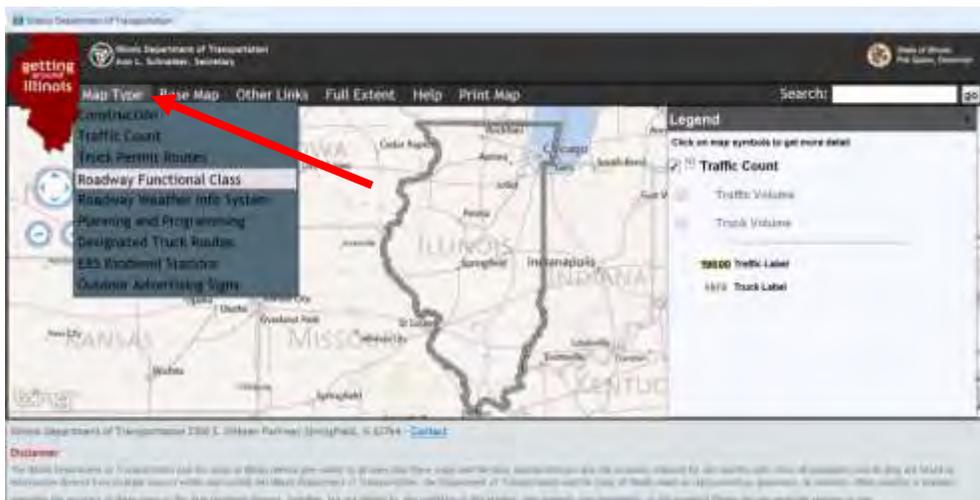
At their option, States may collect data and assign functional classifications to other kinds of non-mainline roadways. These may include other collector-distributor roads, other turning movement facilities not associated with a grade-separated interchange, and other auxiliary roadways. In general, such roadways within the interchanges should be assigned the same functional classification as the highest facility served. However, since many configurations exist, States may assign the functional classification as they deem appropriate. While data for other non-mainline roadways is not required for HPMS, States have the option of reporting it beginning with the 2009 HPMS data reported in 2010.

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From the Getting Around Illinois site <http://www.gettingaroundillinois.com/> click a tab to get to the map.



Click the “Map Type” and then click “Roadway Functional Class”



Zoom into an area to check the Functional Classification of a roadway using the wheel of your mouse or the tools on the left side of the application. The Local Road classification is not color banded.





Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2012-04
SUBJECT: 2010 HIGHWAY CAPACITY MANUAL
ISSUED DATE: October 24, 2012
EFFECTIVE DATE: October 24, 2012

This memorandum revises Section 27-6 of the Bureau of Local Roads & Streets Manual issued January 2006.

The fifth edition of the *Highway Capacity Manual (HCM2010)* will significantly enhance how engineers and planners assess the traffic and environmental effects of highway projects. Section 27-6 has been updated to provide a basic overview of the concepts contained in the *HCM2010*.

This four-volume format was developed to provide information at several levels of detail, to help HCM users more easily apply and understand the concepts, methodologies, and potential applications presented in the manual.

- Volume 1 - Concepts;
- Volume 2 - Uninterrupted Flow;
- Volume 3 - Interrupted Flow; and
- Volume 4 - Applications Guide (electronic only)

Volume 4 is an electronic-only volume that registered HCM users will be able to access via the Internet. This volume includes four types of content: supplemental chapters on methodological details and emerging issues; interpretations, clarifications, and corrections; comprehensive case studies; and a technical reference library.

Copies of the *HCM2010* may be purchased from the Transportation Research Board's book store at <http://books.trbbookstore.org/hcm10.aspx>.

Please contact the Local Policy & Technology Unit at DOT.LocalPolicy@illinois.gov with any questions.

James K. Klein

Acting Engineer of Local Roads and Streets

Attachments

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Highway Capacity Manual 2010

PAUL RYUS, MARK VANDEHEY, LILY ELEFTERIADOU, RICHARD G. DOWLING, AND BARBARA K. OSTROM

Ryus is Associate Engineer, Kittelson & Associates, Inc., Svendborg, Denmark; Vandehey is Managing Principal, Kittelson & Associates, Inc., Portland, Oregon; Elefteriadou is Professor of Civil Engineering and Director of the Transportation Research Center, University of Florida, Gainesville; Dowling is President, Dowling Associates, Inc., Oakland, California; and Ostrom is Principal Engineer, MACTEC Engineering and Consulting, Beltsville, Maryland.

The fifth edition of the *Highway Capacity Manual* (HCM 2010), recently released by the Transportation Research Board (TRB), incorporates results from more than \$5 million of research completed since the publication of the HCM 2000. This latest edition significantly updates the methodologies that engineers and planners use to assess the traffic and environmental effects of highway projects.

HCM 2010 introduces several firsts, including

- ◆ An **integrated multimodal approach** to the analysis and evaluation of urban streets from the points of view of automobile drivers, transit passengers, bicyclists, and pedestrians;
- ◆ Guidance on the proper **application of microsimulation analysis** and the evaluation of those results;
- ◆ The presentation of **active traffic management** in relation to demand and capacity; and
- ◆ **Generalized service volume tables** to assist planners in sizing roadway facilities.

Key Changes

Following are some of the key changes in the HCM 2010:

- ◆ The **signalized intersections** procedure models



HCM 2010 features findings on active traffic management, which strategically deploys an array of measures to relieve congestion.



Among the new features of HCM 2010 is updated material on the impact of weather and work zones on freeway capacity.

the operation of an actuated controller. A new incremental queue accumulation (IQA) method calculates the delay term d_i and the length term Q_i . Although equivalent to the HCM 2000 method for the idealized case, the IQA method is more flexible and can accommodate nonideal cases, such as coordinated arrivals and multiple green periods with differing saturation flow rates, which can occur with protected-plus-permitted left turns. A check procedure for left-turn lane overflow also has been added.

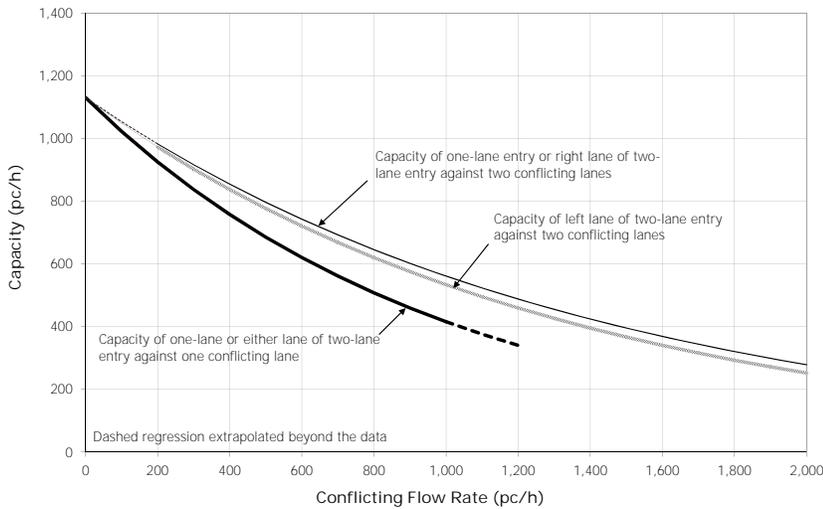
◆ **Unsignalized intersections**, previously a single chapter, now are described in three chapters, covering two-way STOP-controlled (TWSC) intersections, all-way STOP-controlled (AWSC) intersections, and roundabouts. The TWSC method in the HCM 2010 can analyze intersections along six-lane streets, and the AWSC method now includes a queue-estimation procedure. The roundabout material is completely updated, based on the work of National Cooperative Highway Research Program (NCHRP) Project 3-65,¹ which developed a comprehensive database of U.S. roundabout operations and established new methodologies for evaluating roundabout performance. The chapter adds a level-of-service (LOS) table for roundabouts.

- ◆ The **interchange ramp terminals** chapter has

¹ For titles of the NCHRP projects cited in this article, see the sidebar on page 48.

PHOTO: MINNESOTA DOT

PHOTO: NEW JERSEY TURNPIKE AUTHORITY



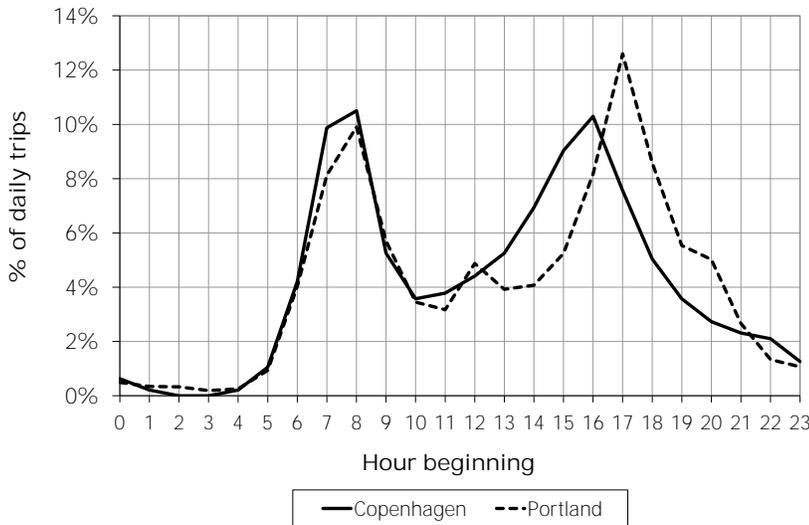
Capacity of roundabout entries, from Chapter 21; the roundabout material in HCM 2010 is completely updated and includes new methodologies for evaluating performance.

Hourly variations in bicycle volumes for two cities that have invested in infrastructure and programs: Copenhagen, Denmark, and Portland, Oregon; from HCM 2010, Chapter 3.

been completely updated with findings from the work of NCHRP Projects 3-60 and 3-60A. The chapter describes a new method for conducting operational analyses and obtaining the LOS for a full range of service interchange types—diamond, partial cloverleaf, and the single-point urban interchange. The chapter includes a methodology for assessing the operational performance of various types of interchanges and making an appropriate selection.

◆ The **urban street segments** chapter has been rewritten, incorporating the work of NCHRP Project 3-79. The chapter presents improved methods for estimating urban street free-flow speeds and running times, as well as a new method for estimating the stop rate along an urban street. In addition, NCHRP Project 3-70 has provided a methodology for evaluating tradeoffs in allocating urban street right-of-way among the modes.

◆ A new **urban street facilities** chapter traces out a methodology for aggregating results from the seg-



ment and point levels of analysis into a facility assessment. Information is provided on the impact of active traffic management measures on urban street performance.

◆ The **freeway facilities** chapter introduces a table for LOS based on density. Other updates include material on the impact of weather and work zones on freeway facility capacity, plus new information on the impact of active traffic management measures on freeway operations.

◆ The **freeway weaving** chapter has been completely updated with findings from NCHRP Project 3-75. Although the general process for analyzing weaving segments is similar to that given in HCM 2000, the HCM 2010 models derive from an up-to-date set of weaving data. The two major differences in applying the methodology are (a) a single algorithm for predicting weaving speeds and a single algorithm for predicting nonweaving speeds, regardless of the weaving configuration, and (b) the threshold for LOS F has changed.

New Approaches

A new chapter on **active traffic management**, based on research produced and compiled by the Federal Highway Administration (FHWA), describes various strategies to relieve highway congestion; the mechanisms affecting demand, capacity, and performance; and general guidance on evaluating active traffic management techniques. Strategies discussed include roadway metering, congestion pricing, traveler information systems, managed lanes, traffic signal control, and speed harmonization.

The HCM 2010 examines the use of **alternative tools** in conjunction with techniques presented, applying research conducted under NCHRP Project 3-85. Chapter 6 describes typical applications of HCM and alternative analysis tools, and Chapter 7 offers guidance on interpreting the results from alternative tools. In addition, each methodological chapter contains specific guidance on the application of the tools in analyzing a facility. Several examples illustrate the use of alternative tools in conjunction with the HCM 2010.

To encourage HCM users to consider all travelers, the HCM 2010 incorporates tools for **multimodal analysis** along highway facilities. This is the first edition of the HCM that takes into account the effects of cars on bicyclists and pedestrians. The stand-alone chapters for the bicycle, pedestrian, and transit modes have been eliminated—instead, the methods applicable to bicycles, pedestrians, and transit have been incorporated into the analyses of the various roadway facilities. For methodologies specific to the operation of transit vehicles on urban streets, readers can con-



PHOTO: DAN BURTON, PEDESTRIAN AND BICYCLE INFORMATION CENTER

A shared pedestrian-bicycle path in San Luis Obispo, California. HCM 2010 updates off-street shared-use path procedures.

sult *TCRP Report 100: Transit Capacity and Quality of Service Manual*.

To assist planners in sizing highway facilities, the HCM 2010 includes **generalized service volume tables** that show the maximum demand volumes for a given LOS under a specified set of conditions. The HCM 2010 also provides **computational engines** to assist users in applying some of the intensive methods.

Additional Changes

Smaller changes have been implemented throughout the manual. For example, the speed-flow curves in the chapter on **basic freeway segments** have been updated with an expanded database. Small changes in the ramps and ramp junctions material—now called **freeway merges and diverges**—check and correct for unreasonable lane distributions. The **two-lane highways** chapter now provides only a one-directional methodology, and several key tables and curves have been updated. Finally, the **off-street shared-use path** procedures have been updated with U.S. data.

Multivolume Format

The new manual has retained many of the stylistic elements introduced in the HCM 2000, such as the page layout formats. The HCM 2010 content, however, is organized into four volumes—Concepts, Uninterrupted Flow, Interrupted Flow, and Applications Guide. The first three volumes are issued as a slipcased set of three looseleaf volumes; Volume 4 is electronic only. The four-volume structure delivers information at several levels of detail, to help HCM users apply and understand the concepts, methodologies, and potential applications.

Volume 1: Concepts presents the basic information that an analyst should master before performing analyses of highway capacity or quality of service. The chapters cover the organization of the HCM 2010; the kinds of applications that can be performed; modal characteristics; traffic flow, capacity, and quality-of-service concepts; the range of tools available to

perform an analysis; guidance on interpreting and presenting analysis results; and the terms and symbols used in the HCM 2010. Chapter 8, HCM Primer, offers an executive summary for decision makers.

Volume 2: Uninterrupted Flow contains methodological chapters relating to system elements, as well as the materials and resources needed to analyze these elements. The description of the process thoroughly conveys the steps involved, including the scope and limitations of the methodology, the specific default values, the LOS thresholds, the handling of special cases, and the application of alternative tools.

The freeway chapters are presented first, arranged from the facility level to the segment level; the chapters on multilane and two-lane highways follow. Volume 2 incorporates the Part III uninterrupted-flow chapters of the HCM 2000, along with material from the corresponding Part II chapters—such as specific default values and LOS thresholds—used directly in an analysis. The chapter on interchange ramp terminals, which appeared with the uninterrupted-flow chapters in the HCM 2000, appears in Volume 3 of the HCM 2010 with the interrupted-flow chapters.

The methodological chapters of **Volume 3: Interrupted Flow** reflect an approach similar to that of Volume 2, starting with a chapter on urban street facilities, followed by urban street segments, the various intersections, and off-street pedestrian and bicycle facilities. The chapters on urban street facilities and segments provide the highest level of multimodal evaluation, presenting methods to determine LOS for motorists, pedestrians, bicyclists, and transit users.

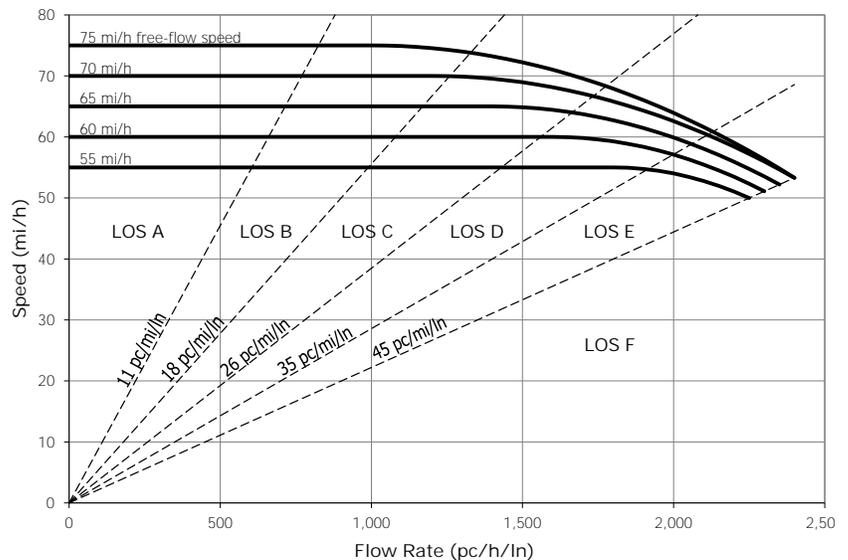
Web Volume

Volume 4: Applications Guide is an electronic-only volume accessible exclusively to registered HCM



HCM 2010 consists of four volumes—three looseleaf volumes in a slipcased set and one electronic-only volume. To order, visit the TRB online bookstore, <http://books.trbbookstore.org/hcm10.aspx>.

Freeway speed-flow curves, from HCM 2010, Chapter 11 (LOS = level of service; pc = passenger car; ln = lane).



HCM 2010 Research Resources

The following research projects contributed to the development of the HCM 2010:

- ◆ NCHRP Project 3-60, Capacity and Quality of Service of Interchange Ramp Terminals;
- ◆ NCHRP 3-60A, Validation and Enhancement of the *Highway Capacity Manual's* Interchange Ramp Terminal Methodology;
- ◆ NCHRP Project 3-64, *Highway Capacity Manual Applications Guide*;
- ◆ NCHRP Project 3-65, Applying Roundabouts in the United States;
- ◆ NCHRP Project 3-70, Multimodal Level of Service Analysis for Urban Streets;
- ◆ NCHRP Project 3-75, Analysis of Freeway Weaving Sections;
- ◆ NCHRP Project 3-79, Measuring and Predicting the Performance of Automobile Traffic on Urban Streets;
- ◆ NCHRP Project 3-82, Default Values for Capacity and Quality of Service Analyses;
- ◆ NCHRP Project 3-85, Guidance for the Use of Alternative Traffic Analysis Tools in Highway Capacity Analyses;
- ◆ NCHRP Project 3-92, Production of the 2010 *Highway Capacity Manual*; and
- ◆ Two FHWA projects: Evaluation of Safety, Design, and Operation of Shared-Use Paths; and Active Traffic Management Measures for Increasing Capacity and Improving Performance.

users via the Internet. This volume includes four types of content: supplemental chapters on methodological details and emerging issues; interpretations, clarifications, and corrections; comprehensive case studies; and a technical reference library.

Chapters 24 through 34 in Volume 4 supplement chapters in Volumes 1, 2, and 3 with

- ◆ More detailed descriptions of selected computational methodologies, written for users who seek a greater depth of understanding or who plan to develop HCM implementation software;
- ◆ Example applications of alternative tools to situations not addressed by the methodologies in the chapters of Volumes 2 and 3;
- ◆ Descriptions of the computational engines for selected methodologies; and
- ◆ Additional example problems and calculation results.

In addition, Chapter 35 in Volume 4 provides a first-generation chapter on the impact of active traffic management techniques on roadway operations. As new research is completed, this chapter will be updated, and chapters may be added to address other emerging issues, such as travel time reliability.

The methodological interpretations section also will continue to develop, as users apply the HCM 2010 and pose questions about particular methodologies to the TRB Highway Capacity and Quality of Service (HCQS) Committee. Clarifications and interpretations of the HCM, as well as corrections, officially approved by the committee will be posted in the interpretations section of Volume 4.

The comprehensive case studies illustrate how to use the HCM to perform common types of analyses. The case studies focus on the analysis process in applying the HCM and alternative tools, not on the step-by-step details of performing calculations—calculations are addressed in the example problems in each methodological chapter and in selected supplemental chapters. Case Studies 1 through 5 derive from the web-based *HCM Applications Guidebook* developed after publication of the HCM 2000, and Case Study 6 was developed in conjunction with NCHRP Project 3-85.

Finally, the Technical Reference Library contains a selection of papers, technical reports, and companion documents cited in the HCM.

Community Collaboration

As the HCM has grown in the decades since its debut in 1951, the content has long since ceased to be the product of a few highly competent experts or of a single technical committee. The HCM 2010 has benefited from the extensive involvement of the professional community to an extent that far surpasses that of previous editions.

A series of practitioner focus groups conducted through NCHRP Project 3-92 and the HCQS Committee supplied valuable insights on the HCM content and organization. More than 300 professionals—many new to TRB—along with members of the HCQS Committee and participants in the manual development process contributed to the year-long review of the chapters.

Four committees from the TRB Technical Activities Operations Section provided reviews and comments on drafts of the manual. Finally, the HCQS Committee's joint summer meetings with local Institute of Transportation Engineers (ITE) sections during the development of the manual, along with focus groups sponsored by ITE, were informative and productive.

The HCQS Committee has invited users of the manual who are interested in improving the profession's understanding of highway capacity and quality of service analysis to participate in the committee deliberations and to provide feedback about the HCM 2010 methods. The committee website, www.AHB40.org, will be available for these interactions.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2012-05
SUBJECT: MUTCD REVISIONS
ISSUED DATE: October 24, 2012
EFFECTIVE DATE: October 24, 2012

This memorandum revises Section 39-2 of the BLRS Manual dated December 2011.

On May 14, 2012 final rules adopting Revisions 1 and 2 of the 2009 Manual on Uniform Traffic Control Devices (MUTCD) were published in the Federal Register with an effective date of June 13, 2012.

Revision 1 of the 2009 edition of the MUTCD restores certain language contained in the 2003 MUTCD edition. The restoration of such language will continue FHWA's current practice under Official Interpretation 1(09)-1(l) which states that in limited, specific cases, deviation from a STANDARD is allowed at a location or other locations with the same conditions, provided that an agency or other official having jurisdiction fully documents the engineering reason for the deviation. The Illinois Supplement to the MUTCD incorporated the FHWA Official Interpretation when issued; therefore, Revision 1 should not impact Illinois highway agencies.

Revision 2 of the 2009 edition of the MUTCD revises Table I-2 of the MUTCD by eliminating the compliance dates for 46 items (8 that had already expired and 38 that had future compliance dates) and extends and/or revises the dates for 4 items. The target compliance dates for 8 items that are deemed to be of critical safety importance will remain in effect. In addition, this final rule adds a new Option statement exempting existing historic street name signs within a locally identified historic district from the Standards and Guidance of Section 2D.43 regarding street sign color, letter size, and other design features, including retroreflectivity.

Even though the compliance date for meeting the minimum retroreflectivity for street name signs has been eliminated, street name signs and overhead guide signs are still required to meet the minimum retroreflectivity requirements contained in the MUTCD. Therefore, the department recommends using the original compliance date of January 22, 2018 as a target date for complying with the retroreflectivity requirements for these signs. These signs should also be covered in the assessment or management method selected for regulatory and warning signs.

HARD COPIES UNCONTROLLED

PM2012-05
October 24, 2012

Section 39-2.07 Dimensions was also added to the BLRS Manual to clarify that engineering judgment may be used to adjust sign size requirements contained in the conventional road column in the various sign size tables in the MUTCD.

Please contact the Local Policy & Technology Unit at DOT.LocalPolicy@illinois.gov with any questions.

A handwritten signature in cursive script that reads "James K. Klein".

Acting Engineer of Local Roads and Streets

Attachments



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Part IV

Department of Transportation

Federal Highway Administration

23 CFR Part 655

National Standards for Traffic Control Devices; the Manual on Uniform Traffic Control Devices for Streets and Highways; Revision; Final Rules

DEPARTMENT OF TRANSPORTATION**Federal Highway Administration****23 CFR Part 655**

[FHWA Docket No. FHWA–2010–0170]

RIN 2125–AF41

National Standards for Traffic Control Devices; the Manual on Uniform Traffic Control Devices for Streets and Highways; Revision; Final Rule

AGENCY: Federal Highway Administration (FHWA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: The MUTCD is incorporated in the FHWA regulations, approved by the FHWA, and recognized as the national standard for traffic control devices used on all streets, highways, bikeways, and private roads open to public travel. The purpose of this final rule is to revise certain definitions and guidance relating to traffic control devices in Part 1 (General) of the MUTCD. The changes will clarify the definition of Standard statements in the MUTCD and clarify the use of engineering judgment and studies in the application of traffic control devices.

DATES: *Effective Date:* This final rule is effective June 13, 2012. The incorporation by reference of the publication listed in this regulation is approved by the Director of the Office of the Federal Register as of June 13, 2012.

FOR FURTHER INFORMATION CONTACT: Mr. Chung Eng, Office of Transportation Operations, (202) 366–8043; or Mr. William Winne, Office of the Chief Counsel, (202) 366–1397, Federal Highway Administration, 1200 New Jersey Ave. SE., Washington, DC 20590. Office hours are from 8 a.m. to 4:30 p.m., e.t., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:**Electronic Access and Filing**

This document, the notice of proposed amendment (NPA), and all comments received may be viewed online through the Federal eRulemaking portal at: <http://www.regulations.gov>. Electronic submission and retrieval help and guidelines are available on the Web site. It is available 24 hours each day, 366 days this year. Please follow the instructions. An electronic copy of this document may also be downloaded from the Office of the Federal Register's home page at: <http://www.archives.gov/federal-register> and the Government

Printing Office's Web page at: <http://www.gpo.gov/fdsys>.

Executive Summary*I. Purpose of the Regulatory Action*

The FHWA has the authority to prescribe standards for traffic control devices on all roads open to public travel pursuant to 23 U.S.C. 109(d), 114(a), 217, 315, and 402(a). In the 2009 edition of the MUTCD, the FHWA made clarifying revisions to the 2003 edition of the MUTCD to remove conflicting language and provide consistency in the intended use of engineering judgment and engineering studies. After issuance of the Final Rule for the 2009 MUTCD, FHWA received correspondence from several entities indicating that the clarifying revisions had the effect of removing highway agencies' flexibility to address field conditions. This was not FHWA's intention. Thus, on August 2, 2011 the FHWA published a Notice of Proposed Amendment (NPA) proposing revisions to the MUTCD to address these concerns.

II. Summary of the Major Provisions of the Regulatory Action in Question

In consideration of the comments received in response to the NPA, this Final Rule restores certain language contained in the 2003 MUTCD edition. The restoration of such language will continue FHWA's current practice under Official Interpretation 1(09)–1 (I) which states that in limited, specific cases, deviation from a STANDARD is allowed at a location or other locations with the same conditions, provided that an agency or other official having jurisdiction fully documents the engineering reason for the deviation. The MUTCD, with these changes incorporated, is being designated as Revision 1 of the 2009 edition of the MUTCD.

III. Costs and Benefits

The changes in the MUTCD will provide additional clarification, guidance, and flexibility in the application of traffic control devices. The FHWA believes that the uniform application of traffic control devices will greatly improve the traffic operations efficiency and roadway safety. The standards, guidance, and support are also used to create uniformity and to enhance safety and mobility at little additional expense to public agencies or the motoring public. These changes are not anticipated to adversely affect, in any material way, any sector of the economy. In addition, these changes will not create a serious inconsistency with any other agency's

action or materially alter the budgetary impact of any entitlements, grants, user fees, or loan programs. Although FHWA did not quantify the costs, we believe they will be minimal. One benefit of this rule is reduced expenditures for locations with identical conditions. For example, when a deviation is found to be warranted and can be justified, these locations will not have to spend funds on repetitive or duplicative engineering studies. In addition, since the rule restores language from the 2003 edition of the MUTCD, agencies would not have to expend resources to modify their existing operating procedures.

Background

On August 2, 2011, at 76 FR 46213, the FHWA published an NPA proposing revisions to the MUTCD. Interested persons were invited to submit comments to the FHWA Docket Number FHWA–2010–0170. Based on the comments received and its own experience, the FHWA is issuing this final rule and is designating the MUTCD, with these changes incorporated, as Revision 1 of the 2009 edition of the MUTCD.

The text of Revision 1 of the 2009 edition of the MUTCD, with these final rule changes incorporated, is available for inspection and copying, as prescribed in 49 CFR part 7, at the FHWA Office of Transportation Operations (HOTO–1), 1200 New Jersey Avenue SE., Washington, DC 20590. Furthermore, the text of Revision 1 of the 2009 edition of the MUTCD, with these final rule changes incorporated, is available on the FHWA's MUTCD Web site at: <http://mutcd.fhwa.dot.gov>. The original 2009 edition of the MUTCD and the 2003 edition of the MUTCD with Revisions 1 and 2 incorporated are also available on this Web site. Revision 1 of the 2009 edition of the MUTCD supersedes all previous editions and revisions of the MUTCD.

Summary of Comments

The FHWA received, reviewed, and analyzed the 51 letters submitted to the docket, which contain more than 125 different comments on the proposed changes. The American Association of State Highway and Transportation Officials (AASHTO), the National Committee on Uniform Traffic Control Devices (NCUTCD), the American Public Works Association (APWA), the National Association of County Engineers (NACE), the American Traffic Safety Services Association (ATSSA), State departments of transportation (DOTs), city and county government agencies, other associations, transportation consultants, and

individual private citizens submitted comments.

The AASHTO generally supported FHWA's proposal to remove the last sentence in the definition of STANDARD in Section 1A.13; however, it expressed that the value of such a change would be minimized by the proposed language in Section 1A.09 regarding the use of engineering judgment and engineering studies. The AASHTO asserted that FHWA's proposed language in Section 1A.09 was insufficient because it did not include additional sentences from the 2003 edition of the MUTCD GUIDANCE statement that emphasized the importance of using engineering judgment in the placement of traffic control devices. The AASHTO also disagreed with the OPTION statement proposed for Section 1A.09 in the NPA, contending that it limited the application of engineering judgment or an engineering study to a specific site. The AASHTO submitted a second letter recommending a new sentence that would allow programmatic deviations from a STANDARD based on an engineering study. The NCUTCD, APWA, NACE, 23 State DOTs, 4 local agencies, and 1 transportation consultant submitted comments similar to AASHTO's first letter.

The ATSSA and the Association of American Railroads supported the NPA in its entirety and specifically disagreed with AASHTO's comments regarding Section 1A.09. Three transportation consultants asserted that the definition of STANDARD and the 2009 edition of the MUTCD's text on the application of engineering judgment and studies are appropriate and do not need to be revised. These comments, including those raised by AASHTO that are identified above, are discussed in more detail in the section-by-section discussions below for both 1A.13 and 1A.09.

Comments Outside the Scope of the Rulemaking

In addition to commenting on the proposed changes, AASHTO and four State DOTs suggested that the FHWA use this rulemaking process to address the issue of "substantial conformance" of State MUTCDs, as defined in the Code of Federal Regulations (CFR). Specifically, AASHTO suggested that FHWA issue interim final rules to revise 23 CFR 655.602 and 655.603 so that States could apply engineering judgment and studies to delete STANDARDS from their State MUTCDs and still have their State MUTCDs accepted by FHWA as being in substantial conformance with the

national MUTCD. The meaning of "substantial conformance" was considered and established through a final rule published in the **Federal Register** on December 14, 2006 at 74 FR 75111. Because the NPA for this rulemaking did not propose any changes to this meaning and did not solicit public comments about this topic, this issue is outside the scope of this rulemaking and will not be addressed in this final rule.

Three States also expressed concern with compliance dates, suggesting that compliance dates the States viewed as unessential be removed or delayed. One State also suggested that FHWA address systematic upgrading of traffic control devices in this rulemaking. Comments related to the issue of compliance dates listed in the MUTCD are currently being considered in response to an NPA published in the **Federal Register** on August 31, 2011 at 76 FR 54156. Because the NPA for this rulemaking did not propose any changes to the compliance dates or to the meaning of "systematic upgrading of traffic control devices" and did not solicit public comments about these topics, these issues are outside the scope of this rulemaking and will not be addressed in this final rule.

Discussion of Comments by Section

1. In the MUTCD Section 1A.13, Definitions of Headings, Words, and Phrases, the FHWA proposed in the NPA to delete the last sentence in the definition of the heading STANDARD. This sentence, which was added in the 2009 edition of the MUTCD, stated:

Standard statements shall not be modified or compromised based on engineering judgment or engineering study.

The majority of commenters, including AASHTO, NCUTCD, APWA, NACE, State DOTs, and local agencies, supported removing this sentence. Two States suggested adding language to the definition of STANDARD to help clarify that site-specific conditions may make it impossible or impractical for an agency to comply with a STANDARD. The FHWA believes that such a change is not necessary because restoration of certain GUIDANCE statements from the 2003 MUTCD will provide for deviation from a STANDARD in limited, specific cases at a location, or other locations with the same conditions, provided that an agency or other official having jurisdiction fully documents the engineering reason for the deviation. Therefore, the FHWA adopts the removal of this sentence from the definition of STANDARD in Section 1A.13, as proposed in the NPA.

The NCUTCD, APWA, and NACE also suggested that the definitions for "engineering judgment" and "engineering study" in Section 1A.13 should be restored to the text found in the 2003 edition of the MUTCD. Specifically, these commenters reasoned that because this rulemaking pertains to exercising engineering judgment and using engineering studies to make traffic control device decisions, it is appropriate to restore the definitions of these terms to the ones contained in the 2003 edition of the MUTCD. The FHWA did not propose any changes to the definitions of "engineering judgment" or "engineering study," which are contained within a STANDARD statement in Section 1A.13, and thus any changes to these definitions are outside the scope of this rulemaking. The FHWA might give consideration to proposing revisions to these definitions in conjunction with a future NPA for the next edition of the MUTCD.

2. In Section 1A.09, Engineering Study and Engineering Judgment, FHWA proposed in the NPA to add a GUIDANCE paragraph stating that the decision to use a particular device at a particular location should be made on the basis of either an engineering study or the application of engineering judgment. The FHWA proposed this change in order to reinstate one of the three GUIDANCE sentences in the 2003 edition of the MUTCD that had been removed in the 2009 edition of the MUTCD. The AASHTO, NCUTCD, APWA, NACE, and the majority of the State and local agencies supported FHWA's proposal, but felt that it was insufficient because it did not include restoration of the two other sentences from the 2003 edition of the MUTCD GUIDANCE statement. Those second and third sentences stated:

Thus, while this Manual provides Standards, Guidance, and Options for design and applications of traffic control devices, this Manual should not be considered a substitute for engineering judgment. Engineering judgment should be exercised in the selection and application of traffic control devices, as well as in the location and design of roads and streets that the devices complement.

Specifically, AASHTO stated that the exclusion of the second sentence from the 2003 edition of the MUTCD GUIDANCE statement, coupled with FHWA's proposal, would not adequately support the reinstatement of engineering judgment into the application of traffic control devices. The NCUTCD, NACE, and APWA suggested that only the second sentence from the 2003 edition of the GUIDANCE statement should be restored. Two State

DOTs agreed with the NPA as proposed. Three transportation consultants disagreed with the proposed GUIDANCE in the NPA, asserting that the application of engineering judgment and studies as described in the 2009 edition of the MUTCD is appropriate and does not need to be revised.

In a second letter to the docket, AASHTO also recommended adding a new, fourth sentence to the GUIDANCE that would state:

An engineering study is required for programmatic deviations from Standards contained within this Manual.

Such language effectively would allow agencies to deviate from a STANDARD on a programmatic basis, rather than based on impracticality at a specific site supported by engineering judgment or study. As noted in the NPA, it is not and has never been the intention of the FHWA to authorize a highway agency to adopt or implement broad policies or practices that deviate from a STANDARD on a blanket or programmatic basis jurisdictionwide, regionwide, on all highways of a particular class, or using similar criteria. Therefore, FHWA believes adding a fourth sentence of GUIDANCE as suggested by AASHTO's second letter is not appropriate.

In the NPA, FHWA proposed to add a new OPTION paragraph stating that when an engineering study or the application of engineering judgment determines that unusual site-specific conditions at a particular location make compliance with a STANDARD statement impossible or impractical, an agency may deviate from that STANDARD statement at that location. The AASHTO, NCUTCD, APWA, NACE, and 20 State DOTs disagreed and suggested that this language be removed because such an application would be overly restrictive and financially burdensome on agencies. Specifically, these commenters stated that such language would require jurisdictions to study each site individually, even where multiple locations with the same or similar conditions make a particular deviation necessary. Additionally, several State agencies indicated that the proposed OPTION statement did not reflect the intent of FHWA's Official Interpretation number 1(09)-1 (I),¹ dated October 1, 2010, which states that in limited, specific cases, deviation from a STANDARD is allowed at a location or other locations with the same conditions, provided that an agency or

other official having jurisdiction fully documents the engineering reason for the deviation. We would note that FHWA did not intend for the proposed OPTION language to trigger studies for each location with similar conditions. Nevertheless, FHWA has determined that the OPTION paragraph proposed in the NPA is not needed because the topic is adequately addressed by Official Interpretation 1(09)-1 (I), which is still in effect.

In consideration of the comments received and our determination that the OPTION language in the NPA is not needed, we have decided, instead, to restore the three 2003 MUTCD GUIDANCE sentences that were subsequently removed in the 2009 MUTCD edition. The inclusion of such language will continue our current practice under Official Interpretation 1(09)-1 (I) to allow deviations from a STANDARD only on the basis of either an engineering study or the application of engineering judgment. Thus, the GUIDANCE language in Section 1A.09 will now read as follows:

The decision to use a particular device at a particular location should be made on the basis of either an engineering study or the application of engineering judgment. Thus, while this Manual provides Standards, Guidance, and Options for design and applications of traffic control devices, this Manual should not be considered a substitute for engineering judgment. Engineering judgment should be exercised in the selection and application of traffic control devices, as well as in the location and design of roads and streets that the devices complement.

The FHWA will continue to consider matters raised by this rulemaking to inform future decisions regarding the MUTCD.

Rulemaking Analyses and Notices

Executive Order 12866 (Regulatory Planning and Review), Executive Order 13563 (Improving Regulation and Regulatory Review), and DOT Regulatory Policies and Procedures

The FHWA has determined that this action is a significant regulatory action within the meaning of Executive Order 12866 and within the meaning of U.S. Department of Transportation regulatory policies and procedures because of the significant public interest in the MUTCD. Additionally, this action complies with the principles of Executive Order 13563. The changes in the MUTCD will provide additional clarification, guidance, and flexibility in the application of traffic control devices. The FHWA believes that the uniform application of traffic control devices will greatly improve the traffic

operations efficiency and roadway safety. The standards, guidance, and support are also used to create uniformity and to enhance safety and mobility at little additional expense to public agencies or the motoring public. These changes are not anticipated to adversely affect, in any material way, any sector of the economy. In addition, these changes will not create a serious inconsistency with any other agency's action or materially alter the budgetary impact of any entitlements, grants, user fees, or loan programs. It is anticipated that the economic impact of this rulemaking will be minimal; therefore, a full regulatory evaluation is not required.

Regulatory Flexibility Act

In compliance with the Regulatory Flexibility Act (Pub. L. 96-354, 5 U.S.C. 601-612), the FHWA has evaluated the effects of this action on small entities, including small governments. The FHWA certifies that this action will not have a significant economic impact on a substantial number of small entities. This rule will provide clarification and additional flexibility.

Executive Order 13132 (Federalism)

This action has been analyzed in accordance with the principles and criteria contained in Executive Order 13132 dated August 4, 1999, and the FHWA has determined that this action will not have sufficient federalism implications to warrant the preparation of a federalism assessment. The FHWA has also determined that this rulemaking will not preempt any State law or State regulation or affect the States' ability to discharge traditional State governmental functions. The MUTCD is incorporated by reference in 23 CFR part 655, subpart F. These amendments are in keeping with the Secretary of Transportation's authority under 23 U.S.C. 109(d), 315, and 402(a) to promulgate uniform guidelines to promote the safe and efficient use of the highway. The overriding safety benefits of the uniformity prescribed by the MUTCD are shared by all of the State and local governments, and changes made by this rule are directed at enhancing safety. To the extent that these amendments may override any existing State requirements regarding traffic control devices, they do so in the interest of national uniformity.

Unfunded Mandates Reform Act of 1995

This rule does not impose unfunded mandates as defined by the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4, 109 Stat. 48, March 22, 1995). The changes provide additional

¹ This Official Interpretation of the MUTCD can be viewed at the following Web site: http://mutcd.fhwa.dot.gov/resources/interpretations/1_09_1.htm.

guidance, flexibility, and clarification and will not require an expenditure of funds. This action will not result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of \$140.8 million or more in any 1 year (2 U.S.C. 1532).

Executive Order 13175 (Tribal Consultation)

The FHWA has analyzed this action under Executive Order 13175, dated November 6, 2000, and believes that it will not have substantial direct effects on one or more Indian tribes, will not impose substantial direct compliance costs on Indian tribal governments, and will not preempt tribal law. Therefore, a tribal summary impact statement is not required.

Executive Order 13211 (Energy Effects)

The FHWA has analyzed this final rule under Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use. The FHWA has determined that this is not a significant energy action under that order because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. Therefore, a Statement of Energy Effects under Executive Order 13211 is not required.

Executive Order 12372 (Intergovernmental Review)

Catalog of Federal Domestic Assistance Program Number 20.205, Highway Planning and Construction. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program.

Paperwork Reduction Act

Under the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501, *et seq.*), Federal agencies must obtain approval from the Office of Management and Budget for each collection of information they conduct, sponsor, or require through regulations. The FHWA has determined that this action does not contain a collection of information requirement for the purposes of the PRA.

Executive Order 12988 (Civil Justice Reform)

This action meets applicable standards in sections 3(a) and 3(b)(2) of Executive Order 12988, Civil Justice Reform, to minimize litigation, to eliminate ambiguity, and to reduce burden.

Executive Order 13045 (Protection of Children)

The FHWA has analyzed this action under Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. This is not an economically significant action and does not concern an environmental risk to health or safety that might disproportionately affect children.

Executive Order 12630 (Taking of Private Property)

This action would not affect a taking of private property or otherwise have taking implications under Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights.

National Environmental Policy Act

The agency has analyzed this action for the purpose of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and has determined that it will not have any effect on the quality of the environment and meets the criteria for the categorical exclusion at 23 CFR 771.117(c)(20).

Regulation Identification Number

A regulation identification number (RIN) is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN contained in the heading of this document can be used to cross reference this action with the Unified Agenda.

List of Subjects in 23 CFR Part 655

Design standards, Grant programs—Transportation, Highways and roads, Incorporation by reference, Pavement Markings, Traffic regulations.

Issued on: May 9, 2012.

Victor M. Mendez,
Administrator.

In consideration of the foregoing, the FHWA is amending title 23, Code of Federal Regulations, part 655, subpart F as follows:

PART 655—TRAFFIC OPERATIONS

- 1. The authority citation for part 655 continues to read as follows:

Authority: 23 U.S.C. 101(a), 104, 109(d), 114(a), 217, 315 and 402(a); 23 CFR 1.32; and 49 CFR 1.48(b).

Subpart F—[Amended]

- 2. Revise § 655.601, to read as follows:

§ 655.601 Purpose.

To prescribe the policies and procedures of the Federal Highway Administration (FHWA) to obtain basic uniformity of traffic control devices on all streets and highways in accordance with the following references that are approved by the FHWA for application on Federal-aid projects:

- (a) MUTCD.
- (b) AASHTO Guide to Metric Conversion.
- (c) AASHTO Traffic Engineering Metric Conversion Factors.
- (d) The standards required in this section are incorporated by reference into this section in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the FHWA must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the Federal Highway Administration, Office of Transportation Operations, 1200 New Jersey Avenue SE., Washington, DC 20590, (202) 366–8043 and is available from the sources listed below. It is also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA call (202) 741–6030, or go to <http://www.archives.gov/federal-register/cfr/index.html>.

(1) AASHTO, American Association of State Highway and Transportation Officials, Suite 249, 444 North Capitol Street NW., Washington, DC 20001

(i) AASHTO Guide to Metric Conversion, 1993;

(ii) AASHTO, Traffic Engineering Metric Conversion Factors, 1993—Addendum to the Guide to Metric Conversion, October 1993.

(2) FHWA, Federal Highway Administration, 1200 New Jersey Avenue SE., Washington, DC 20590, telephone (202) 366–1993, also available at <http://mutcd.fhwa.dot.gov>.

(i) Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), 2009 Edition, including Revisions No. 1 and No. 2, FHWA, dated May 2012.

(ii) [Reserved]

[FR Doc. 2012–11712 Filed 5–10–12; 4:15 pm]

BILLING CODE 4910–22–P

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

23 CFR Part 655

[FHWA Docket No. FHWA–2010–0159]

RIN 2125–AF43

National Standards for Traffic Control Devices; the Manual on Uniform Traffic Control Devices for Streets and Highways; Revision

AGENCY: Federal Highway Administration (FHWA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: The MUTCD is incorporated in regulations, approved by the FHWA, and recognized as the national standard for traffic control devices used on all streets, highways, bikeways, and private roads open to public travel. The purpose of this final rule is to revise certain information relating to target compliance dates for traffic control devices. This final rule revises Table I–2 of the MUTCD by eliminating the compliance dates for 46 items (8 that had already expired and 38 that had future compliance dates) and extends and/or revises the dates for 4 items. The target compliance dates for 8 items that are deemed to be of critical safety importance will remain in effect. In addition, this final rule adds a new Option statement exempting existing historic street name signs within a locally identified historic district from the Standards and Guidance of Section 2D.43 regarding street sign color, letter size, and other design features, including retroreflectivity.

Consistent with Executive Order 13563, and in particular its emphasis on burden-reduction and on retrospective analysis of existing rules, the changes adopted are intended to reduce the costs and impacts of compliance dates on State and local highway agencies and to

streamline and simplify the information. The MUTCD, with these changes incorporated, is being designated as Revision 2 of the 2009 edition of the MUTCD.

DATES: *Effective Date:* This final rule is effective June 13, 2012. The incorporation by reference of the publication listed in this regulation is approved by the Director of the Office of the Federal Register as of June 13, 2012.

FOR FURTHER INFORMATION CONTACT: Mr. Chung Eng, Office of Transportation Operations, (202) 366–8043; or Mr. William Winne, Office of the Chief Counsel, (202) 366–1397, Federal Highway Administration, 1200 New Jersey Ave. SE., Washington, DC 20590. Office hours are from 8 a.m. to 4:30 p.m., E.T., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:

Electronic Access and Filing

This document, the notice of proposed amendment (NPA), and all comments received may be viewed online through the Federal eRulemaking portal at: <http://www.regulations.gov>. Electronic submission and retrieval help and guidelines are available on the Web site. It is available 24 hours each day, 366 days this year. Please follow the instructions. An electronic copy of this document may also be downloaded from the Office of the Federal Register’s home page at: <http://archives.gov/federal-register> and the Government Printing Office’s Web page at: <http://www.gpo.gov/fdsys>.

Executive Summary

I. Purpose of the Regulatory Action

The purpose of this final rule is to revise certain information relating to target compliance dates for traffic control devices. The changes adopted are intended to reduce the impacts of compliance dates on State and local

highway agencies and streamline and simplify information contained in the MUTCD without reducing safety. The FHWA has the authority to prescribe standards for traffic control devices on all roads open to public travel pursuant to 23 U.S.C. 109(d), 114(a), 217, 315, and 402(a).

II. Summary of the Major Provisions of the Regulatory Action in Question

This final rule revises Table I–2 of the MUTCD by eliminating the compliance dates for 46 items (8 that had already expired and 38 that had future compliance dates) and extends and/or revises the dates for 4 items. The target compliance dates for 8 items that are deemed to be of critical safety importance will remain in effect. In addition, this final rule adds a new Option statement exempting existing historic street name signs within a locally identified historic district from the Standards and Guidance of Section 2D.43 regarding street sign color, letter size, and other design features, including retroreflectivity.

III. Costs and Benefits

The changes in this rulemaking will not require the expenditure of additional funds, but rather will provide State and local governments with the flexibility to allocate scarce financial resources based on local conditions and the useful service life of its traffic control devices. Since this rulemaking will benefit State and local governments by providing additional clarification, guidance and flexibility, it is anticipated that the economic impacts will be minimal and that costs and burdens will be reduced. Thus, a full regulatory evaluation was not conducted.

Revised Table I–2

This final rule amends Table I–2 of the 2009 MUTCD to read as follows:

2009 MUTCD Section No.(s)	2009 MUTCD Section title	Specific provision	Compliance date
2A.08	Maintaining Minimum Retroreflectivity.	Implementation and continued use of an assessment or management method that is designed to maintain regulatory and warning sign retroreflectivity at or above the established minimum levels (see Paragraph 2).	2 years from the effective date of this revision of the 2009 MUTCD*.
2A.19	Lateral Offset	Crashworthiness of sign supports on roads with posted speed limit of 50 mph or higher (see Paragraph 2).	January 17, 2013 (date established in the 2000 MUTCD).
2B.40	ONE WAY Signs (R6–1, R6–2).	New requirements in the 2009 MUTCD for the number and locations of ONE WAY signs (see Paragraphs 4, 9, and 10).	December 31, 2019.
2C.06 through 2C.14.	Horizontal Alignment Warning Signs.	Revised requirements in the 2009 MUTCD regarding the use of various horizontal alignment signs (see Table 2C–5).	December 31, 2019.

2009 MUTCD Section No.(s)	2009 MUTCD Section title	Specific provision	Compliance date
2E.31, 2E.33, and 2E.36.	Plaques for Left-Hand Exits.	New requirement in the 2009 MUTCD to use E1–5aP and E1–5bP plaques for left-hand exits.	December 31, 2014.
4D.26	Yellow Change and Red Clearance Intervals.	New requirement in the 2009 MUTCD that durations of yellow change and red clearance intervals shall be determined using engineering practices (see Paragraphs 3 and 6).	5 years from the effective date of this revision of the 2009 MUTCD, or when timing adjustments are made to the individual intersection and/or corridor, whichever occurs first.
4E.06	Pedestrian Intervals and Signal Phases.	New requirement in the 2009 MUTCD that the pedestrian change interval shall not extend into the red clearance interval and shall be followed by a buffer interval of at least 3 seconds (see Paragraph 4).	5 years from the effective date of this revision of the 2009 MUTCD, or when timing adjustments are made to the individual intersection and/or corridor, whichever occurs first.
6D.03 **	Worker Safety Considerations.	New requirement in the 2009 MUTCD that all workers within the right-of-way shall wear high-visibility apparel (see Paragraphs 4, 6, and 7).	December 31, 2011.
6E.02 **	High-Visibility Safety Apparel.	New requirement in the 2009 MUTCD that all flaggers within the right-of-way shall wear high-visibility apparel.	December 31, 2011.
7D.04 **	Uniform of Adult Crossing Guards.	New requirement in the 2009 MUTCD for high-visibility apparel for adult crossing guards.	December 31, 2011.
8B.03, 8B.04	Grade Crossing (Crossbuck) Signs and Supports.	Retroreflective strip on Crossbuck sign and support (see Paragraph 7 in Section 8B.03 and Paragraphs 15 and 18 in Section 8B.04).	December 31, 2019.
8B.04	Crossbuck Assemblies with YIELD or STOP Signs at Passive Grade Crossings.	New requirement in the 2009 MUTCD for the use of STOP or YIELD signs with Crossbuck signs at passive grade crossings.	December 31, 2019.

* Types of signs other than regulatory or warning are to be added to an agency's management or assessment method as resources allow.

** MUTCD requirement is a result of a legislative mandate.

Note: All compliance dates that were previously published in Table I–2 of the 2009 MUTCD and that do not appear in this revised table have been eliminated.

Background

One of the purposes of the MUTCD is to provide for the consistent and uniform application of traffic control devices on streets and highways open to public travel. These traffic control devices are designed to promote highway safety and efficiency. As technology evolves and surroundings change, new provisions for traffic control devices and their application may be proposed. When new provisions are adopted in a new edition or revision of the MUTCD, any new or reconstructed traffic control devices installed after adoption are required to be in compliance with the new provisions. Existing devices already in use that do not comply with the new MUTCD provisions are expected to be upgraded by highway agencies over time to meet the new provisions, unless the FHWA establishes a target compliance date for upgrading such devices. If such a target date has been established by the FHWA through the Federal rulemaking process, agencies are to upgrade existing noncompliant devices on or before the target compliance date. Due to the current economic climate, State and local agencies have expressed concern about the potential costs associated with replacing noncompliant traffic control

devices within the target compliance dates previously adopted in the MUTCD. In response to those concerns, the FHWA issued a Request for Comments in the **Federal Register**¹ seeking public input on traffic control device compliance dates.

After reviewing and considering the nearly 600 letters submitted by State and local government highway agencies, national associations, traffic industry representatives, traffic engineering consultants, and private citizens, on August 31, 2011, the FHWA published a Notice of Proposed Amendments (NPA), proposing revisions to the MUTCD at 76 FR 54156. The NPA proposed to revise Table I–2 of the 2009 edition of the MUTCD to eliminate the compliance dates for 46 items (8 that have already expired and 38 that have future compliance dates) and to extend and/or revise the dates for 4 items. In addition, the NPA proposed to retain the target compliance dates for eight items that were deemed to be of critical safety importance. Interested persons were invited to submit comments to FHWA Docket No. FHWA–2010–0159. Based on the comments received and its own experience, the FHWA is issuing this final rule and is designating the MUTCD, with these changes

¹ 75 FR 74128, November 30, 2010.

incorporated, as Revision 2 of the 2009 edition of the MUTCD.

The text of Revision 2 of the 2009 edition of the MUTCD, with these final rule changes incorporated, is available for inspection and copying, as prescribed in 49 CFR part 7, at the FHWA Office of Transportation Operations (HOTO–1), 1200 New Jersey Avenue SE., Washington, DC 20590. Furthermore, the text of the 2009 edition of the MUTCD, with these final rule changes and the changes of Revision 1 also incorporated, is available on the FHWA's MUTCD Web site at: <http://mutcd.fhwa.dot.gov>. The 2009 edition with Revisions 1 and 2 incorporated supersedes all previous editions and revisions of the MUTCD.

Summary of Comments

The FHWA received, reviewed, and analyzed 158 letters submitted to the docket, which contain nearly 240 different comments on the proposed changes. The American Association of State Highway and Transportation Officials (AASHTO), the National Committee on Uniform Traffic Control Devices (NCUTCD), the American Public Works Association (APWA), the National Association of County Engineers (NACE), the American Traffic Safety Services Association (ATSSA), American Road and Transportation

Builders Association (ARTBA), State departments of transportation (DOTs), city and county government agencies, other associations, transportation consultants, and individual private citizens submitted comments. The majority of the comments were fully or partially supportive of the NPA proposal, agreeing with the general intent. The AASHTO agreed with the NPA, except for two specific compliance dates that were retained in the NPA (see below for additional details). In addition to commenting on the compliance date proposal, several local jurisdictions and individuals submitted comments regarding existing provisions in Section 2D.43 of the MUTCD that affect "historic" street name signs in their communities. A summary of the comments received and the changes in the MUTCD adopted in this final rule are included in the following section.

Discussion of Comments on Table I-2 and Adopted Revisions

As noted above, most the comments were fully or partially supportive of the NPA proposal, and agreed with the general intent of the NPA. Many commenters had previously taken the opportunity to comment on the November 30, 2010, request for comments on traffic control compliance dates published at 75 FR 74128. As a result, the proposals in the NPA reflected many of the commenters' concerns and opinions. The following discussion addresses the significant issues raised by comments in opposition to elements of the NPA published on August 31, 2011 at 76 FR 54156.

1. In the NPA, the FHWA proposed to eliminate 46 of the existing compliance dates (not including the two associated with sign retroreflectivity). Six citizens and one association of local governments in Minnesota opposed these 46 eliminations, on the basis of reduced uniformity and safety of traffic control devices. The Maryland State Highway Administration noted that the NPA preamble stated that FHWA proposed to "eliminate" the dates that have already expired for eight items in Table I-2, but the note at the bottom of the table stated that these dates were "deleted" from the table. The eight specific compliance dates that have expired were intended to be legally eliminated (rather than just removed from the table). To clarify this issue, the FHWA revises the note at the bottom of the table in the final rule to read, "All compliance dates that were originally published in Table I-2 of the 2009 MUTCD that do not appear in this revised table have been eliminated."

The FHWA adopts the elimination of the compliance dates in Table I-2, as proposed in the NPA, for Sections 2B.03, 2B.09, 2B.10, 2B.11, 2B.13, 2B.26, 2B.55, 2C.04, 2C.13, 2C.20, 2C.30, 2C.38, 2C.40, 2C.41, 2C.42, 2C.46, 2C.49, 2C.50, 2C.61, 2C.63, 2D.43 (two provisions), 2D.44, 2D.45, 2G.01 through 2G.07, 2G.11 through 2G.15, 2H.05 and 2H.06, 2I.09, 2I.10, 2J.05, 2N.03, 3B.04 and 3B.05, 3B.18, 4D.01, 4D.31, 4E.07, 5C.05, 7B.11, 7B.12, 7B.16, 8B.19 and 8C.02 through 8C.05, 8C.09, 8C.12, and 9B.18.

The elimination of a compliance date for a given Standard contained in the MUTCD does not eliminate the regulatory requirement to comply with that Standard. The Standard itself remains in the MUTCD and applies to any new installations, but the compliance date for replacing noncompliant devices that exist in the field is eliminated. To further clarify, any new installation of an existing noncompliant device (such as moving a noncompliant device to another location) would also have to comply with the Standard upon installation.

2. The FHWA proposed to extend the compliance date by approximately 2 years for the provision in Section 2A.08 that requires agencies to implement an assessment or management method designed to maintain sign retroreflectivity at or above the established minimum levels. As part of this proposal, the FHWA proposed to limit this particular compliance date to apply only to regulatory and warning signs. This compliance date does not require replacement of any signs by a particular date. Rather, it requires highway agencies to implement an assessment or management method for maintaining sign retroreflectivity, in accordance with section 406 of the Department of Transportation and Related Agencies Appropriations Act, 1993 (Pub. L. 102-388; October 6, 1992), by the compliance date. Safety advocacy organizations, the ARTBA, one State DOT, and some industry representatives generally disagreed with the proposal. The ATSSA and some State DOTs agreed with the extension for implementing an assessment/management method, but requested that guide signs not be excluded. However, many agencies stated that including guide signs in the assessment method would limit funds that could be used for other projects. The FHWA disagrees with including guide signs at this time because regulatory and warning signs constitute the highest priority for assessing retroreflectivity of existing signs. The FHWA, therefore, adopts the revisions as proposed in the final rule.

The additional cost of including guide signs would increase the economic burden on agencies, whose funds are limited due to the current economic climate. The revisions to the compliance date and its applicability will provide relief and enable agencies to determine when their resources will allow them to add signs, other than regulatory and warning signs, to their assessment or management method. Several commenters noted the confusion and potential for misinterpretation introduced by limiting the compliance date to regulatory and warning signs. The FHWA reiterates that the language in Section 2A.08 still requires agencies to establish a method for all types of signs, but understands that limiting the compliance date to regulatory and warning signs could lead some agencies to mistakenly think that guide signs would never be required to be included in an agency's method. In addition, because the MUTCD requirement is for a method rather than a device, it is unclear how agencies would interpret the application of "systematic upgrading" (applicable to MUTCD requirements that have no specific compliance date) in the case of adding guide signs to the agency's management or assessment method. The FHWA adds a footnote to Table I-2 to clarify that other types of signs are to be added to an agency's management or assessment method as resources allow. The FHWA believes that adding this footnote in the final rule, rather than being silent on the issue, will provide clarity. The FHWA adopts the extension of the compliance date from January 22, 2012, to 2 years after this final rule and adds a footnote as discussed above.

In addition, the FHWA proposed in the NPA to eliminate the compliance dates for replacement of signs found not to meet the minimum retroreflectivity standards. The ATSSA, the ARTBA, other safety advocates, industry representatives, some States and cities, and several citizens disagreed with eliminating the January 22, 2015, and January 22, 2018, compliance dates and suggested that the dates instead be extended to 2018 and 2021, respectively. Even without a specific date, agencies will still need to replace any sign they identify as not meeting the established minimum retroreflectivity levels. Their schedules replacing the signs, however, would be based on resources and relative priorities, rather than specific compliance dates. As a result, the FHWA eliminates these compliance dates in the final rule.

3. The FHWA proposed to extend the compliance dates for signal timing adjustments associated with vehicular

yellow and red clearance intervals in Section 4D.26 and pedestrian clearance intervals in Section 4E.06 from December 31, 2014, to 5 years after this final rule. The National Association of City Transportation Officials requested a further extension to 10 years after the final rule and Pennsylvania DOT suggested eliminating this date instead of extending it. The FHWA disagrees with extending the compliance date even further into the future or eliminating it, as the extension that was proposed in the NPA achieves a reasonable balance between the need for these critical safety retiming efforts and resource constraints. As mentioned in the NPA, the original compliance date of December 31, 2014 published for the 2009 edition of the MUTCD was based on what FHWA believed to be the typical signal retiming frequency of about 5 years. This new proposed compliance date provides agencies with more than 2 additional years to implement the new requirements of Sections 4D.26 and 4E.06 at any locations that have not already been made compliant under a previous intersection or corridor retiming. Thus, the FHWA believes that it is reasonable for agencies to retime those signals by 2017 that have not already been made compliant under a previous intersection or corridor retiming. The FHWA adopts the extension of the compliance dates for Sections 4D.26 and 4E.06 to 5 years after this final rule, or when timing adjustments are made to the individual intersections and/or corridor, whichever occurs first, as proposed in the NPA.

4. In the NPA, the FHWA proposed to revise and extend the compliance dates in Sections 8B.03 and 8B.04 related to requiring retroreflective strips on the back of Crossbuck signs and on the front and back of supports for Crossbuck signs at passive railroad grade crossings (those crossings that do not have gates and/or flashing lights activated upon approach of a train). As discussed in the NPA, the FHWA proposed to extend this compliance date to December 31,

2019, which would coincide with the date for adding YIELD or STOP signs with Crossbuck signs at passive grade crossings so that railroad companies and highway agencies can avoid unnecessary expense and achieve greater economies of sending sign crews to crossings only once rather than twice. The FHWA also proposed to extend the compliance date to clarify that the requirements for retroreflective strips are in Section 8B.04 as well as Section 8B.03 and to clarify that the compliance date was also intended to apply to the retroreflective strip on the backs of the Crossbuck signs. Two State DOTs and one consultant opposed this extension, suggesting instead that the dates be eliminated. Two commenters questioned the effectiveness of the devices but did not provide supporting evidence. As a result, the FHWA could not evaluate the commenters' effectiveness concerns. As to the suggestion of eliminating the compliance date entirely, the FHWA disagrees with those commenters because the extension proposed in the NPA provides an additional 9 years beyond the original 10-year compliance period established for this requirement in the 2000 edition of the MUTCD, while achieving the practical benefit of allowing agencies and companies to apply the retroreflective strips at the same time that they add YIELD or STOP signs at those same crossings. The FHWA adopts the revision and extension of this compliance date to December 31, 2019, as proposed in the NPA.

5. The FHWA proposed in the NPA to retain the existing target compliance dates for eight items that it deemed to be of critical safety importance, based on existing evidence, FHWA's subject matter expertise, and FHWA's experience in traffic control device matters. As stated in the NPA, final rules establishing compliance dates for each of the eight items clearly identified the safety justification for the compliance dates established. As a

general comment, the NCUTCD, the NACE, three State DOTs, two cities, and two State associations of engineers requested that all retained compliance dates be justified by a benefit/cost analysis in accordance with Executive Order 13563. The FHWA disagrees that such an analysis is necessary because the compliance dates are already in the MUTCD and were put in place prior to the issuance of the Executive Order. This rulemaking is not establishing new, more burdensome dates for these items and is actually relieving burdens associated with many existing compliance dates. The following paragraphs describe the concerns that commenters expressed specifically related to the target compliance dates retained by the FHWA.

The FHWA proposed to retain the January 17, 2013, target compliance date for provisions in Section 2A.19 requiring crashworthiness of existing sign supports on roads with posted speed limits of 50 miles per hour (mph) or higher. This compliance date was established in the 2003 edition of the MUTCD. The AASHTO, the NCUTCD, the NACE, four State DOTs, a city, and a state association of engineers requested extension of the January 17, 2013, compliance date to 2019, or the end of the useful life of the sign supports (with no specific compliance date), rather than retaining the existing compliance date. The commenters did not provide supporting evidence for their position. The FHWA disagrees with eliminating or extending the compliance date because eliminating fixed-object hazards on high-speed roads remains a critical safety need due to the potential for death or severe injury that can result from high-speed, run-off-the-road crashes when non-crashworthy sign supports are struck. The following data on fatal crashes on roads with speed limits of 50 mph or higher, where a sign support was the "most harmful event," was obtained from the Fatality Analysis Reporting System (FARS).²

Most harmful event	Year				
	2005	2006	2007	2008	2009
Highway Sign Post	47	56	54	71	53
Overhead Sign Support	9	9	12	17	12
Total Fatalities	56	65	66	88	65

During the 5-year period from 2005 to 2009, on average each year, 68 fatalities occurred that can be attributed to

collisions with sign supports. The most recent year where full data is available is 2009. The data does not differentiate

between crashworthy and non-crashworthy supports. However, based on this data, if the compliance date was

² <http://www.nhtsa.gov/FARS>.

extended by 6 years, about 400 potential fatalities might occur during that time. Collisions with sign supports are the cause of about 15 percent of the total fatalities involving poles of any sort. Nevertheless, they represent a significant problem on high-speed roads. To address this problem, in late 2000, the MUTCD addressed this issue by adding a requirement for a 10-year compliance date (2013), which was formally adopted in 2003. By 2013, agencies will have had 12 years to comply. The FHWA adopts the retention of the existing January 17, 2013, compliance date for this item, as proposed in the NPA.

For provisions in Section 2B.40 that require agencies to install additional ONE WAY signs at certain types of intersections, the FHWA proposed retaining the target compliance date of December 31, 2019, as established in the 2009 edition of the MUTCD. Two State DOTs and a county disagreed with retaining the existing compliance date and asked that the date be eliminated instead. The FHWA adopts the retention of the existing compliance date for this item, as proposed in the NPA, because of the safety issues associated with wrong-way travel on divided highways (the subject of a current National Transportation Safety Board (NTSB) investigation), research on the needs of older drivers, and the significant safety benefits to road users that the addition of such signs may provide.³

The FHWA proposed in the NPA to retain the December 31, 2019, target compliance date for the provisions in Sections 2C.06 through 2C.14 that require the use of various horizontal alignment warning signs and determinations of advisory speed values, adopted in the 2009 edition of the MUTCD. The AASHTO, the NCUTCD, the NACE, eight State DOTs, one city, a State association of engineers, and a consultant requested postponing the existing compliance date until National Cooperative Highway Research Program (NCHRP) Project 03-106 ("Traffic Control Device Guidelines for Curves") confirms or disproves the costs and benefits of these warning signs, rather than retaining the date. The FHWA disagrees with extending the date because the NCHRP research is due to be completed by the end of 2015, which is 4 years before the compliance date. Four years allows sufficient time for revision of the 2019 date, if

necessary. As stated in the NPA, the FHWA established the 10-year compliance date due to the safety issues associated with run-off-the-road crashes at horizontal curves and the disproportionate number of fatalities at horizontal curves on the Nation's highways. The FHWA adopts the retention of the existing compliance date for this item, as proposed in the NPA.

One State DOT disagreed with the FHWA's proposal in the NPA to retain the December 31, 2014, compliance date associated with requiring the use of LEFT EXIT plaques on guide signs for left exits established in Sections 2E.31, 2E.33, and 2E.36 of the 2009 edition of the MUTCD. The State DOT suggested eliminating, rather than retaining, the compliance date. The FHWA disagrees, because the 5-year target compliance date was established to address a recommendation of the NTSB arising from a significant safety concern with left-hand exits. The NTSB made a specific recommendation that the implementation of the LEFT plaque at left-hand exits be accelerated with a 5-year compliance date due to the fact that left-hand exits, though relatively rare, continue to violate driver expectancy at freeway and expressway locations. The lack of clear notice of a left-hand exit was cited as a contributing factor in a 2007 fatal crash of a motorcoach that inadvertently departed the freeway lanes at a left-hand exit. The FHWA adopts the retention of the December 31, 2014, compliance date in the final rule. As stated in the NPA, the installation of these plaques generally does not require replacement of the existing sign or sign support and this change affects relatively few existing locations throughout the country.

As proposed in the NPA, the FHWA adopts the retention of the existing December 31, 2011, target compliance date associated with the requirements in Sections 6D.03, 6E.02, and 7D.04 that all workers, including flaggers and school crossing guards must wear high-visibility apparel within the right-of-way of all highways, not just Federal-aid highways. Although a consultant suggested that the compliance date for high-visibility apparel should be eliminated because the compliance date will have expired by the time the final rule becomes effective, the FHWA retains the existing compliance date. Due to safety concerns and minimal costs, the FHWA does not believe agencies that have not yet complied should be relieved from compliance at the earliest possible time.

Finally, as proposed in the NPA, the FHWA adopts the retention of the

existing December 31, 2019, target compliance date for the provisions in Section 8B.04 that require the use of either a YIELD or STOP sign with the Crossbuck sign at all passive grade crossings. Two State DOTs and a consultant disagreed with retaining the existing compliance date, suggesting that the date be eliminated. One of these commenters stated that this signing was only minimally effective and that compliance by the existing date was too costly but did not provide any evidence for either of these statements. The FHWA disagrees, because the 10-year compliance period provides adequate time to install these signs and because research has found the signs are needed to improve grade crossing safety.⁴

Discussion of Comments on Section 2D.43 and Adopted Revisions

Comments on the provisions of Section 2D.43 regarding Street Name signs were submitted to the docket by officials and citizens of the Township of Lower Merion, Pennsylvania, the Town of Brookline, Massachusetts, citizens of Saugerties and Forest Hills, New York, and the organization Historic New England. The comments stated that the communities have "historic" Street Name signs that do not meet the Standards and Guidance of Section 2D.43 regarding color, letter size, and other design features, including retroreflectivity. These communities asked for an exemption from the MUTCD so that they can retain their historic Street Name signs without fear of noncompliance with the MUTCD. These docket comments are similar to other concerns raised previously to the FHWA by two other communities (Fox Point, Wisconsin, and Waverly, Pennsylvania). The FHWA understands the desire of some communities to retain truly historic Street Name signs that are a key component of maintaining the historic character and environment of a particular district.

The FHWA agrees to provide flexibility for communities with historic Street Name signs that do not meet the provisions of the MUTCD, where the community deems the historic Street Name signs to meet the need for effective navigational information to road users. However, the FHWA believes that such flexibility is appropriate only in specific circumstances and lower risk situations. The Code of Federal Regulations, in 36 CFR part 60, governs the listing on the

³ "Guidelines and Recommendations to Accommodate Older Drivers and Pedestrians," FHWA Report No. FHWA-RD-01-051, May 2001, can be viewed at the following Internet Web site: <http://www.tfhrc.gov/humanfac/01105/cover.htm>. Recommendations 1E(4), 1K(2), and 1K(3).

⁴ See NCHRP Report 470: Traffic-Control Devices for Passive Railroad-Highway Grade Crossings, available at http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_470-a.pdf.

National Register of Historic Places (NRHP) of historic districts and structures such as Street Name signs. Specifically, 36 CFR 60.4 provides criteria for evaluating a district to be identified as a historic district and for evaluating a system of structures, such as Street Name signs, to be identified as historic structures.

Therefore, the FHWA adds a new OPTION paragraph at the end of Section 2D.43 stating, "On lower speed roadways, historic street name signs within locally identified historic districts that are consistent with the criteria contained in 36 CFR 60.4 for such structures and districts may be used without complying with the provisions of Paragraphs 3, 4, 6, 9, 12 through 14, and 18 through 20 of this section."

The FHWA believes that the vast majority of what is expected to be a fairly small number of historic Street Name signs meeting the criteria will be on local roads with speed limits of 25 mph or less. If a community decides to use the new OPTION to retain existing historic Street Name signs within a historic district, the FHWA believes it is important for the community to ensure that the historic Street Name signs provide at least some degree of utility as navigational devices for road users. External illumination of the Street Name signs should be considered for this purpose. It is also important to note that the OPTION applies only to historic Street Name signs in historic districts meeting the eligibility criteria of 36 CFR 60.4 and does not apply to other types of traffic signs or devices, nor to locations outside of historic districts.

Rulemaking Analyses and Notices

Executive Order 12866 (Regulatory Planning and Review), Executive Order 13563 (Improving Regulation and Regulatory Review), and DOT Regulatory Policies and Procedures

The FHWA has determined that this action constitutes a significant regulatory action within the meaning of Executive Order 12866 and within the meaning of DOT regulatory policies and procedures due to the significant public interest in issues surrounding the MUTCD. This action complies with Executive Orders 12866 and 13563 to improve regulation. In particular, this action is consistent with, and can be seen as directly responsive to, the requirements of Executive Order 13563, and in particular its requirement for retrospective analysis of existing rules (section 6), with an emphasis on streamlining its regulations. This approach is also consistent with

Presidential Memorandum, Administrative Flexibility, which calls for reducing burdens and promoting flexibility for State and local governments.

The changes in the MUTCD will reduce burdens on State and local government in the application of traffic control devices. They will provide additional clarification, guidance, and flexibility to such governments. The uniform application of traffic control devices will greatly improve roadway safety and traffic operations efficiency. The standards, guidance, options, and support are also used to create uniformity and to enhance safety and mobility. The changes in this rulemaking will not require the expenditure of additional funds, but rather will provide State and local governments with the flexibility to allocate scarce financial resources based on local conditions and the useful service life of its traffic control devices. It is anticipated that the economic impact of this rulemaking will be minimal and indeed costs and burdens will be reduced, not increased; therefore, a full regulatory evaluation is not required.

As noted, this action streamlines existing significant regulation to reduce burden and promote the flexibilities of State and local governments under Executive Order 13563. In response to concerns about the potential impact of previously adopted MUTCD compliance dates on State and local governments in the current economic climate, the FHWA published a Request for Comments on traffic control device compliance dates. The FHWA asked for responses to a series of seven questions about compliance dates, their benefits and potential economic impacts, especially economic hardships to State and local governments that might result from specific target compliance dates for upgrading certain non-compliant existing devices. The responses received from that notice were considered in the development of this final rule. The FHWA anticipates that this rulemaking will reduce the impacts of compliance dates on State and local highway agencies and will streamline and simplify information contained in the MUTCD without reducing safety. The FHWA has retained compliance dates where it is of critical safety importance.

Regulatory Flexibility Act

In compliance with the Regulatory Flexibility Act (Pub. L. 96-354, 5 U.S.C. 601-612), the FHWA has evaluated the effects these changes on small entities. I certify that this action will not have a significant economic impact on a

substantial number of small entities because this rule will reduce burdens and provide clarification and additional flexibility, and will not require an expenditure of funds.

Executive Order 13132 (Federalism)

This action has been analyzed in accordance with the principles and criteria contained in Executive Order 13132 dated August 4, 1999. This action will increase flexibility for State and local governments. The FHWA has determined that this action would not have sufficient federalism implications to warrant the preparation of a federalism assessment. The FHWA has also determined that this rulemaking will not preempt any State law or State regulation or affect the States' ability to discharge traditional State governmental functions. The MUTCD is incorporated by reference in 23 CFR part 655, subpart F. These proposed amendments are in keeping with the Secretary of Transportation's authority under 23 U.S.C. 109(d), 315, and 402(a) to promulgate uniform guidelines to promote the safe and efficient use of the highway. The overriding safety benefits of the uniformity prescribed by the MUTCD are shared by all of the State and local governments. In general, this rule will increase flexibility for States and local governments. To the extent that these amendments override any existing State requirements regarding traffic control devices, they do so in the interest of national uniformity.

Unfunded Mandates Reform Act of 1995

This rule will not impose unfunded mandates as defined by the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4, 109 Stat. 48, March 22, 1995). On the contrary, the rule provides additional guidance, flexibility, and clarification and would not require an expenditure of funds. This action will not result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of \$140.8 million or more in any 1 year (2 U.S.C. 1532).

Executive Order 13175 (Tribal Consultation)

The FHWA has analyzed this action under Executive Order 13175, dated November 6, 2000, and believes that it will not have substantial direct effects on one or more Indian tribes, will not impose substantial direct compliance costs on Indian tribal governments, and will not preempt tribal law. Therefore, a tribal summary impact statement is not required.

Executive Order 13211 (Energy Effects)

The FHWA has analyzed this final rule under Executive Order 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use. The FHWA has determined that this is not a significant energy action under that order because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. Therefore, a Statement of Energy Effects under Executive Order 13211 is not required.

Executive Order 12372 (Intergovernmental Review)

Catalog of Federal Domestic Assistance Program Number 20.205, Highway Planning and Construction. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program.

Paperwork Reduction Act

Under the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501, *et seq.*), Federal agencies must obtain approval from the Office of Management and Budget for each collection of information they conduct, sponsor, or require through regulations. The FHWA has determined that this action does not contain a collection of information requirement for the purposes of the PRA.

Executive Order 12988 (Civil Justice Reform)

This action meets applicable standards in Sections 3(a) and 3(b)(2) of Executive Order 12988, Civil Justice Reform, to minimize litigation, to eliminate ambiguity, and to reduce burden.

Executive Order 13045 (Protection of Children)

The FHWA has analyzed this action under Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. This is not an economically significant action and does not concern an environmental risk to health or safety that might disproportionately affect children.

Executive Order 12630 (Taking of Private Property)

This action would not affect a taking of private property or otherwise have taking implications under Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights.

National Environmental Policy Act

The agency has analyzed this action for the purpose of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and has determined that it will not have any effect on the quality of the environment and meets the criteria for the categorical exclusion at 23 CFR 771.117(c)(20).

Regulation Identification Number

A regulation identification number (RIN) is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN contained in the heading of this document can be used to cross reference this action with the Unified Agenda.

List of Subjects in 23 CFR Part 655

Design standards, Grant programs—Transportation, Highways and roads, Incorporation by reference, Signs, Traffic regulations.

Issued on: May 9, 2012.

Victor M. Mendez,
Administrator.

In consideration of the foregoing, the FHWA is amending title 23, Code of Federal Regulations, part 655, subpart F as follows:

PART 655—TRAFFIC OPERATIONS

■ 1. The authority citation for part 655 continues to read as follows:

Authority: 23 U.S.C. 101(a), 104, 109(d), 114(a), 217, 315 and 402(a); 23 CFR 1.32; and 49 CFR 1.48(b).

Subpart F—[Amended]

■ 2. Revise § 655.601 to read as follows:

§ 655.601 Purpose.

To prescribe the policies and procedures of the Federal Highway

Administration (FHWA) to obtain basic uniformity of traffic control devices on all streets and highways in accordance with the following references that are approved by the FHWA for application on Federal-aid projects:

(a) MUTCD.

(b) AASHTO Guide to Metric Conversion.

(c) AASHTO Traffic Engineering Metric Conversion Factors.

(d) The standards required in this section are incorporated by reference into this section in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the FHWA must publish notice of change in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at the Federal Highway Administration, Office of Transportation Operations, 1200 New Jersey Avenue SE., Washington, DC 20590, (202) 366-8043 and is available from the sources listed below. It is also available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA call (202) 741-6030, or go to <http://www.archives.gov/federal-register/cfr/index.html>.

(1) AASHTO, American Association of State Highway and Transportation Officials, Suite 249, 444 North Capitol Street NW., Washington, DC 20001

(i) AASHTO Guide to Metric Conversion, 1993;

(ii) AASHTO, Traffic Engineering Metric Conversion Factors, 1993—Addendum to the Guide to Metric Conversion, October 1993.

(2) FHWA, Federal Highway Administration, 1200 New Jersey Avenue SE., Washington, DC 20590, telephone (202) 366-1993, also available at <http://mutcd.fhwa.dot.gov>.

(i) Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), 2009 Edition, including Revisions No. 1 and No. 2, FHWA, dated May 2012.

(ii) [Reserved]

[FR Doc. 2012-11710 Filed 5-10-12; 4:15 pm]

BILLING CODE 4910-22-P



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2012-06
SUBJECT: CONSULTANT AGREEMENTS
ISSUED DATE: November 15, 2012
EFFECTIVE DATE: February 1, 2013

This memorandum combines Section 5-5 and 5-6 of the BLRS Manual dated January 2012 and July 2006.

On November 30, 2005, Public Law 109-115, HR 3058 amended 23 CFR 112(b)(2) relating to the award of consultant services when using federal-aid funding. This amendment eliminated existing provisions of the law allowing alternative State procedures to select and procure consultant services on other than small purchases less than \$150,000. The Code of Federal Regulations (CFR) has not yet been amended based on this public law. The Illinois Division of the Federal Highway Administration (FHWA) made the Central Bureau of Local Roads & Streets (BLRS) aware of this issue on February 15, 2012 and requested that Section 5-6 of the BLRS Manual be updated accordingly.

The FHWA has developed the *Federal-Aid Essentials for Local Public Agencies* website that provides a series of short videos. Please go to www.fhwa.dot.gov/federal-aidessentials/catmod.cfm?id=14 to watch the video and review documents concerning Consultant Services Overview.

Also, starting in 2012, the Central BLRS, with cooperation from American Council of Engineering Companies - Illinois (ACEC-IL), began developing a single consultant agreement form for preliminary engineering and construction engineering using Federal-aid (FA), state, Motor Fuel Tax (MFT), or Township Bridge Program (TBP) funding. Form BLR 05510 will be revised to incorporate Forms BLR 05511, BLR 05512, BLR 05610, and BLR 5611. The following forms will be renumbered: Form BLR 05612 will be BLR 05530; Form BLR 05613 will be BLR 05535; and Form BLR 05620 will be BLR 05540.

BLRS Manual Sections 5-5 and 5-6 have been combined to a single section covering all engineering services agreements. Revision marks are not shown since the new Section 5-5 has been entirely revised and reorganized. The following describes major changes:

PM2012-06
November 15, 2012

- Existing relationships with a professional design firm or a sole proprietorship may not be used to meet the Qualification Based Selection (QBS) requirement on any federal-aid funded engineering services contract that exceeds \$150,000 and is executed on or after February 1, 2013.
- Master Task Orders – these types of engineering services contracts will allow agencies to define a specific scope of work (i.e. Construction Supervision) that is not tied to a specific project. Task orders will be issued once the consultant is needed.
- Length of Services – the department has established 10 years as a reasonable maximum contract length including any extensions. The local public agency shall comply with any statutory or local ordinance imposing a shorter contract length.
- Conflict of Interests – a new section was developed to identify common conflict of interests that are not allowed. There may be other situations involving conflict of interest not contained in the manual.
- QBS Requirements – the manual has been revised to identify when QBS is required for each funding type.
- Lump Sum – the maximum dollar amount for using lump sum has been increased to \$20,000.
- Cost Plus Fixed Fee (CPFF) – the variables contained in this formula have been better defined.
- Direct Labor Multiplier (DLM) – this compensation formula is no longer allowed on federal-aid engineering services contracts.

All engineering services contracts executed on or after February 1, 2013 with FA, state, MFT, or TBP funding shall follow the revised policies established in Section 5-5. The department does not have oversight over contracts for engineering services funded entirely with local funds. However, it is recommended the QBS procedures contained in Section 5-5 be followed. The procurement method used for selection of engineering services will not impact funding for the construction of a project.

Contact the Local Policy & Technology Unit at DOT.LocalPolicy@illinois.gov with any questions.



Acting Engineer of Local Roads and Streets

Attachments

cc: Norm Stoner, FHWA
Dave Kennedy, ACEC - Illinois

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U.S. Department of
Transportation
**Federal Highway
Administration**

MEMORANDUM

Subject: **INFORMATION:** Awarding Engineering and Design
Services Contracts Based on Brooks Act
Requirements

Date: December 12, 2005

From: /s/ Original signed by:
Dwight A. Horne
Director of Program Administration

Refer To: HIPA-20

To: Division Administrators

On November 30, 2005 the President signed into law the Transportation, Treasury, Housing and Urban Development, the Judiciary, the District of Columbia, and Independent Agencies Appropriations Act, 2006 (119 Stat. 2396; Public Law 109- 115, HR 3058 ("the FY 2006 Appropriations Act"). Section 174 of this Act, amends 23 U.S.C. §112(b)(2) relating to the award of engineering and design services (A&E) contracts that are directly related to a construction project and use Federal- aid highway funding. This amendment strikes existing provisions of law and requires that these contracts shall be awarded in the same manner as a contract for architectural and engineering services is negotiated under the "Brooks Act" provisions contained in chapter 11 of 40 U.S.C. (copy attached).

The Brooks Act requires agencies to promote open competition by advertising, ranking, selecting, and negotiating contracts based on demonstrated competence and qualifications for the type of engineering and design services being procured, and at a fair and reasonable price. Engineering and design related services are defined in 23 U.S.C. §112 (b)(2)(A) and 23 C.F.R. §172.3 to include program management, construction management, feasibility studies, preliminary engineering, design engineering, surveying, mapping, or other related services. These other services may include professional engineering related services, or incidental services that may be performed by a professional engineer, or individuals working under their direction, who may logically or justifiably perform these services.

The changes resulting from this amendment in Federal law are effective immediately. Effective with the enactment of the FY 2006 Act, §112(b)(2) of title 23 reads as follows:

"(2) Contracting for Engineering and Design Services.- -

- A. General Rule.- - Subject to paragraph (3), each contract for program management, construction management, feasibility studies, preliminary engineering, design, engineering, surveying, mapping or architectural related services with respect to a project subject to the provisions of subsection(a) of this section shall be awarded in the same manner as a contract for architectural and engineering services is negotiated under chapter 11 of title 40.
- B. Performance and Audits- Any contract or subcontract awarded in accordance with subparagraph (A), whether funded in whole or in part with Federal- aid highway funds, shall be performed and audited in compliance with the cost principles contained in the [Federal Acquisition Regulations of part 31 of title 48, Code of Federal Regulations](#)
- C. Indirect Cost Rates.- Instead of performing its own audits, a recipient of funds under a contract or subcontract awarded in accordance with subparagraph (A) shall accept indirect cost rates established in accordance with the Federal Acquisition Regulations for 1- year applicable accounting periods by a cognizant Federal or state government agency, if such rates are not currently under dispute.
- D. Application of Rates.- Once a firm's indirect cost rates are accepted under this paragraph, the recipient of the funds shall apply such rates for the purpose of contract estimation, negotiation, administration, reporting, and contract payment and shall not be limited by administrative or defacto ceilings of any kind.
- E. Prenotification; Confidentiality of Data.- A recipient of funds requesting or using the cost and rate data described in subparagraph (D) shall notify any affected firm before such request or use. Such data shall be confidential and shall not be accessible or provided, in whole or in part, to another firm or another government agency which is not part of the group of agencies sharing cost data under this paragraph, except for written permission of the audited firm. If prohibited by law, such cost and rate data, shall not be disclosed under any circumstances.

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F. Subparagraphs (B),(C),(D), and (E) herein shall not apply to the States of West Virginia or Minnesota.

As a result, State and local agencies are no longer entitled to procure engineering and design related service contracts (directly relating to construction) with Federal- aid highway funding using either "alternative" or "equivalent" Brooks Act procedures that were permitted prior to this amendment. State and local agencies will also be required to use the indirect cost rates established by a cognizant agency audit (23 C.F.R. §172.7) based on the cost principles contained in 48 C.F.R. Part 31 for the consultant, eliminating the placing of caps on indirect cost rates.

West Virginia and Minnesota are granted exceptions from the requirements relating to audits, indirect cost rates, pre- notification and confidentiality of data. However these States must also follow the Brooks Act requirements when procuring engineering and design services using Federal- aid highway funding.

We are currently reviewing the Federal Regulations (23 C.F.R. Part 172) pertaining to the administration of engineering and design related services contracts to determine the modifications that may be required to our existing regulations. We are also reviewing the implementing guidance that supports administering engineering and design related service contracts (<http://www.fhwa.dot.gov/programadmin/172qa.cfm>) to determine what specific changes need to be made to implement Brooks Act procurement policies.

The laws, policies, procedures, and practices that State and local agencies follow in procuring engineering and design related service using Federal- aid highway funding need to comply with the amendments to §112(b)(2) that are contained in Section 174 of the FY 2006 Appropriations Act. Pursuant to the Secretary's authority under 23 U.S.C §315 all requests for proposals (RFPs) issued on or after December 1, 2005 for engineering and design related service contracts directly related to a construction project using Federal- aid highway funding are required to comply with these new requirements. As a result, to ensure compliance with this amendment the Division offices need to review these requirements with their state DOT partners and advise the States of the necessity to revise, as appropriate all requests for proposals that conflict with the Brooks Act requirements that were not authorized on or prior to November 30, 2005.

In the interim, to facilitate the provision of immediate guidance on implementing this amendment to the State DOTs, the Brooks Act provisions and the FAR regulations implementing these requirements are attached. If you have any questions pertaining to the implementation of §174 of the FY 2006 Appropriations Act, please contact Mr. Jon Obenberger (jon.obenberger@fhwa.dot.gov) in my Office, or Mr. Steve Rochlis (steve.rochlis@fhwa.dot.gov) of the Chief Counsel's office.

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Procurement, Management, and Administration of Engineering and Design Related Services - Questions and Answers

Last Updated March 2, 2012

[Update History](#) (.pdf, 31 kb)

Introduction

This web page provides guidance that supplements Federal laws and regulations relating to the procurement, management, and administration of engineering and design related services using Federal-aid highway program (FAHP) funding. As Federal laws and regulations governing these service contracts are complex, the purpose of the guidance is to clarify the statutory and regulatory requirements of the Federal Highway Administration (FHWA) associated with the use of engineering and design related consultant services.

Definitions

Unless indicated otherwise, the questions and answers pertain to engineering and design related service contracts (as defined in 23 U.S.C. 112(b)(2)(A) and 23 CFR 172.3) using FAHP funding and directly related to an ultimate construction project. Unless otherwise specified, the definition of the terms provided within the definition section of the referenced Federal laws and regulations (23 U.S.C. 101, 40 U.S.C. 1102, 23 CFR 172.3, and 48 CFR 31.001) are applicable to these questions and answers.

While several regulatory requirements and policies contained within these questions and answers are applicable to design-build, public private partnerships, and other innovative project-delivery methods, this guidance is not intended to address these methods. For additional information regarding design-build contracting, please visit the FHWA Design Build web site at: <http://www.fhwa.dot.gov/construction/cqit/desbuild.cfm>. Information on other innovative contracting methods may be obtained at: <http://www.fhwa.dot.gov/construction/cqit/sep14.cfm>.

Acronyms

AASHTO - American Association of State Highway and Transportation Officials
 CASB - Cost Accounting Standards Board
 CE - Categorical Exclusion
 CFR - Code of Federal Regulations
 CPA - Certified Public Accountant
 DBE - Disadvantaged Business Enterprise
 DOT - Department of Transportation (or equivalent State highway agency)
 FAHP - Federal-aid highway program
 FAR - Federal Acquisition Regulation
 FHWA - Federal Highway Administration
 FONSI - Finding of No Significant Impact
 GAGAS - Generally Accepted Government Auditing Standards
 NEPA - National Environmental Policy Act
 ROD - Record of Decision
 U.S.C. - United States Code

Questions and Answers

The guidance is provided in the form of questions and answers that have been categorized as noted below. The statutory and regulatory bases, as well as references to other resource material, are provided where appropriate within each specific question and answer. The references to related questions and answers, statutory and regulatory provisions, and supporting information contained in each response are intended to enhance understanding and provide further clarification of Federal requirements and FHWA policies associated with the use of engineering and design related consultant services.

Select a category to access the available questions and answers.

- I. [Competitive Negotiation/Qualifications Based Selection Procurement Procedure](#)

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- II. [Other Procurement Procedures](#)
- III. [Indirect Cost Rates and Audits](#)
- IV. [Compensation \(Payment\) Methods](#)
- V. [Contract Negotiation](#)
- VI. [Contract Administration](#)
- VII. [Disadvantaged Business Enterprise \(DBE\) Considerations](#)
- VIII. [Conflicts of Interest](#)
- IX. [Other Considerations](#)

[Complete Set of Questions and Answers](#) (.pdf, 0.2 mb)

- ["Consultant Services Requirements & Updated Q&A Guidance" Web Conference](#) 03/27/2012
Recording of web conference conducted on March 27, 2012, to provide a discussion of key Federal requirements and the clarifying guidance provided within the available questions and answers.
-

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Federal-aid Program Overview Consultant Services

Consultant Services Overview

Certain Federal requirements apply to engineering and design-related consultant services contracts



[Companion Resource](#) (PDF, 232 KB) : Includes the printable script for this video

Web Resources: Includes Web links to related Code of Federal Regulations and other links appropriate to this video module.

- [Information on FHWA's consultant services policy and guidance](#)
- [Additional regulation on administration of engineering and design-related service contracts](#)
- [Federal regulations on administration of engineering and design-related service contracts](#)
- [Information on consultant services in Q & A format](#)

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2012-07
SUBJECT: ASH TREE REMOVAL DUE TO EMERALD ASH BORER
ISSUED DATE: November 26, 2012
EFFECTIVE DATE: November 26, 2012

This memorandum revises Section 14-1 dated January 2012 of the Bureau of Local Roads & Streets Manual.

The Emerald Ash Borer (EAB), *Agilus planipennis* Fairmaire, is an exotic beetle that was discovered in southeastern Michigan near Detroit in the summer of 2002. The adult beetles nibble on ash foliage but cause little damage. The larvae (the immature stage) feed on the inner bark of ash trees, disrupting the tree's ability to transport water and nutrients. EAB probably arrived in the United States on solid wood packing material carried in cargo ships or airplanes originating in its native Asia. EAB is also established in Windsor, Ontario, was found in Ohio in 2003, northern Indiana in 2004, northern Illinois and Maryland in 2006, western Pennsylvania and West Virginia in 2007, Wisconsin, Missouri and Virginia in the summer of 2008, Minnesota, New York, Kentucky in the spring of 2009, Iowa in the spring of 2010, Tennessee in the summer of 2010, and Connecticut, Kansas, and Massachusetts in the summer of 2012. Since its discovery, EAB has:

- Killed tens of millions of ash trees;
- Caused regulatory agencies and the USDA to enforce quarantines and fines to prevent potentially infested ash trees, logs or hardwood firewood from moving out of areas where EAB occurs.
- Cost governmental agencies, property owners, nursery operators and forest products industries tens of millions of dollars.

EAB infestation may be controlled or managed by using a combination of methods (biological, chemical, systematic removal, or complete removal). For detailed information and management resources, visit the Emerald Ash Borer website at www.emeraldashborer.info.

The Illinois Department of Agriculture (IDOA) has established a web site to assist and educate individuals about EAB. For the most recent information about confirmed locations, please visit www.agr.state.il.us/eab/.

A Local Public Agency (LPA) may use Motor Fuel Tax (MFT) funds under the general maintenance program for the systematic or complete removal of Ash trees if the following criteria are met:

- LPA is located in the Emerald Ash Borer quarantined zone published by the Illinois Department of Agriculture;
- the Ash trees are located on the public right-of-way or are a potential hazard to vehicle travel;
- the Ash trees to be removed are shown in a detailed inventory; and
- MFT funds are not used to plant replacement trees.

Contact the Local Policy & Technology Unit at IDOT.LocalPolicy@illinois.gov with any questions.

A handwritten signature in cursive script that reads "James K. Klein".

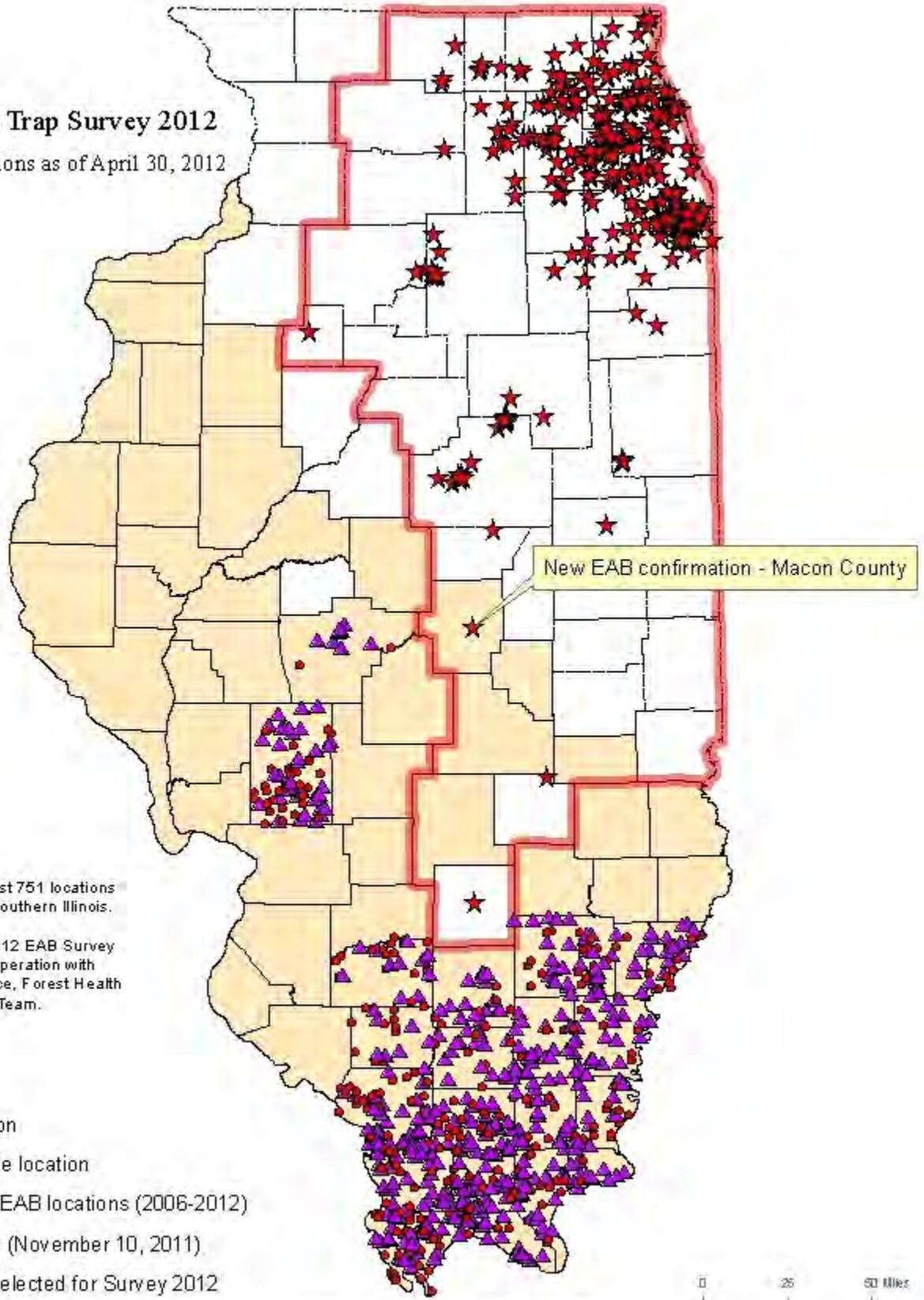
Acting Engineer of Local Roads and Streets

KB/kb

Attachments

Illinois EAB Trap Survey 2012

751 survey locations as of April 30, 2012



This map depicts the first 751 locations of the 2012 Survey in Southern Illinois.

The locations for the 2012 EAB Survey were determined in cooperation with the USDA Forest Service, Forest Health Technology Enterprise Team.

Legend

-  Trap location
-  Inaccessible location
-  Confirmed EAB locations (2006-2012)
-  Quarantine (November 10, 2011)
-  Counties Selected for Survey 2012



Wanda D. Gossard, PE, CHM
Illinois Department of Natural Resources
Division of Natural Resources

Illinois EAB Trap Survey 2012
as of April 30, 2012



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Test/Research Results	Insecticide Research	Survey Research
Dispersal Information	Biosurveillance	Host Range Information
Economic Impact	Ash Tree Genetics and Ecology	

Test/Research Results

- Factors affecting the survival of ash (*Fraxinus* spp.) trees infested by emerald ash borer (*Agrilus planipennis*)**
 2012 - Kathleen S. Knight, John P. Brown and Robert P. Long
 The article is on the survival analysis of ash trees in Ohio. According to Kathleen Knight, the main take-home message was that ash trees actually died slightly faster in stands with lower densities of ash, the opposite of what the authors thought would happen. This is just the speed of mortality, not the % mortality (almost all the ash trees die eventually no matter what).

- Historical Accumulation of Nonindigenous Forest Pests in the Continental United States**
 December 2010 - American Institute of Biological Sciences
AIBS Press Release
 Nonindigenous insects and pathogens continue to become established in US forests with regularity despite regulations intended to prevent this, according to a study published in the December 2010 issue of BioScience. The study, by a team led by Juliann E. Aukema, of the National Center for Ecological Analysis and Synthesis in Santa Barbara, California, (including MSU's Deb McCullough), found that nonindigenous insects are being newly detected in US forests at a rate of about 2.5 per year, and high-impact insects and pathogens that cause significant effects in forests, including tree death, are being newly detected every 2 to 2.5 years. The rate of detection of harmful forest invaders seems to have increased in the past two decades.



- Risk Assessment of the Movement of Firewood within the United States**
 (PDF, 3,315 KB)
 May 2010 - USDA APHIS
 Exotic and native forest pests such as *Agrilus planipennis* (emerald ash borer), *Anoplophora glabripennis* (Asian longhorned beetle), and others cause serious damage to urban and natural forests in the United States. These pests and many others disperse various distances through multiple pathways including movement of nursery stock and firewood. Firewood is a raw forest product that is widely utilized and moved throughout the United States with relatively limited consideration of the potential pests within or the associated risks. We conducted an assessment and examined factors that may affect the risk associated with the movement of firewood such as users, movement, insects and diseases, potential impact to natural and urban forests, and trends in firewood use.
- Geographic Origin of North America's Emerald Ash Borer**  (PDF, 0.08MB)
 Jim Smith, Michigan State University - This research is looking for the origins of EAB found in North America by looking at the genetic similarities in samples of EAB populations from Asia and comparing them to North American populations.
- Studies to Develop an Emerald Ash Borer Survey Trap**  (PDF, 0.09MB)
 Jason B. Oliver, Joe Francese, Vic Mastro, Ivich Fraser, Dave Lance, Nadeer Youssef - Studies to develop an emerald ash borer survey trap through trap location, seedling tree damage, trap design evaluation.
- Developing a Fast, Inexpensive Method to Extract and Analyze Imidacloprid Residue in Plant Tissue**
 (PDF, 0.06MB)
 Phil Lewis and Deborah G. McCullough - A cheap, rapid method to analyze chemical residue in treated trees is necessary in order to best assess efficacy of different treatments.
- Genetic Analysis of Emerald Ash Borer**  (PDF, 0.02MB)
 Jim Smith, Bob Haack and Leah Bauer - estimate the geographic origin of emerald ash borer populations in Asia that gave rise to EAB in North America
- Exploration for Emerald Ash Borer in China**  (PDF, 0.03MB)
 Houping Liu, Toby R. Petrice, Leah S. Bauer, Robert A. Haack, Ruitong Gao, and Tonghai Zhao - research on the study of the natural enemy complex of EAB in China

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Insecticide Research

Research on methods to control EAB began in 2002. Research is ongoing, and as methods are developed, more information will be available.

- **"Slow Ash Mortality" – SLAM Pilot Project**
Description: The SLAM project is a collaborative effort involving Michigan State University, the USDA Forest Service, USDA Animal and Plant Health Inspection Service (APHIS), Michigan Technological University (MTU), the Michigan Dept. of Agriculture and Rural Development (MDARD), the Michigan Dept. of Natural Resources (MDNR), and Michigan Conservation Districts in Michigan's Upper Peninsula. The goal of the SL.A.M. pilot project in Michigan's Upper Peninsula is to delay and slow the expansion of ash mortality by reducing populations of the beetle in newly-infested sites, outside of known EAB infestations.
- **Frequently Asked Questions Regarding Potential Side Effects of EAB Insecticides**  (PDF, 311KB)
February 2011
Research and Extension Specialists from Michigan State University, the Ohio State University OARDC and Extension, and University of Minnesota Extension have put together a comprehensive publication that addresses questions and concerns regarding insecticide use to control emerald ash borer.
- **Control of Emerald Ash Borer with Microbial Insecticides**  (PDF, 0.05MB)
Revised 4/14/04
Leah S. Bauer, Houping Liu, and Deborah L. Miller - studying the efficacy of registered microbial insecticides for EAB control in environmentally sensitive habitats
- **Evaluation of Perma Guard D-20 and Imidacloprid to Control Emerald Ash Borer**  (PDF, 0.02MB)
Robert A. Haack and Toby R. Petrice - This study tested the effectiveness D-20 by Perma Guard (Albuquerque, NM) in controlling emerald ash borer
- Research abstracts and other information addressing the EAB problem in North America.
 - 2009 
 - 2007 
 - 2006  (PDF, 4.78MB)
 - 2005 
 - 2004 
 - 2003 

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Survey Research

- **Evaluation of Different Trap Types and Lures for Capturing Emerald Ash Borer Adults in Low Density Populations**
Therese M. Poland, Deborah G. McCullough, Andrew J. Storer, Jordan M. Marshall, and Ivich Fraser
(from Proceedings of the 22nd U.S. Department of Agriculture Interagency Research Forum on Invasive Species 2011)
- **Utilizing Girdled Ash Trees for Optimal Detection, Delimitation and Survey of Low Density Emerald Ash Borer Populations**
Nathan W. Siegert, Nicholas J. Gooch, Deborah G. McCullough, Therese M. Poland, and Robert L. Heyd
(from Proceedings of the 22nd U.S. Department of Agriculture Interagency Research Forum on Invasive Species 2011)
- **Optimization of Trap Color for Emerald Ash Borer (Coleoptera: Buprestidae)**
By Joseph A. Francese, Damon J. Crook, Ivich Fraser, David R. Lance, Alan J. Sawyer, and Victor C. Mastro
(from Journal of Economic Entomology 103(4):1235-1241. 2010)
- **Effects of Trap Type, Placement and Ash Distribution on Emerald Ash Borer Captures in a Low Density Site**
By Deborah G. McCullough, Nathan W. Siegert, Therese M. Poland, Steven J. Pierce, and Su Zie Ahn
(from Environmental Entomology 40(5):1239-1252. 2011)
- **"Slow Ash Mortality" – SLAM Pilot Project**
Description: The SLAM project is a collaborative effort involving Michigan State University, the USDA Forest Service, USDA Animal and Plant Health Inspection Service (APHIS), Michigan Technological University (MTU), the Michigan Dept. of Agriculture and Rural Development (MDARD), the Michigan Dept. of Natural Resources (MDNR), and Michigan Conservation Districts in Michigan's Upper Peninsula. The goal of the SL.A.M. pilot project in Michigan's Upper Peninsula is to delay and slow the expansion of ash mortality by reducing populations of the beetle in newly-infested sites, outside of known EAB infestations.
- **Using Double-Decker Traps to Detect Emerald Ash Borer**  (PDF, 496KB)
April 2009
Deborah G. McCullough and Therese Poland - Detecting or monitoring populations of emerald ash borer

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(*Agrilus planipennis* Fairmaire) is very difficult when infestations are relatively new or when densities of this invasive pest are low. The Double-Decker (DD) trap is designed to integrate several visual and olfactory cues that are likely to attract EAB beetles. The DD traps are designed to be highly apparent to beetles. The vertical silhouette of the DD trap somewhat mimics the silhouette of an open-grown tree. The trap includes two purple panels, partly because beetles respond positively to that particular shade of purple. The two panels help to mimic the shape of a tree "canopy." In addition, they increase the surface area available for trapping beetles.

- **Using Girdled Trap Trees Effectively For EAB Detection, Delimitation & Survey**  (PDF, 407KB)
July 2007 - Dr. Deborah G. McCullough and Dr. Nathan W. Siegert
- **Characteristics and distribution of potential ash tree hosts for Emerald Ash Borer**  (PDF, 0.07MB)
David W. MacFarlane and Shawna Patterson Meyer - This report highlights some potential risk factors related to ash host characteristics and spatial distribution to potential risk from EAB.
- **Improving Survey Methodology for Emerald Ash Borer**  (PDF, 0.03MB)
2004 - David W. MacFarlane - Ongoing research to improve survey methodologies for detecting emerald ash borer and establish baseline data for estimating risk of spread and establishment across Michigan.
- **Ash dieback survey slides**
(power point presentation) David Smitley - comparison of ash dieback for 2003 and 2004

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Survival of EAB

- **Risk Assessment of the Movement of Firewood within the United States**  (PDF, 3,315 KB)
May 2010 - USDA APHIS
Exotic and native forest pests such as *Agrilus planipennis* (emerald ash borer), *Anoplophora glabripennis* (Asian longhorned beetle), and others cause serious damage to urban and natural forests in the United States. These pests and many others disperse various distances through multiple pathways including movement of nursery stock and firewood. Firewood is a raw forest product that is widely utilized and moved throughout the United States with relatively limited consideration of the potential pests within or the associated risks. We conducted an assessment and examined factors that may affect the risk associated with the movement of firewood such as users, movement, insects and diseases, potential impact to natural and urban forests, and trends in firewood use.
- **Emerald Ash Borer Survival in Firewood**  (PDF, 0.03MB)
2003 - Robert A. Haack and Toby R. Petrice - This study looked at firewood infested with emerald ash borer, to determine the survival rate.
- **Survival of Emerald Ash Borer in Chips**  (PDF, 0.02MB)
2003 - Deborah G. McCullough, Therese M. Poland and David Cappaert - This study was to determine survival of EAB in chips of different sizes.

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Biosurveillance

- ***Cerceris fumipennis*?**  (PDF, 2MB)
2009 - A Biosurveillance Tool for Emerald Ash Borer. Canadian Food Inspection Agency

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Dispersal Information

- **Factors affecting the survival of ash (*Fraxinus* spp.) trees infested by emerald ash borer (*Agrilus planipennis*)**
2012 - Kathleen S. Knight, John P. Brown and Robert P. Long
The article is on the survival analysis of ash trees in Ohio. According to Kathleen Knight, the main take-home message was that ash trees actually died slightly faster in stands with lower densities of ash, the opposite of what the authors thought would happen. This is just the speed of mortality, not the % mortality (almost all the ash trees die eventually no matter what).
- **Emerald Ash Borer Flight Estimates Revised**  (PDF, 200 KB)
2007 - Robin A. J. Taylor, Therese M. Poland, Leah S. Bauer, Neith N. Windell, and James L. Kautz
- **Is Emerald Ash Borer an Obligate Migrant?**  (PDF, 59 KB)
2006 - Robin A. J. Taylor, Therese M. Poland, Leah S. Bauer, and Robert Haack
- **Emerald Ash Borer Flight Potential**  (PDF, 16 KB)
2005 - Robin A. J. Taylor, Leah S. Bauer, Deborah L. Miller, and Robert Haack
- **Flight Potential of the Emerald Ash Borer**  (PDF, 774 KB)
2004 - Leah S. Bauer, Deborah L. Miller, Robin A. J. Taylor, and Robert Haack

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- **Dispersal of Emerald Ash Borer: A Case Study at Tipton, Michigan**  (PDF, 20 KB)
2003 - Deborah G. McCullough, Therese Poland and David Cappaert - assess dispersal of one generation of emerald ash borer adults in a rural area
- **Emerald Ash Borer Adult Dispersal**  (PDF, 23 KB)
Robert A. Haack, Toby R. Petrice - This study evaluated emerald ash borer, adult dispersal at two Michigan sites in early summer 2003.

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Host Range Information

- **Host Range of Emerald Ash Borer**  (PDF, 0.02MB)
Robert A. Haack, Toby R. Petrice, Deborah L. Miller, Leah S. Bauer and Nathan M. Schiff - In 2003, foliage of several trees and shrubs as food for emerald ash borer (EAB), *Agrilus planipennis* Fairmaire, adults were evaluated in a series of no-choice and choice tests that were conducted indoors in Michigan
- **Host Range and Host Preference of Emerald Ash Borer**  (PDF, 0.02MB)
2003 - Deborah G. McCullough, Andrea Agius, David Cappaert, Therese Poland, Debbie Miller and Leah Bauer - Our first objective is to evaluate alternate species of concern to determine whether they are acceptable to ovipositing adult beetles and whether they are suitable for larval development. We also assessed alternate hosts with a series of field tests.

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Economic Impact

- **EAB Economic Impact (OSU)**  (PDF, 0.10MB)
January 2007 - Matt Bumgardner, Drew Todd and Davis Syndor, the Ohio State University - Outlines the potential economic impacts of EAB on Ohio, U.S., and communities.

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Ash Tree Genetics and Ecology

- **Ecological and Genetic Isolation of *Fraxinus***
1972 - By Sylvia May Obenauf Taylor
Scan  (PDF, 0.13MB) | **Scan**  (JPG, 1.84MB)

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2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2013-01
SUBJECT: ECOLOGICAL COMPLIANCE ASSESSMENT TOOL
(EcoCAT)
ISSUED DATE: July 12, 2013
EFFECTIVE DATE: July 1, 2013

This memorandum supersedes Section 10-1 dated October 2008, Section 20-2 dated October 2008, Section 20-8 dated October 2008, and Section 20-9 dated October 2008 of the Bureau of Local Roads & Streets Manual.

The *Illinois Natural Areas Preservation Act* (525 ILCS 30/17), Section 11b of the *Illinois Endangered Species Protection Act* (520 ILCS 10/11), and the implementing rules (17 Ill. Adm. Code 1075) require consultation with the Illinois Department of Natural Resources (IDNR) on all construction, land management, or other activities that are authorized, funded, or performed in whole or in part by agencies of State and local public agencies (LPA) and that will result in a change to the existing environmental conditions, or may affect listed threatened or endangered species or their essential habitat or Natural Areas.

The *Interagency Wetland Policy Act of 1989* (20 ILCS 830/1 et seq.) and the *Implementation Procedures for the Interagency Wetland Policy Act* (17 Ill. Admin. Code 1090) require consultation with IDNR on all state and state pass-through funded construction projects.

The Illinois Department of Transportation (IDOT) and the Illinois Department of Natural Resources (IDNR) recently updated the Memorandum of Understanding (MOU) outlining the roles and responsibilities of each agency to comply with State biological and cultural regulations. The updated MOU now includes not only Federally funded LPA projects, but also those funded with State, Motor Fuel Tax (MFT), or Township Bridge Program (TBP) funds, and any locally funded project requiring IDOT review and approval (such as non-municipal structures greater than 30 feet not funded with federal, state, MFT, or TBP funds). Therefore, the Ecological Compliance Assessment Tool (EcoCAT) shall no longer be used by the LPA for these types of projects. Cultural and biological clearances will be processed the same as federally funded projects according to Section 20-8 and 20-9 by using the Environmental Survey Request. Form BLR 10100 may continue to be used to document environmental review. However, this form will not be required to be submitted to the District prior to advertisement.

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For locally funded projects without department review and approval, the LPA must still use EcoCAT and pay any fee established by IDNR. Copies of the consultation termination letter or consultation closed report from EcoCAT shall be submitted to the District BLRS with Form BLR10100 prior to the optional advertisement in IDOT's *Notice to Contractors Bulletin*. The District will acknowledge receipt of Form BLR 10100 by signature and return the signed copy for the project file.

Contact the Local Policy & Technology Unit at IDOT.LocalPolicy@illinois.gov with any questions.



Acting Engineer of
Local Roads and Streets

KB/kb

Attachments

cc: John Baranzelli, Bureau of Design & Environment
Steve Hamer, Illinois Department of Natural Resources



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2013-02
SUBJECT: SPECIAL WASTE
ISSUED DATE: July 12, 2013
EFFECTIVE DATE: July 15, 2013

This memorandum supersedes Section 20-2 dated October 2008 and Section 20-12 dated October 2008 of the Bureau of Local Roads & Streets Manual.

Regulated substances, as defined in Federal and State statutes, are subject to controls variously affecting their generation, storage, transport, and disposal, and associated record-keeping. "Special waste" refers to industrial or pollution control waste and hazardous waste. Local public agencies responsible for development and implementation of highway projects shall consider regulated substances in project development and shall comply with applicable controls. These considerations, compliance actions, and related coordination shall be appropriately documented in project files and project review documents.

Due care shall be exercised to determine whether regulated substances may be present on or located adjacent to property being considered for use for highway project purposes. Acquisition of an interest in a site determined to contain regulated substances shall be avoided unless the risks and liabilities of such acquisition can be justified. The BLRS Manual has been revised to define terminology, to update the screening process, and to clarify the procedures required when LPA projects affect State property.

Contact the Local Policy & Technology Unit at IDOT.LocalPolicy@illinois.gov with any questions.

James K. Klein

Acting Engineer of Local Roads and Streets

KB/kb

Attachment

cc: John Baranzelli, Bureau of Design & Environment

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The ESR must be fully completed. BDE Manual Chapter 27 (Section 3) requires 6-months for completion of a Preliminary Environmental Site Assessment (PESA) and 6-months for completion of a Preliminary Site Investigation (PSI). Thus, the letting date should be 12-months or more from the time the ESR is initially submitted to allow for successful completion of Special Waste environmental survey work, plus time to execute land acquisition, prior to letting.

A local roads project involving state road jurisdiction, even a small portion, must follow BDE Chapter 27 (Section 3) and must be coordinated with the District Special Waste Coordinator (aka, Environmental Manager). The time frames for completion of the PESA (6-months) and PSI (6-months) also applies to the state road portion of a local roads project.

On the ESR, include the following information for DOH and BLRS special waste projects:

PMA ESR Section	Item	Notes
A	Survey Target Date (STD)	>= 6-months from ESR submittal date
A	Anticipated Design Approval	Optional. Should be >= 6-months out
F	Env. Contact	Section F (bottom): Should be the District Special Waste Coordinator
PESA tab	Anticipated Letting date	If known, should be 12-months out
Add'l Info	Additional notes	Any supporting information
Add'l Info	Reference previous PESAs	
Attachments	Site location map	
Attachments	Survey limit figure	

Additionally, for local roads projects, the following information is also required:

PMA ESR Section	Item	Notes
F	Contact Person	Section F (top): Should be the BLRS contact person
F	Local Contact Person	Name of Local Public Agency contact or LPA consultant
Attachments	State jurisdiction figure	Show state jurisdiction on a figure and also describe it in the additional notes., i.e., which portion of the project is on state route and which is non-state
Attachments	Survey limits for Phase I PESA	Clearly identify which portion of project that ISGS will complete PESA (following BDE Chapter 27) and which portion the LPA will conduct their own PESA (following BLRS Chapter 20)

[See ESR example and attachments on the following pages](#)

*Prepared by Jim Curtis, November 9, 2012; updated June 26, 2013
Call with any questions. 217-558-4653, IDOT Central Office, Geologic & Waste Assessment Unit*

EXAMPLE

Attention: Central Office BD&E
Environment Section
Room 330

Environmental Survey Request

A. Project Information Bio Cultural Wetlands Special Waste

Submittal Date: 10/10/2012
 District: 1 Requesting: Survey Target Date is at least six months out from submittal date
 Contract #: Project No:
 Counties: Cook
 Route: Marked:
 Street: Austin Avenue Section: 12-00106-00-PV
 Municipality(ies) Villages of Morton G Project Length: 1.561 km 0.97 miles
 From To (At): Lincoln Avenue to Oakton Street
 Quadrangle: Park Ridge Township Range Section: T44N R13E S20 and S29
 Survey Target Date: 09/01/2013 Anticipated Design Approval: 11/01/2013

B. Reason for Submittal: (Check all that apply)

Acquisition of additional ROW or easement 4.04885 ha/ 10 acres
 In-Stream Work Stream Name:
 Other:

C. Project Description: The roadway improvement project includes partial reconstruction and partial curb and gutter reconstruction at the Austin Ave and Oakton Street intersection.

Proposed Work: Highway Bridge

DOH district Environmental Coordinator

D. Tree Removal?: No Number? ha/ ac
 Historic Buildings Involved? Do
 Section 6(f) Lands Involved? No
 End. Species Consultation performed

BLRS contact person

LPA contact or LPA consultant. (should also include the Title/Company)

E. Funding: Federal State TBP MFT Local Non-MFT
 404 Permit Required Anticipated Processing: CE

F. Contact Person: Gerardo Fierro Local Contact Person: Mark Johnson
 Telephone #: (847) 705-4238 ext. Telephone #: (773) 775-4009 ext.
 Env. Contact: Sam Mead E-Mail: mjohnson@ciorba.com
 Telephone #: 8477054101 Title/Company:

Field Sign Off (Bio & Cultural Only) Received in CO 10/18/2012 SW Received 10/25/2012

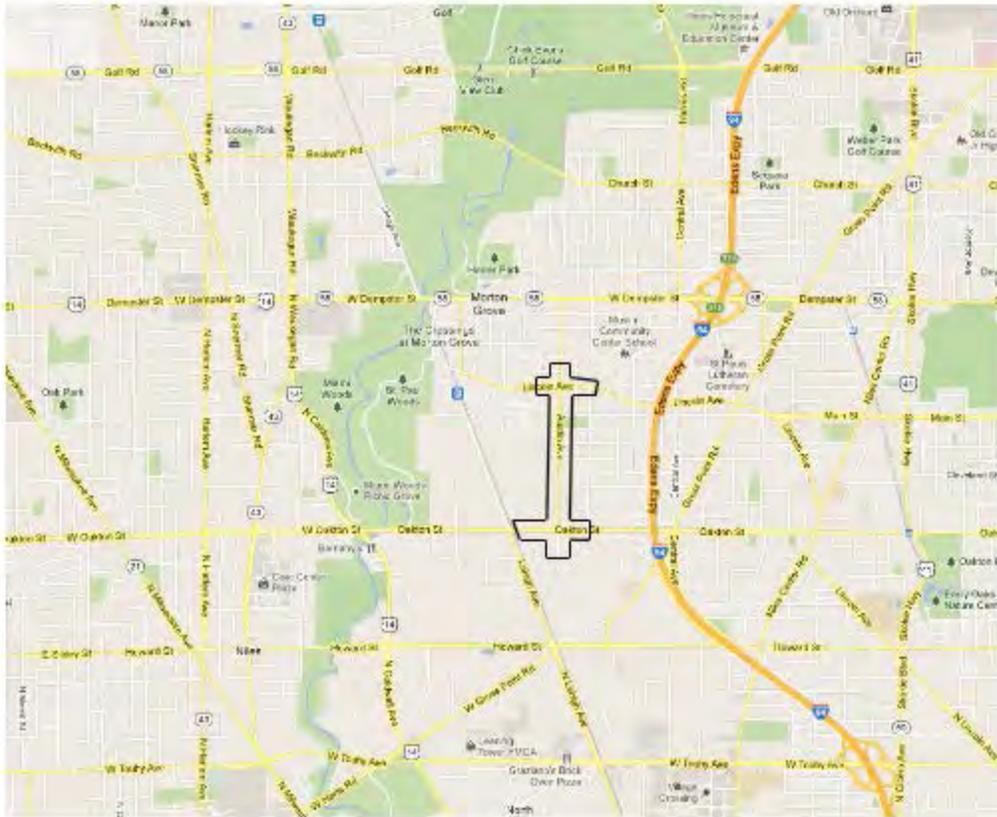
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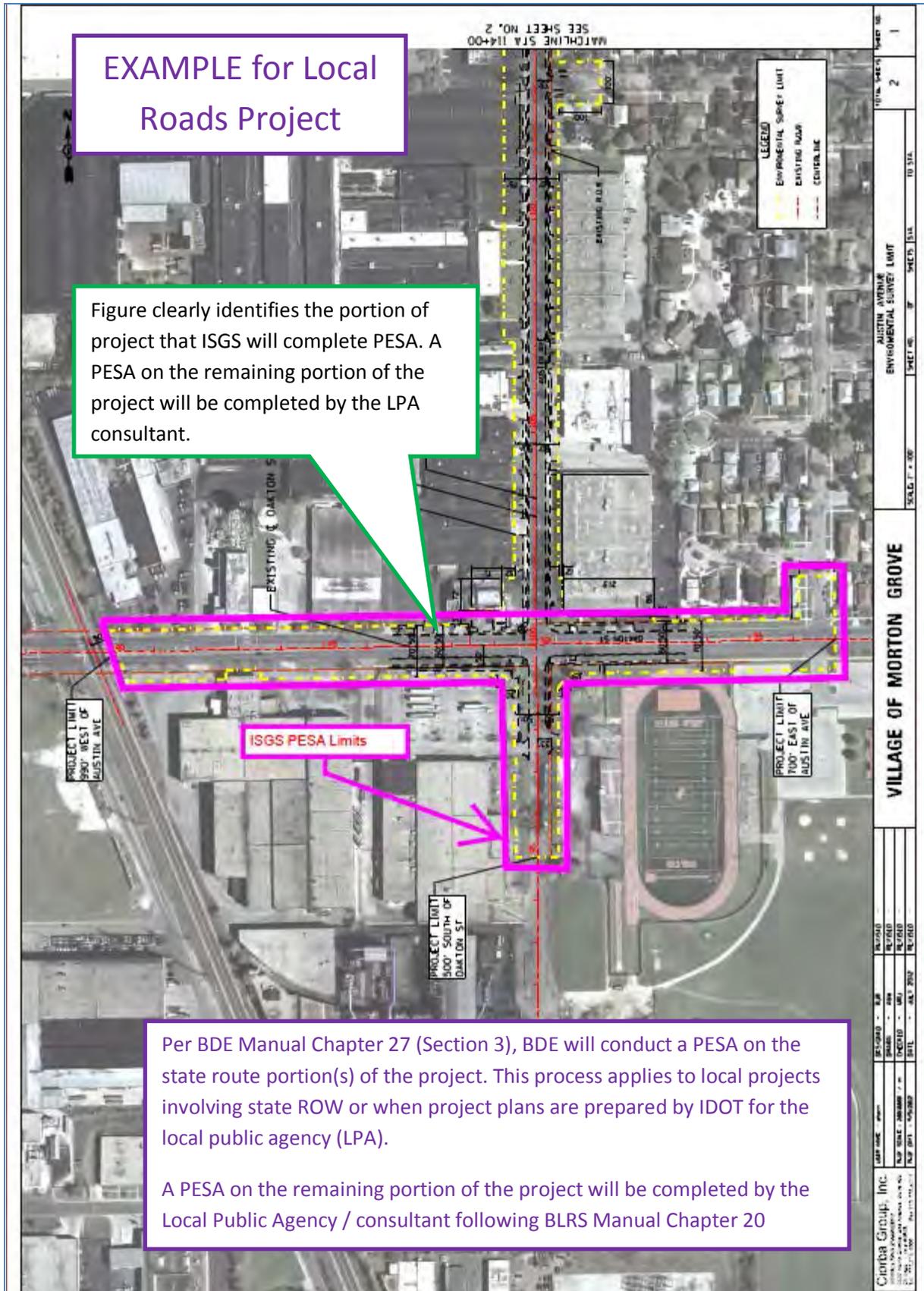
Memo Date: 10/25/2012 **Memo By:** Sam Mead
Memo: ISGS will perform a PESA for BDE on the portion of the project on Oakton Street, plus Austin Ave south of Oakton Street. See revised figure showing limits. The LPA will conduct a PESA on the remaining portion of the project.

Memo Date: 10/10/2012 **Memo By:** Gerardo Fierro
Memo: IDOT will need to perform the special waste analysis for Oakton Street.
 There are proposed storm sewer improvements on Austin Ave between Oakton Street and Cleveland Street. Oakton Street is a State route. A Lincoln Ave are municipal routes.

For a Local Roads project, additional comment states what portion of the project is on state route.

Morton Grove, IL Austin Ave Location Map





EXAMPLE for Local Roads Project

Figure clearly identifies the portion of project that ISGS will complete PESA. A PESA on the remaining portion of the project will be completed by the LPA consultant.

Per BDE Manual Chapter 27 (Section 3), BDE will conduct a PESA on the state route portion(s) of the project. This process applies to local projects involving state ROW or when project plans are prepared by IDOT for the local public agency (LPA).
 A PESA on the remaining portion of the project will be completed by the Local Public Agency / consultant following BLRS Manual Chapter 20

Q: How do I know when Special Waste should be involved in a Local Roads project? That is, for a Local Roads project, when should I check the Special Waste box in PMA?

A: The Project Monitoring Application (PMA) for Special Waste is used to track DOH projects and the DOH segment of a Local Roads project. BDE Manual Chapter 27 (and BLRS Manual Chapter 20) describes the circumstances when a special waste survey should be conducted.

Step 1 – Does BDE Chapter 27-3 (Special Waste Procedures) apply to my project?

The procedures in Section 27-3 are applicable to all of the following types of projects:

1. State highway project;
2. Local project when the project plans are prepared by IDOT for a local public agency (LPA);
3. Local project affecting State right-of-way or a road under State jurisdiction;
4. Local project acquiring right-of-way in the name of the State;
5. Local project involving temporary or permanent easements in the name of the State;
6. Other transportation project (e.g., railroad or aeronautics project) affecting State right-of-way or roads under State jurisdiction, or when plans are prepared by IDOT.

If your project is any one of these, check the Special Waste box in PMA. Specifically, if your project is #1 or #2, then follow Chapter 27 for the entire project. If your project is #3 - #6, then follow BDE Chapter 27 for the portion of the project involving State ROW, and follow BLRS Chapter 20 for the remaining portion of the project. Go to Step 2. If NO to all of these, then BDE Chapter 27 does not apply; do not check the special waste box.

Note: This process applies to all transportation projects meeting one or more of the criterion regardless of funding source.

Step 2 – Is Special Waste involved?

A PESA is required for all applicable projects, as determined in Step 1, with some exceptions. Per Section 27-3.20(a) [Level 1 Screening], determine whether a PESA is necessary. Does the project involve any of these three situations?

- Acquisition of additional right-of-way or easements (temporary or permanent)
- Railroad right-of-way (other than a rural single rail with no maintenance facilities)
- Excavationⁱ or subsurface utility relocation (see definition of “excavation”)

If any of these situations is present, then the project must include special waste consideration and a PESA is required. If none are present, then the project can be screened-out for special waste and a PESA is not required.

Step 3 – Coordination

If your project involves Special Waste, per steps #1 and #2 above, then do the following:

- In PMA, fully complete the ESR and click the Special Waste box (in the “A/B” tab).
- Clearly identify the portion(s) of the project where ISGS should complete the PESA for BDE, delineate this area on a figure, explain in text, and include with the ESR submittal.
- The ISGS PESA should cover the state portion(s) of the project. The LPA should determine if they should conduct their own PESA on the non-state portion(s) of the project (using BLRS Chapter 20 criteria). How a project is divided between BDE and BLRS should be determined on a case-by-case basis by the District Special Waste Coordinator and BDE using the information supplied by BLRS and LPA). In general, the project is divided along jurisdiction lines.
- Alert the District (Highways) Special Waste Coordinator who is responsible for ensuring that BDE Manual Chapter 27 is followed for the portion of the project affecting State jurisdiction.

You may contact your District Special Waste Coordinator or Jim Curtis with any questions regarding this process.

*Prepared October 31, 2012, revised 06/27/2013 by Jim Curtis
Chief, Geologic & Waste Assessment Unit*

Illinois Department of Transportation
Bureau of Design & Environment, Room 330
2300 South Dirksen Pkwy, Springfield, IL 62764
direct: 217.558-4653 james.r.curtis@illinois.gov

ⁱ **Excavation.** For the purposes of BDE Chapter 27 (updated July 2012), excavation is the digging or grading of any soil or fill material, including underground utility works such as installation of fiber optic cabling, with the exception of aggregate fills which are not considered a soil or fill material of concern. The following types of maintenance projects are not considered excavation when the excavated material is left on, or incorporated within, the IDOT ROW for that project:

- bridge maintenance
- ditch cleaning
- working within the sub base or pavement
- removal and replacement of shoulders, curb and gutter, or sidewalk ramps



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2013-03
SUBJECT: EVALUATION OF FARMLAND CONVERSION IMPACTS
ISSUED DATE: July 12, 2013
EFFECTIVE DATE: July 15, 2013

This memorandum supersedes Section 10-1 dated October 2008 and Section 20-10 dated January 2006 of the Bureau of Local Roads & Streets Manual.

In the development of a project, consideration must be given to the impacts that the action will cause in the conversion of farmland to non-farm uses. Under certain circumstances, coordination must be initiated with the US Department of Agriculture, Natural Resources Conservation Service (NRCS) and/or the Illinois Department of Agriculture (IDOA) to evaluate the impacts on farmland and obtain the views of those agencies on alternatives to the proposed action.

The exemption for projects within the official 1.5 mile (2.4 km) planning area of an incorporated municipality is no longer allowed.

Contact the Local Policy & Technology Unit at IDOT.LocalPolicy@illinois.gov with any questions.

James K. Klein

Acting Engineer of Local Roads and Streets

KB/kb

Attachment



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2013-04
SUBJECT: WORK ZONE TRANSPORTATION MANAGEMENT PLANS
ISSUED DATE: July 25, 2013
EFFECTIVE DATE: July 31, 2013

This memorandum supersedes Section 10-2 dated July 2008 and Section 22-2 dated February 2009 of the Bureau of Local Roads & Streets Manual.

Per Safety Engineering Procedure Memorandum 3-07 effective October 12, 2007, the Work Zone Safety and Mobility Rule (23 CFR 630 Subpart J) applies to all state projects and federal aid funded local highway projects. A well-planned method for maintaining traffic flow is critical for meeting the Department's mobility goals, minimizing complaints from the traveling public, residents, and businesses, and reducing unnecessary capital costs. Therefore, any local public agency (LPA) project, regardless of funding, that impacts a State highway will need to comply with these requirements as well.

Contact the Local Policy & Technology Unit at IDOT.LocalPolicy@illinois.gov with any questions.

James K. Klein

Acting Engineer of Local Roads and Streets

KB/kb

Attachment



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

Safety Engineering Policy Memorandum

SAFETY 3-07

Work Zone Safety and Mobility Rule

Effective October 12, 2007

POLICY

This policy supersedes Traffic Departmental Policy TRA-1, Traffic Control through Construction and Maintenance Work Zones, April 1, 1981.

The Federal Highway Administration (FHWA) has updated the work zone regulations at 23 CFR 630 Subpart J. The updated rule is referred to as the Work Zone Safety and Mobility Rule (Rule). The Rule applies to all state projects and federal aid funded local highway projects and requires compliance with these provisions by October 12, 2007. The changes made to the regulations broaden the former rule to better address the work zone issues of today and the future.

During construction, maintenance, and all other activities including engineering contracts, railroad crossings, and utility projects on Illinois highways, it shall be the policy of the department to provide a high level of safety for workers and the public, to provide mobility, minimize congestion and adverse community impacts, and to provide greater public satisfaction. This policy outlines IDOT's activities necessary to implement the requirements and intent of the Rule.

PURPOSE

Work Zone Safety is an identified emphasis area of the Illinois Comprehensive Highway Safety Plan (ICHSP). Developing and implementing a work zone safety and mobility policy as required by the Rule provides an additional strategy to further the goals of the ICHSP.

VISION

The overall goal of this policy is to reduce and eliminate crashes and fatalities, and to mitigate congestion due to work zones.

GOALS

SAFETY

1. Zero worker fatalities for traffic-related work zone crashes.
2. Reduce the number of motorist fatalities in traffic-related work zone crashes by 10% each year with the eventual goal of eliminating all of these fatalities. Eliminate crashes and resulting fatalities and serious injuries caused by queuing.
3. Reduce the number of work zone crashes by 5% from each prior year.

MOBILITY

Mobility shall be defined as moving road users efficiently through or around a work zone area (site specific or regionally) with a minimum delay compared to baseline travel when no work zone is present while not compromising safety. The following goals are thresholds for traffic mobility on projects which impact traffic flow:

- 1) Delays caused by work zones should not exceed more than five (5) minutes per mile of project length with a maximum of thirty (30) minutes above the normal recurring traffic delay; and,
- 2) Queues caused by work zones should be no more than 1.5 miles beyond pre-existing queues.

GUIDELINES FOR IMPLEMENTATION

PROJECT GUIDELINES

To facilitate the implementation of this policy the following items have been developed:

- 1) Work Zone Safety and Mobility Process Flow Chart (Appendix A). This flow chart represents the process flow to determine the level of significance of a project and the necessary steps and requirements to implement the Rule.
- 2) Significant Route Location Maps (Appendix B). These statewide and district maps show those state routes where a lane closure on the roadway is expected to cause sustained work zone impacts that are not considered tolerable based on the goals and objectives of this policy or public opinion and, thus, are considered Significant Routes. Roadways marked in red are considered as Significant Routes. Roadways marked in yellow are approaching Significant Route designation and should be evaluated for potential impacts. These maps will be revised as additional information becomes available through process reviews and district feedback.

These two items should be used together to determine if a project is considered Non-Significant, Significant – Short Term (Less Than Three (3) Days), or Significant – Long Term.

NON-SIGNIFICANT PROJECTS

If the proposed project is on a roadway that is not considered a Significant Route, then it is a Non-Significant Project and work impacts the traveling public to a small degree. Traffic volumes are low; public interest is low; and, duration is short to moderate. For Non-Significant Projects, an Impact Analysis is not required. The final design may proceed with a Traffic Management Plan (TMP) that consists of only a Traffic Control Plan (TCP). However, appropriate Transportation Operations Plan (TOP) and Public Information Plan (PIP) strategies are encouraged to be considered as well. Further details of a full TMP are described under Significant Projects – Long Term.

SIGNIFICANT PROJECTS – SHORT TERM (LESS THAN THREE (3) DAYS): OPERATIONS, PERMIT, UTILITY WORK AND OTHER SHORT TERM WORK

Roadway segments identified on the Significant Route Location Maps involving work of three (3) days or less shall be considered as Significant Projects – Short Term. A Permitted Lane Closure Map/List (PLCM) shall be developed by the district, based on Appendix B and district knowledge and should be updated as traffic conditions warrant. The PLCM map will define the allowable times a lane(s) may be closed on Significant Routes within each district to assist in meeting the goals of this Policy. This is to allow minor short time work to be accomplished with as little impact to the motorist as possible. If the goals of this policy cannot be met, work shall be planned in advance minimizing the impacts and only emergency repairs or work would be allowed. The operations may proceed with a TMP that consists of only a TCP. However, appropriate TOP and PIP strategies are encouraged to be considered as well. Further details of a full TMP are described under Significant Projects – Long Term.

SIGNIFICANT PROJECTS – LONG TERM

Routes identified on the Significant Route Location Maps involving work greater than three (3) days shall be considered as Significant Projects – Long Term. Work zones for these projects have a much greater impact long term on motorists. Every reasonable effort to mitigate these impacts shall be considered. Significant Projects shall be identified as early as possible in the development process to help allocate resources more effectively to projects that are likely to have greater impacts. A Significant Project – Long Term requires an Impact Analysis be performed. This Impact Analysis will involve a process of understanding the safety and mobility impacts of a road

construction/maintenance project. The use of hourly volume maps, district knowledge and experience, site reviews, and/or computer simulation programs, such as QUEWZ, TSIS-CORSIM, Quick Zone or other modeling programs would be considered acceptable. Where queues are normally present even without lane closures, the analysis shall compare existing queues to expected queues based on the resulting mitigation and strategies used to reduce the impacts of lane closures, construction or other work would have on a project.

During the planning and design phase of a Significant Project, various TMP strategies and the resulting impacts to delays and queuing shall be considered and analyzed to determine which are acceptable or unacceptable based on the goals of this policy.

Developing a TMP is a process that involves identifying applicable strategies to manage the impacts of the work zone and budgeting costs to ensure that funding is available. A full TMP is required for Significant Projects – Long Term and lays out a set of coordinated transportation management strategies and describes how they will be used to manage the work zone impacts of a road project. As the project evolves, it is important to reassess the TMP including the management strategies to be sure the work zone impacts are mitigated and the necessary budget for the project is available. Incident management and emergency services shall be considered. Refer to BDE Manual Chapters 13 and 55.

A full TMP shall include the following three Plans:

1. **Traffic Control Plan (TCP)**. A plan to safely guide traffic through a construction project through the use of traffic control devices and project coordination.
2. **Transportation Operations Plan (TOP)**. A plan that consists of strategies which mitigate work zone impacts through the use of improved transportation operations and management of the transportation system.
3. **Public Information Plan (PIP)**. A plan that consists of strategies to inform those affected road users including the surrounding community of the expected impact of a project, of changing conditions, and available travel options.

To assist in the development of a full TMP, a TMP Components Checklist (Appendix C) has been included in this policy. Federal guidelines have been developed and should be utilized when developing the TMP. These include:

- Implementing the Rule on Work Zone Safety and Mobility
- Developing and Implementing Transportation Management Plans for Work Zones
- Work Zone Impacts Assessment: An Approach to Assess and Manage Work Zone Safety and Mobility Impacts of Road Projects

- Work Zone Public Information and Outreach Strategies

Electronic copies of these resources can be found at the following link: http://www.ops.fhwa.dot.gov/wz/resources/final_rule.htm. Hard copies of these publications will be provided with this policy to the IDOT District Offices and Central Highways Bureaus as a Tool Box. These are attached as Appendix E.

Once the impacts have been analyzed and a preliminary full TMP has been prepared, it should be determined if the goals of this policy have been met. If they have not, additional TMP strategies should be further analyzed and considered.

IMPACTS MEET GOALS

Once it is determined that the prepared TMP would meet the goals of this policy it should be presented for approval at the bi-monthly coordination meeting. Once the TMP is approved, it shall be included in the Phase I Report and incorporated into plan development.

IMPACTS DO NOT MEET GOALS

Once all reasonable and cost-effective TMP strategies have been evaluated and incorporated into the project and the goals of this policy still cannot be met, then the District shall request an exception to this policy. The District shall submit an "Exception to Compliance Request" which shall include all strategies considered as well as the ones included in the full TMP for the project. This request shall include an explanation why it is not feasible to meet the goals of this policy. This shall be submitted to the Bureau of Safety Engineering and then to the appropriate bureau for approval (i.e., Bureau of Design and Environment, Bureau of Local Roads, Bureau of Operations), and FHWA for approval. Upon approval, final development of the TMP would proceed, be included in the Phase I Report, and be incorporated into plan development.

SIGNIFICANT PROJECTS NEAR PLANS, SPECIFICATIONS AND ESTIMATES (PS&E) DATE

Significant Projects that are in the later stages of development or near implementation of this policy may be considered for an "Exception to Compliance Request." This would apply if it is determined that the completion of the PS&E would be significantly impacted as a result of the provisions in this Policy.

Items to be included in the exception request include:

- Project location and description;
- Status of project letting date; and,
- Justification for why the project's PS&E would be affected and why the exception is requested.

The "Exception to Compliance Request" shall be submitted to the Bureau of Safety Engineering and routed to the bureaus for approval, i.e., Bureau of Design and Environment, Bureau of Local Roads or Bureau of Operations, and FHWA for approval. FHWA has final approval in these cases.

PROCESS GUIDELINES

TRAFFIC CONTROL SUPERVISOR

A technical position referred to as the District Traffic Control Supervisor shall be maintained in each District Bureau of Operations/Traffic with the primary function of traffic control planning and inspection.

TRAINING

Personnel involved in the development, design, implementation, operation, inspection, and enforcement of work zone related transportation management and traffic control are to be trained appropriate to the job decisions each individual is required to make. Existing training classes that are available are shown on Exhibit D. To ensure the maximum attainable degree of safety and mobility, a program of training, including updating of classes and providing new classes to keep up with current practices will continue.

IMPLEMENTATION OF THE TCP

A TCP shall be developed for all projects and be included in the contract plans and specifications. The plans and any revisions to these plans, for all construction, maintenance, or permit work let to contract shall be reviewed and signed by the District Traffic Operations Engineer to indicate concurrence of the proposed TCP.

For all State-awarded construction contracts, the TCP shall be reviewed at a conference preceding the start of any work on the project. Conference participants should include, as appropriate, representatives of the Contractor, utility company, local government agency, and District bureaus directly involved. Prior to any field activity covered by this policy, Form OPER 725,

Traffic Control Authorization Request, shall be submitted to and approved by the District Traffic Operations Engineer.

For highways under State jurisdiction, the District Traffic Control Supervisor or other designated District personnel shall notify the Department Communications Center (Station One) at least ten (10) days in advance of action as per current Departmental Policy when any of the following conditions apply. If any of these conditions involve major activities, a public notice shall be provided:

- Route closures lasting more than one day;
- Rerouting of traffic over a detour or temporary road if it limits oversize or overweight permit moves, 21 days prior;
- Other restrictions limiting or prohibiting oversize or overweight permit moves, 21 days prior;
- Rerouting of traffic over a new or temporary bridge;
- Reopening of sites previously restricted;
- Opening to traffic of new sections or new bridges;
- Introduction of new or revised vertical clearance restrictions, such as those created by erection of the first beam of a new overpass, a new overhead signal, or resurfacing under a structure;
- Emergency conditions requiring a route closure or restriction; and/or,
- Interstate, freeway and multilane state highway lane closures.

For projects that will affect traffic for more than five (5) days, an initial inspection of the traffic control installation and any subsequent major changes during construction should be conducted as soon as practicable but no later than five (5) days after the time it is put into effect. Follow-up inspections should be made approximately once per week thereafter, either day or night, as appropriate. The follow-up inspections may be increased or decreased to give priority attention to projects that are subject to congestion, are complex, have a more serious impact on traffic or have been found to have numerous and/or significant deficiencies. If the District Traffic Control Supervisor determines the traffic control for a full closure of a local road with an ADT of less than 400 is adequate, follow-up inspections will not be required.

Inspections of State-awarded construction contracts on highways under State jurisdiction shall be conducted by the District Traffic Control Supervisor utilizing Form OPER 726 Traffic Control Inspection Report. In Districts 2 through 9, this will include both the initial and follow-up inspections. In District 1, the follow-up inspections may be made by the FAUS Engineers in the District Bureau of Construction. The District Traffic Control Supervisor shall also conduct inspections of the following types of work zones as workload permits:

- State-awarded construction contracts on local agency streets and highways;
- Utility work on State highways being done under permit;

- Railroad crossing work on State highways being done under agreement;
- Maintenance work on State highways;
- Traffic work on State highways; and,
- Consultant work done on state highways.

The Regional Deputy Director may assign these types of inspections to other District personnel. Such assigned responsibilities must be clearly defined. The TCP for each contract shall indicate that both the responsible person at the project level and the person assigned to make the inspections will be designated at the preconstruction conference. Unusual problems encountered during routine inspections shall be referred to the District Traffic Control Supervisor.

Form OPER 726 Traffic Control Inspection Report shall be utilized to record the Traffic Control Supervisor's inspections. The records should be adequate to indicate date and time of inspection, general condition of traffic control devices, and whether or not traffic operations are satisfactory.

If the Traffic Control Supervisor reveals minor variations from acceptable standards, equipment, or procedures, these variations should be called to the attention of the responsible person for the project. If in the judgment of the District Traffic Control Supervisor, the traffic control in place does not provide adequate protection for the motorists, pedestrians and workers, s/he shall discuss the necessary corrections with the person responsible for the project. The Traffic Control Supervisor shall request the necessary revisions be initiated before s/he leaves the jobsite and also complete Form OPER 726, which shall include the action taken. One copy of the completed form shall be retained in the files of the District Bureau of Operations/Traffic. One copy shall be provided to the individual primarily responsible for traffic control at the project site. Whenever two consecutive inspections at the same site indicate adequate protection is not being provided; additional copies of the report shall be forwarded to the Regional Deputy Director and the appropriate Bureau Chief.

All technical personnel of the Central Bureaus of Safety Engineering, Operations, and Construction shall give particular attention to these traffic control measures during their routine travels throughout the State. Major deviations from proper traffic control practices shall be brought to the attention of the appropriate District Traffic Operations Engineer/Bureau Chief of Traffic.

WORK ZONE REVIEWS

Work Zone Safety and Mobility Policy Process Review

This process review shall be performed by the Central Office every other year to assess the effectiveness of IDOT's work zone standards, specifications, policies, procedures, TCPs, PIPs, TOPs, TMPs, Significant Projects, and the

level of mobility and safety afforded the traveling public. All types of projects shall be reviewed. These shall include day work and night work, all types of traffic characteristics, and the various management strategies that are being utilized. The process review team should consist of personnel who represent the project development stages and the different offices of IDOT who participate in project development and implementation. Bureau of Safety Engineering shall be the lead agency, and the FHWA Office shall be invited.

Work Zone Traffic Control Project Review

These project reviews shall be performed by the Central Office every two (2) years, on the opposite years of the Work Zone Safety and Mobility Policy Process Review. This review will consist of a drive-through to inspect the traffic control of construction projects. A random selection of projects will be selected for review. The project review team should consist of personnel who represent the project development stages and the different offices of IDOT who participate in project development and implementation. Bureau of Safety Engineering shall be the lead agency and the FHWA Office shall be invited. The findings of these reviews shall be documented and presented to the District in a closeout meeting.

TMP PERFORMANCE ASSESSMENT

Safety

If a fatal crash occurs within the project limits, the Resident Engineer or person in charge of any project/ encroachment on state highway shall submit a Work Zone Crash Summary Report within ten (10) days to the Bureau of Safety Engineering. This Work Zone Crash Summary Report shall provide the following information:

- Summary of the type of construction;
- Description of the traffic control in place at the time of the crash;
- Description of the traffic conditions at the time of the crash;
- Description of the Contractor's operations at the time of the crash;
- Description of the weather conditions, pavement conditions, and time of day;
- Description of changes made to the traffic control as a result of the crash;
- Recommendations for change to IDOT's Standards, Specifications, policies, or procedures that should be considered as a result of the crash; and,
- Photos of the traffic control throughout the project before (if available) and after the crash.

Mobility

Upon completion of the construction contract on Significant Projects – Long Term, the Resident Engineer shall develop and submit a Work Zone TMP Summary Report to the Bureau of Safety Engineering within thirty (30) days after the essential completion of the project. The Work Zone TMP Summary Report shall provide the following information:

- Project description, staging, and traffic control utilized;
- Summary of TMP strategies utilized including successes or failures;
- Description of the traffic operations due to work zone, such as were there backups, duration of the delays, length of queues, etc.;
- Description of changes made to the TMP;
- Description of changes made to the traffic control due to crashes occurring within the project limits; and,
- Recommendations for change to IDOT's Standards, Specifications, policies, or procedures that should be considered.

These reports are to be prepared in accordance with the Illinois Vehicle Code at 625 ILCS 5/11-408(c), and these reports shall be for the privileged use of the Department and held confidential, and shall not be used in any trial, civil or criminal.

The Bureau of Safety Engineering shall review all Work Zone Crash Summary Reports and Work Zone TMP Summary Reports and evaluate all recommended changes. Changes shall be made to Standards, Specifications, policies, and procedures as deemed appropriate to resolve issues resulting from these reports.

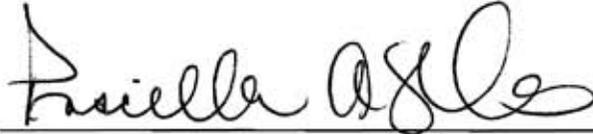
RESPONSIBILITIES

The Bureau of Safety Engineering is responsible for preparing and maintaining this policy. All Districts and Central Bureaus are responsible for implementing the portions of this policy that affect their operations. The District Traffic Control Supervisor or other designated District personnel shall have the traffic control inspection responsibilities. The Resident Engineer/Technician for a construction project, the construction supervisor for a day labor project, the Operations Field Engineer for either a maintenance or traffic project, or a company representative for a consulting firm or a utility project shall have the primary responsibility for ensuring that the traffic control is established in accordance with the approved plan, adequately maintained and revised, if necessary.

The Regional Deputy Director has the primary responsibility to ensure that this policy is carried out within his/her jurisdiction.

ACCESSIBILITY

Copies of this Policy may be obtained either from the department's website or from the Bureau of Safety Engineering in the Harry R. Hanley Building. This Policy may be examined in the Hanley Building library and in each of the nine Division of Highways' district offices.

A handwritten signature in black ink, appearing to read "Priscilla A. Tobias", written over a horizontal line.

Priscilla A. Tobias, PE
State Safety Engineer

- Appendix A, Work Zone Mobility and Safety Process Flow Chart
- Appendix B, Significant Route Locations Maps
- Appendix C, TMP Components Checklist
- Appendix D, Current Training Classes
- Appendix E, Federal Guideline Publications (Districts and Central Office Only)



IDOT DISTRICT 1

SIGNIFICANT ROUTE LOCATIONS



Significant Locations (2007)

- Approaching Significant Route Designation.
- Consider as a Significant Route.



Appendix B
9/10/2007



IDOT DISTRICT 2

SIGNIFICANT ROUTE LOCATIONS



Significant Locations (2007)

- Free Flow under Most Conditions.
- Normal Free Flow with Limited Congestion.
- Approaching Significant Route Designation.
- Consider as a Significant Route.

Appendix B
9/8/2007



IDOT DISTRICT 3

SIGNIFICANT ROUTE LOCATIONS



Significant Locations (2007)

- Free Flow under Most Conditions.
- Normal Free Flow with Limited Congestion.
- Approaching Significant Route Designation.
- Consider as a Significant Route.

Appendix B
9/8/2007



IDOT DISTRICT 4

SIGNIFICANT ROUTE LOCATIONS



Significant Locations (2007)

- Free Flow under Most Conditions.
- Normal Free Flow with Limited Congestion.
- Approaching Significant Route Designation.
- Consider as a Significant Route.



Appendix B
9/8/2007



IDOT DISTRICT 5

SIGNIFICANT ROUTE LOCATIONS



Significant Locations (2007)

- Free Flow under Most Conditions.
- Normal Free Flow with Limited Congestion.
- Approaching Significant Route Designation.
- Consider as a Significant Route.

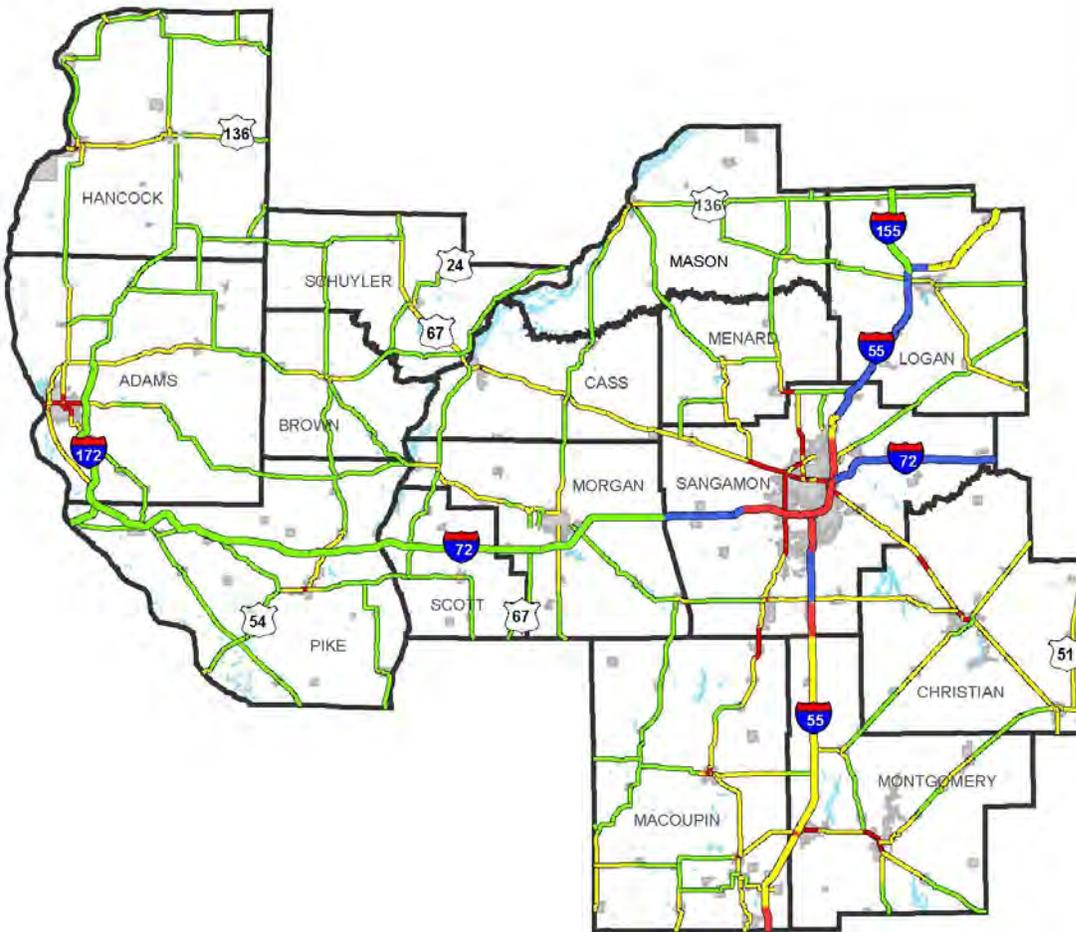


Appendix B
9/8/2007



IDOT DISTRICT 6

SIGNIFICANT ROUTE LOCATIONS



SIGNIFICANT ROUTES (2007)

- Free Flow under Most Conditions.
- Normal Free Flow with Limited Congestion.
- Approaching Significant Route Designation.
- Consider as a Significant Route.



Appendix B
9/6/2007



IDOT DISTRICT 7

SIGNIFICANT ROUTE LOCATIONS



Significant Locations (2007)

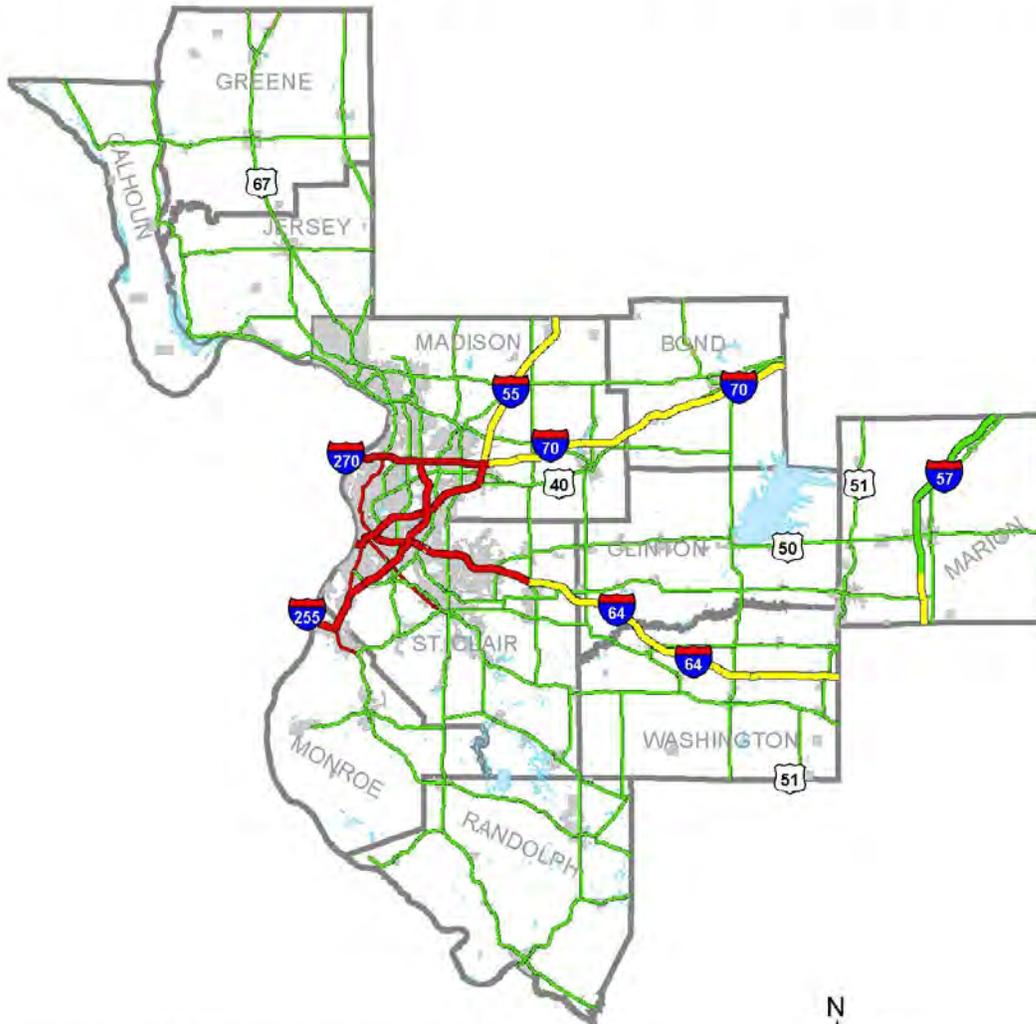
- Free Flow under Most Conditions.
- Normal Free Flow with Limited Congestion.
- Approaching Significant Route Designation.
- Consider as a Significant Route.

Appendix B
9/7/07



IDOT DISTRICT 8

SIGNIFICANT ROUTE LOCATIONS



Significant Locations (2007)

- Free Flow Under Most Conditions.
- Approaching Significant Route Designation.
- Consider As A Significant Route.



Appendix B
10/12/2007



IDOT DISTRICT 9

SIGNIFICANT ROUTE LOCATIONS



Significant Locations (2007)

- Free Flow under Most Conditions.
- Normal Free Flow with Limited Congestion.
- Approaching Significant Route Designation.
- Consider as a Significant Route.

Appendix B
9/8/2007



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2013-05
SUBJECT: COMPLETE STREETS
ISSUED DATE: July 25, 2013
EFFECTIVE DATE: July 31, 2013

This memorandum supersedes Section 10-2 dated July 2008 and Section 22-2 dated February 2009 of the Bureau of Local Roads & Streets Manual.

605 ILCS 5/4-220 requires the Department to give bicycle and pedestrian ways full consideration in the planning and development of transportation facilities. This is commonly referred to as Complete Streets. Therefore, any local public agency (LPA) project, regardless of funding, that impacts a State highway will need to comply with the Complete Streets requirements on the State highway.

Contact the Local Policy & Technology Unit at IDOT.LocalPolicy@illinois.gov with any questions.

James K. Klein

Acting Engineer of Local Roads and Streets

KB/kb

Attachment

(605 ILCS 5/4-220)

Sec. 4-220. Bicycle and pedestrian ways.

(a) Bicycle and pedestrian ways shall be given full consideration in the planning and development of transportation facilities, including the incorporation of such ways into State plans and programs.

(b) In or within one mile of an urban area, bicycle and pedestrian ways shall be established in conjunction with the construction, reconstruction, or other change of any State transportation facility except:

(1) in pavement resurfacing projects that do not widen the existing traveled way or do not provide stabilized shoulders; or

(2) where approved by the Secretary of Transportation based upon documented safety issues, excessive cost or absence of need.

(c) Bicycle and pedestrian ways may be included in pavement resurfacing projects when local support is evident or bicycling and walking accommodations can be added within the overall scope of the original roadwork.

(d) The Department shall establish design and construction standards for bicycle and pedestrian ways. Beginning July 1, 2007, this Section shall apply to planning and training purposes only. Beginning July 1, 2008, this Section shall apply to construction projects.

(Source: P.A. 95-665, eff. 10-10-07.)

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2013-06
SUBJECT: NOISE ANALYSIS
ISSUED DATE: July 25, 2013
EFFECTIVE DATE: August 31, 2013

This memorandum supersedes Section 20-6 dated January 2006 of the Bureau of Local Roads & Streets Manual.

The FHWA developed the noise regulation as required by section 136 of the Federal-Aid Highway Act of 1970 (codified at 23 U.S.C. 109(i)). The regulation applies to highway construction projects where a State department of transportation has requested Federal funding for participation in the project. The FHWA noise regulation, found at 23 CFR 772, requires a highway agency to investigate traffic noise impacts for projects considered Type I Projects. Type I projects are defined as:

- The construction of a highway on a new location;
- The physical alteration of an existing highway where there is either a substantial horizontal or vertical alteration;
- The addition of a through traffic lane(s). This includes the addition of a through-lane that functions as a HOV lane, High-occupancy Toll (HOT) lane, bus lane, or truck climbing lane;
- The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane;
- The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange;
- Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or
- The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.

If a project is determined to be a Type I project under these definitions, the entire project area as defined in the NEPA environmental document is then a Type I project. If the highway agency identifies impacts, it must consider abatement. The highway agency must incorporate all feasible and reasonable noise abatement into the project design.

On July 13, 2010, the FHWA published a final rule updating 23 CFR 772. This final rule amends sections 772.1, 772.5 to 772.17, and Table 1--Noise Abatement Criteria. Sections 772.3 and 772.19 are not amended by this final rule. The final rule also eliminated the use of the TNM Lookup Tables in either form (hard copy table or executable program) to predict noise levels on Federal or Federal-aid projects. The final rule required each State DOT to revise its noise policy to be in accordance with this final rule. FHWA approved IDOT's Noise Policy on April 1, 2011 with an effective date of June 29, 2011. IDOT's Noise Policy is contained in Section 26-6 of the BDE Manual. IDOT has also released the Highway Traffic Noise Assessment Manual, which is found at www.dot.il.gov/environment/HTNAMManual.pdf.

Contact the Local Policy & Technology Unit at IDOT.LocalPolicy@illinois.gov with any questions.

A handwritten signature in cursive script that reads "James K. Klein".

Acting Engineer of Local Roads and Streets

KB/kb

Attachments



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2013-07
SUBJECT: MOTOR FUEL TAX USAGE
ISSUED DATE: October 15, 2013
EFFECTIVE DATE: October 15, 2013

This memorandum supersedes Section 4-3 dated November 2012 and Section 14-1 dated November 2012 of the Bureau of Local Roads & Streets Manual.

The Department has clarified the following eligible uses of Motor Fuel Tax (MFT) funds.

Salary & Expenses. MFT funds may be used to pay for the County Engineer's Salary and expenses provided that the duties being performed by the County Engineer are related to functions of the County Engineer established by the Illinois Highway Code or the Department.

Non-Dedicated Subdivision Roads Established Prior to July 23, 1959. MFT Funds may be used to perform construction or maintenance on these roads provided the residents provide a proportional share of funding.

Investments & Deposits. MFT funds may be invested or deposited according to the requirements of the Public Investment Act and the Investment of Municipal Funds Act. Any loss of principal will require MFT funds to be reimbursed with other local funds.

Joint Improvements. MFT funds may be used by an local public agency to perform construction or maintenance on public highways not under its jurisdiction provided there is a written contract approved by the Department, or a negotiated agreement.

Traffic Control Device Maintenance. MFT funds may be used to purchase required software for maintenance of traffic signals.

Please contact the Bureau's Local Policy & Technology Unit at IDOT.LocalPolicy@illinois.gov with any questions.

James K. Klein

Acting Engineer of Local Roads and Streets

KB/kb

Attachments

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OFFICE OF THE ATTORNEY GENERAL
STATE OF ILLINOIS

Jim Ryan
ATTORNEY GENERAL

January 31, 1996

FILE NO. 96-008

COUNTIES:
Use of Motor Fuel Tax
Funds for Nondedicated
Subdivision Roads

Honorable Gary W. Pack
State's Attorney, McHenry County
McHenry County Government Center
2200 North Seminary Avenue
Woodstock, Illinois 60098

Dear Mr. Pack:

I have your letter wherein you inquire regarding the meaning of the term "nondedicated subdivision roads", for purposes of section 5-701.15 of the Illinois Highway Code (605 ILCS 5/5-701.15 (West 1994)). For the reasons hereinafter stated, it is my opinion that the term "nondedicated subdivision roads" in section 5-701.15 refers only to those roads which were denoted as such on a subdivision plat filed prior to July 23, 1959, which have not been dedicated to the public.

Section 5-701.15 of the Illinois Highway Code provides:

"The formula allocation for counties for the distribution of motor fuel tax funds, provided for in Section 8 in the "Motor Fuel Tax Law", may be used by the county board for

Honorable Gary W. Pack - 2.

the maintenance or improvement of nondedicated subdivision roads established prior to July 23, 1959. Any such improved road becomes, by operation of law, a part of the township or district road system in accordance with Section 6-325 of this Code. The county board shall condition its approval, as required by this Section, upon proportional matching contributions, whether in cash, kind, services or otherwise, by property owners in the subdivision where such a road is situated. No more than the amount of the increase in allocation of such funds allocated under the formula as provided in Section 8 in the "Motor Fuel Tax Law" which is attributable to this amendatory Act of 1979 and any subsequent amendatory Act and subsequently approved as provided in this Section, may be expended on eligible nondedicated subdivision roads."

Based upon its plain language, section 5-701.15 is applicable only to roads that are part of a "subdivision", that are "nondedicated", and that were "established" prior to July 23, 1959.

The primary purpose of statutory construction is to ascertain and give effect to legislative intent. (People v. Zaremba (1994), 158 Ill. 2d 36). To that end, the history of legislation and the course it has taken are proper matters to be considered. (Acme Fireworks Corp. v. Bibb (1955), 6 Ill. 2d 112.) Further, it is proper to consider statutes on related subjects, although not strictly in pari materia. Scotfield v. Board of Education of Community Consol. School Dist. No. 181 (1952), 411 Ill. 11.

Honorable Gary W. Pack - 3.

Section 5-701.15 was added to the Highway Code by Public Act 81-3 (Second Special Session), effective September 19, 1979. During the course of the legislative debate regarding the amendment which became section 5-701.5, Representative Skinner, its sponsor, explained that it was made applicable only to subdivisions that were platted before July 23, 1959, because after that date counties were not allowed to plat subdivisions that did not have decent roads. (Remarks of Rep. Skinner, September 5, 1979, House Debate on Senate Bill 889, pp. 203-207.) The date of July 23, 1959, appears to refer to an Act approved on that date which added a section to the statute governing counties, requiring that counties served by the Northeastern Illinois Metropolitan Planning Commission adopt rules for the approval of plats, including minimum standards for streets. (Laws 1959, p. 2134) The counties referred to by Representative Skinner during debate are in the area to which that Act was applicable. Essentially the same provision now appears at section 5-1042 of the Counties Code (55 ILCS 5/5-1042 (West 1994)). Section 2 of the Plat Act (765 ILCS 205/2 (West 1994)) also permits counties to establish requirements for the approval of plats.

Generally, the Plat Act (765 ILCS 205/0.01 et seq. (West 1994)), which has been in effect for more than 100 years, requires that when land is subdivided into parts of less than 5 acres, a survey must be made and a plat prepared and recorded.

Honorable Gary W. Pack - 4.

The filing or recording of a plat, and the acceptance by public authorities of streets, alleys, or other public grounds marked thereon, results in transfer of title to the public authority and dedication of those streets, alleys or other grounds. (765 ILCS 205/3 (West 1994).) However, no rights are transferred, and no dedication made, absent acceptance, either express or implied, by the public authority. (LaSalle National Bank v. City of Chicago (1974), 19 Ill. App. 3d 883, 886). Therefore, subdivisions, and the streets within them, are generally established by plats which are filed or recorded. Streets within subdivisions may be dedicated or nondedicated depending upon whether they are so marked on the plat and whether they are accepted by the appropriate public authority.

Based upon the legislative history of section 5-701.15 and its relationship to the provisions of the Plat Act, it is my opinion that the term "nondedicated subdivision roads" in section 5-701.15 refers only to nondedicated roads in subdivisions concerning which a plat was filed or recorded prior to July 23, 1959.

Sincerely,


JAMES E. RYAN
Attorney General

Information maintained by the Legislative Reference Bureau

Updating the database of the Illinois Compiled Statutes (ILCS) is an ongoing process. Recent laws may not yet be included in the ILCS database, but they are found on this site as [Public Acts](#) soon after they become law. For information concerning the relationship between statutes and Public Acts, refer to the [Guide](#).

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FINANCE
(30 ILCS 235/) Public Funds Investment Act.

(30 ILCS 235/0.01) (from Ch. 85, par. 900)

Sec. 0.01. Short title. This Act may be cited as the Public Funds Investment Act.

(Source: P.A. 86-1324.)

(30 ILCS 235/1) (from Ch. 85, par. 901)

Sec. 1. The words "public funds", as used in this Act, mean current operating funds, special funds, interest and sinking funds, and funds of any kind or character belonging to or in the custody of any public agency.

The words "public agency", as used in this Act, mean the State of Illinois, the various counties, townships, cities, towns, villages, school districts, educational service regions, special road districts, public water supply districts, fire protection districts, drainage districts, levee districts, sewer districts, housing authorities, the Illinois Bank Examiners' Education Foundation, the Chicago Park District, and all other political corporations or subdivisions of the State of Illinois, now or hereafter created, whether herein specifically mentioned or not. This Act does not apply to the Illinois Prepaid Tuition Trust Fund, private funds collected by the Illinois Conservation Foundation, or pension funds or retirement systems established under the Illinois Pension Code, except as otherwise provided in that Code.

The words "governmental unit", as used in this Act, have the same meaning as in the Local Government Debt Reform Act.

(Source: P.A. 98-297, eff. 1-1-14.)

(30 ILCS 235/2) (from Ch. 85, par. 902)

(Text of Section from P.A. 98-297)

Sec. 2. Authorized investments.

(a) Any public agency may invest any public funds as follows:

(1) in bonds, notes, certificates of indebtedness, treasury bills or other securities now or hereafter issued, which are guaranteed by the full faith and credit of the United States of America as to principal and interest;

(2) in bonds, notes, debentures, or other similar obligations of the United States of America, its agencies, and its instrumentalities;

(3) in interest-bearing savings accounts, interest-bearing certificates of deposit or interest-bearing time deposits or any other investments

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constituting direct obligations of any bank as defined by the Illinois Banking Act;

(4) in short term obligations of corporations organized in the United States with assets exceeding \$500,000,000 if (i) such obligations are rated at the time of purchase at one of the 3 highest classifications established by at least 2 standard rating services and which mature not later than 270 days from the date of purchase, (ii) such purchases do not exceed 10% of the corporation's outstanding obligations and (iii) no more than one-third of the public agency's funds may be invested in short term obligations of corporations; or

(5) in money market mutual funds registered under the Investment Company Act of 1940, provided that the portfolio of any such money market mutual fund is limited to obligations described in paragraph (1) or (2) of this subsection and to agreements to repurchase such obligations.

(a-1) In addition to any other investments authorized under this Act, a municipality, county, or other governmental unit may invest its public funds in interest bearing bonds of any county, township, city, village, incorporated town, municipal corporation, or school district, of the State of Illinois, of any other state, or of any political subdivision or agency of the State of Illinois or of any other state, whether the interest earned thereon is taxable or tax-exempt under federal law. The bonds shall be registered in the name of the municipality, county, or other governmental unit, or held under a custodial agreement at a bank. The bonds shall be rated at the time of purchase within the 4 highest general classifications established by a rating service of nationally recognized expertise in rating bonds of states and their political subdivisions.

(b) Investments may be made only in banks which are insured by the Federal Deposit Insurance Corporation. Any public agency may invest any public funds in short term discount obligations of the Federal National Mortgage Association or in shares or other forms of securities legally issuable by savings banks or savings and loan associations incorporated under the laws of this State or any other state or under the laws of the United States. Investments may be made only in those savings banks or savings and loan associations the shares, or investment certificates of which are insured by the Federal Deposit Insurance Corporation. Any such securities may be purchased at the offering or market price thereof at the time of such purchase. All such securities so purchased shall mature or be redeemable on a date or dates prior to the time when, in the judgment of such governing authority, the public funds so invested will be required for expenditure by such public agency or its governing authority. The expressed judgment of any such governing authority as to the time when any public funds will be required for expenditure or be redeemable is final and conclusive. Any public agency may invest any public funds in dividend-bearing share accounts, share certificate accounts or class of share accounts of a credit union chartered under the laws of this State or the laws of the United States; provided, however, the principal office of any such credit union must be located within the State of Illinois. Investments may be made only in those credit unions the accounts of which are insured

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by applicable law.

(c) For purposes of this Section, the term "agencies of the United States of America" includes: (i) the federal land banks, federal intermediate credit banks, banks for cooperative, federal farm credit banks, or any other entity authorized to issue debt obligations under the Farm Credit Act of 1971 (12 U.S.C. 2001 et seq.) and Acts amendatory thereto; (ii) the federal home loan banks and the federal home loan mortgage corporation; and (iii) any other agency created by Act of Congress.

(d) Except for pecuniary interests permitted under subsection (f) of Section 3-14-4 of the Illinois Municipal Code or under Section 3.2 of the Public Officer Prohibited Practices Act, no person acting as treasurer or financial officer or who is employed in any similar capacity by or for a public agency may do any of the following:

(1) have any interest, directly or indirectly, in any investments in which the agency is authorized to invest.

(2) have any interest, directly or indirectly, in the sellers, sponsors, or managers of those investments.

(3) receive, in any manner, compensation of any kind from any investments in which the agency is authorized to invest.

(e) Any public agency may also invest any public funds in a Public Treasurers' Investment Pool created under Section 17 of the State Treasurer Act. Any public agency may also invest any public funds in a fund managed, operated, and administered by a bank, subsidiary of a bank, or subsidiary of a bank holding company or use the services of such an entity to hold and invest or advise regarding the investment of any public funds.

(f) To the extent a public agency has custody of funds not owned by it or another public agency and does not otherwise have authority to invest such funds, the public agency may invest such funds as if they were its own. Such funds must be released to the appropriate person at the earliest reasonable time, but in no case exceeding 31 days, after the private person becomes entitled to the receipt of them. All earnings accruing on any investments or deposits made pursuant to the provisions of this Act shall be credited to the public agency by or for which such investments or deposits were made, except as provided otherwise in Section 4.1 of the State Finance Act or the Local Governmental Tax Collection Act, and except where by specific statutory provisions such earnings are directed to be credited to and paid to a particular fund.

(g) A public agency may purchase or invest in repurchase agreements of government securities having the meaning set out in the Government Securities Act of 1986, as now or hereafter amended or succeeded, subject to the provisions of said Act and the regulations issued thereunder. The government securities, unless registered or inscribed in the name of the public agency, shall be purchased through banks or trust companies authorized to do business in the State of Illinois.

(h) Except for repurchase agreements of government securities which are subject to the Government Securities Act of 1986, as now or hereafter amended or succeeded, no public agency may purchase or invest in instruments which constitute repurchase agreements, and no financial institution may enter into such an agreement with or on behalf of any public agency unless the instrument and the transaction meet the following

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requirements:

(1) The securities, unless registered or inscribed in the name of the public agency, are purchased through banks or trust companies authorized to do business in the State of Illinois.

(2) An authorized public officer after ascertaining which firm will give the most favorable rate of interest, directs the custodial bank to "purchase" specified securities from a designated institution. The "custodial bank" is the bank or trust company, or agency of government, which acts for the public agency in connection with repurchase agreements involving the investment of funds by the public agency. The State Treasurer may act as custodial bank for public agencies executing repurchase agreements. To the extent the Treasurer acts in this capacity, he is hereby authorized to pass through to such public agencies any charges assessed by the Federal Reserve Bank.

(3) A custodial bank must be a member bank of the Federal Reserve System or maintain accounts with member banks. All transfers of book-entry securities must be accomplished on a Reserve Bank's computer records through a member bank of the Federal Reserve System. These securities must be credited to the public agency on the records of the custodial bank and the transaction must be confirmed in writing to the public agency by the custodial bank.

(4) Trading partners shall be limited to banks or trust companies authorized to do business in the State of Illinois or to registered primary reporting dealers.

(5) The security interest must be perfected.

(6) The public agency enters into a written master repurchase agreement which outlines the basic responsibilities and liabilities of both buyer and seller.

(7) Agreements shall be for periods of 330 days or less.

(8) The authorized public officer of the public agency informs the custodial bank in writing of the maturity details of the repurchase agreement.

(9) The custodial bank must take delivery of and maintain the securities in its custody for the account of the public agency and confirm the transaction in writing to the public agency. The Custodial Undertaking shall provide that the custodian takes possession of the securities exclusively for the public agency; that the securities are free of any claims against the trading partner; and any claims by the custodian are subordinate to the public agency's claims to rights to those securities.

(10) The obligations purchased by a public agency may only be sold or presented for redemption or payment by the fiscal agent bank or trust company holding the obligations upon the written instruction of the public agency or officer authorized to make such investments.

(11) The custodial bank shall be liable to the public agency for any monetary loss suffered by the public agency due to the failure of the custodial bank to take and maintain possession of such securities.

(i) Notwithstanding the foregoing restrictions on investment in instruments constituting repurchase agreements

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the Illinois Housing Development Authority may invest in, and any financial institution with capital of at least \$250,000,000 may act as custodian for, instruments that constitute repurchase agreements, provided that the Illinois Housing Development Authority, in making each such investment, complies with the safety and soundness guidelines for engaging in repurchase transactions applicable to federally insured banks, savings banks, savings and loan associations or other depository institutions as set forth in the Federal Financial Institutions Examination Council Policy Statement Regarding Repurchase Agreements and any regulations issued, or which may be issued by the supervisory federal authority pertaining thereto and any amendments thereto; provided further that the securities shall be either (i) direct general obligations of, or obligations the payment of the principal of and/or interest on which are unconditionally guaranteed by, the United States of America or (ii) any obligations of any agency, corporation or subsidiary thereof controlled or supervised by and acting as an instrumentality of the United States Government pursuant to authority granted by the Congress of the United States and provided further that the security interest must be perfected by either the Illinois Housing Development Authority, its custodian or its agent receiving possession of the securities either physically or transferred through a nationally recognized book entry system.

(j) In addition to all other investments authorized under this Section, a community college district may invest public funds in any mutual funds that invest primarily in corporate investment grade or global government short term bonds. Purchases of mutual funds that invest primarily in global government short term bonds shall be limited to funds with assets of at least \$100 million and that are rated at the time of purchase as one of the 10 highest classifications established by a recognized rating service. The investments shall be subject to approval by the local community college board of trustees. Each community college board of trustees shall develop a policy regarding the percentage of the college's investment portfolio that can be invested in such funds.

Nothing in this Section shall be construed to authorize an intergovernmental risk management entity to accept the deposit of public funds except for risk management purposes.

(Source: P.A. 97-129, eff. 7-14-11; 98-297, eff. 1-1-14.)

(Text of Section from P.A. 98-390)

Sec. 2. Authorized investments.

(a) Any public agency may invest any public funds as follows:

(1) in bonds, notes, certificates of indebtedness, treasury bills or other securities now or hereafter issued, which are guaranteed by the full faith and credit of the United States of America as to principal and interest;

(2) in bonds, notes, debentures, or other similar obligations of the United States of America, its agencies, and its instrumentalities;

(3) in interest-bearing savings accounts, interest-bearing certificates of deposit or interest-bearing time deposits or any other investments constituting direct obligations of any bank as defined by

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the Illinois Banking Act;

(4) in short term obligations of corporations organized in the United States with assets exceeding \$500,000,000 if (i) such obligations are rated at the time of purchase at one of the 3 highest classifications established by at least 2 standard rating services and which mature not later than 270 days from the date of purchase, (ii) such purchases do not exceed 10% of the corporation's outstanding obligations and (iii) no more than one-third of the public agency's funds may be invested in short term obligations of corporations; or

(5) in money market mutual funds registered under the Investment Company Act of 1940, provided that the portfolio of any such money market mutual fund is limited to obligations described in paragraph (1) or (2) of this subsection and to agreements to repurchase such obligations.

(a-1) In addition to any other investments authorized under this Act, a municipality, park district, forest preserve district, conservation district, or a county may invest its public funds in interest bearing bonds of any county, township, city, village, incorporated town, municipal corporation, or school district, of the State of Illinois, of any other state, or of any political subdivision or agency of the State of Illinois or of any other state, whether the interest earned thereon is taxable or tax-exempt under federal law. The bonds shall be registered in the name of the municipality, park district, forest preserve district, conservation district, or county or held under a custodial agreement at a bank. The bonds shall be rated at the time of purchase within the 4 highest general classifications established by a rating service of nationally recognized expertise in rating bonds of states and their political subdivisions.

(b) Investments may be made only in banks which are insured by the Federal Deposit Insurance Corporation. Any public agency may invest any public funds in short term discount obligations of the Federal National Mortgage Association or in shares or other forms of securities legally issuable by savings banks or savings and loan associations incorporated under the laws of this State or any other state or under the laws of the United States. Investments may be made only in those savings banks or savings and loan associations the shares, or investment certificates of which are insured by the Federal Deposit Insurance Corporation. Any such securities may be purchased at the offering or market price thereof at the time of such purchase. All such securities so purchased shall mature or be redeemable on a date or dates prior to the time when, in the judgment of such governing authority, the public funds so invested will be required for expenditure by such public agency or its governing authority. The expressed judgment of any such governing authority as to the time when any public funds will be required for expenditure or be redeemable is final and conclusive. Any public agency may invest any public funds in dividend-bearing share accounts, share certificate accounts or class of share accounts of a credit union chartered under the laws of this State or the laws of the United States; provided, however, the principal office of any such credit union must be located within the State of Illinois. Investments may be made

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only in those credit unions the accounts of which are insured by applicable law.

(c) For purposes of this Section, the term "agencies of the United States of America" includes: (i) the federal land banks, federal intermediate credit banks, banks for cooperative, federal farm credit banks, or any other entity authorized to issue debt obligations under the Farm Credit Act of 1971 (12 U.S.C. 2001 et seq.) and Acts amendatory thereto; (ii) the federal home loan banks and the federal home loan mortgage corporation; and (iii) any other agency created by Act of Congress.

(d) Except for pecuniary interests permitted under subsection (f) of Section 3-14-4 of the Illinois Municipal Code or under Section 3.2 of the Public Officer Prohibited Practices Act, no person acting as treasurer or financial officer or who is employed in any similar capacity by or for a public agency may do any of the following:

(1) have any interest, directly or indirectly, in any investments in which the agency is authorized to invest.

(2) have any interest, directly or indirectly, in the sellers, sponsors, or managers of those investments.

(3) receive, in any manner, compensation of any kind from any investments in which the agency is authorized to invest.

(e) Any public agency may also invest any public funds in a Public Treasurers' Investment Pool created under Section 17 of the State Treasurer Act. Any public agency may also invest any public funds in a fund managed, operated, and administered by a bank, subsidiary of a bank, or subsidiary of a bank holding company or use the services of such an entity to hold and invest or advise regarding the investment of any public funds.

(f) To the extent a public agency has custody of funds not owned by it or another public agency and does not otherwise have authority to invest such funds, the public agency may invest such funds as if they were its own. Such funds must be released to the appropriate person at the earliest reasonable time, but in no case exceeding 31 days, after the private person becomes entitled to the receipt of them. All earnings accruing on any investments or deposits made pursuant to the provisions of this Act shall be credited to the public agency by or for which such investments or deposits were made, except as provided otherwise in Section 4.1 of the State Finance Act or the Local Governmental Tax Collection Act, and except where by specific statutory provisions such earnings are directed to be credited to and paid to a particular fund.

(g) A public agency may purchase or invest in repurchase agreements of government securities having the meaning set out in the Government Securities Act of 1986, as now or hereafter amended or succeeded, subject to the provisions of said Act and the regulations issued thereunder. The government securities, unless registered or inscribed in the name of the public agency, shall be purchased through banks or trust companies authorized to do business in the State of Illinois.

(h) Except for repurchase agreements of government securities which are subject to the Government Securities Act of 1986, as now or hereafter amended or succeeded, no public agency may purchase or invest in instruments which constitute repurchase agreements, and no financial institution may enter into such an agreement with or on behalf of any public agency

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unless the instrument and the transaction meet the following requirements:

(1) The securities, unless registered or inscribed in the name of the public agency, are purchased through banks or trust companies authorized to do business in the State of Illinois.

(2) An authorized public officer after ascertaining which firm will give the most favorable rate of interest, directs the custodial bank to "purchase" specified securities from a designated institution. The "custodial bank" is the bank or trust company, or agency of government, which acts for the public agency in connection with repurchase agreements involving the investment of funds by the public agency. The State Treasurer may act as custodial bank for public agencies executing repurchase agreements. To the extent the Treasurer acts in this capacity, he is hereby authorized to pass through to such public agencies any charges assessed by the Federal Reserve Bank.

(3) A custodial bank must be a member bank of the Federal Reserve System or maintain accounts with member banks. All transfers of book-entry securities must be accomplished on a Reserve Bank's computer records through a member bank of the Federal Reserve System. These securities must be credited to the public agency on the records of the custodial bank and the transaction must be confirmed in writing to the public agency by the custodial bank.

(4) Trading partners shall be limited to banks or trust companies authorized to do business in the State of Illinois or to registered primary reporting dealers.

(5) The security interest must be perfected.

(6) The public agency enters into a written master repurchase agreement which outlines the basic responsibilities and liabilities of both buyer and seller.

(7) Agreements shall be for periods of 330 days or less.

(8) The authorized public officer of the public agency informs the custodial bank in writing of the maturity details of the repurchase agreement.

(9) The custodial bank must take delivery of and maintain the securities in its custody for the account of the public agency and confirm the transaction in writing to the public agency. The Custodial Undertaking shall provide that the custodian takes possession of the securities exclusively for the public agency; that the securities are free of any claims against the trading partner; and any claims by the custodian are subordinate to the public agency's claims to rights to those securities.

(10) The obligations purchased by a public agency may only be sold or presented for redemption or payment by the fiscal agent bank or trust company holding the obligations upon the written instruction of the public agency or officer authorized to make such investments.

(11) The custodial bank shall be liable to the public agency for any monetary loss suffered by the public agency due to the failure of the custodial bank to take and maintain possession of such securities.

(i) Notwithstanding the foregoing restrictions on

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investment in instruments constituting repurchase agreements the Illinois Housing Development Authority may invest in, and any financial institution with capital of at least \$250,000,000 may act as custodian for, instruments that constitute repurchase agreements, provided that the Illinois Housing Development Authority, in making each such investment, complies with the safety and soundness guidelines for engaging in repurchase transactions applicable to federally insured banks, savings banks, savings and loan associations or other depository institutions as set forth in the Federal Financial Institutions Examination Council Policy Statement Regarding Repurchase Agreements and any regulations issued, or which may be issued by the supervisory federal authority pertaining thereto and any amendments thereto; provided further that the securities shall be either (i) direct general obligations of, or obligations the payment of the principal of and/or interest on which are unconditionally guaranteed by, the United States of America or (ii) any obligations of any agency, corporation or subsidiary thereof controlled or supervised by and acting as an instrumentality of the United States Government pursuant to authority granted by the Congress of the United States and provided further that the security interest must be perfected by either the Illinois Housing Development Authority, its custodian or its agent receiving possession of the securities either physically or transferred through a nationally recognized book entry system.

(j) In addition to all other investments authorized under this Section, a community college district may invest public funds in any mutual funds that invest primarily in corporate investment grade or global government short term bonds. Purchases of mutual funds that invest primarily in global government short term bonds shall be limited to funds with assets of at least \$100 million and that are rated at the time of purchase as one of the 10 highest classifications established by a recognized rating service. The investments shall be subject to approval by the local community college board of trustees. Each community college board of trustees shall develop a policy regarding the percentage of the college's investment portfolio that can be invested in such funds.

Nothing in this Section shall be construed to authorize an intergovernmental risk management entity to accept the deposit of public funds except for risk management purposes.

(Source: P.A. 97-129, eff. 7-14-11; 98-390, eff. 8-16-13.)

(30 ILCS 235/2.5)

Sec. 2.5. Investment policy.

(a) Investment of public funds by a public agency shall be governed by a written investment policy adopted by the public agency. The level of detail and complexity of the investment policy shall be appropriate to the nature of the funds, the purpose for the funds, and the amount of the public funds within the investment portfolio. The policy shall address safety of principal, liquidity of funds, and return on investment and shall require that the investment portfolio be structured in such manner as to provide sufficient liquidity to pay obligations as they come due. In addition, the investment policy shall include or address the following:

- (1) a listing of authorized investments;
- (2) a rule, such as the "prudent person rule",

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establishing the standard of care that must be maintained by the persons investing the public funds;

(3) investment guidelines that are appropriate to the nature of the funds, the purpose for the funds, and the amount of the public funds within the investment portfolio;

(4) a policy regarding diversification of the investment portfolio that is appropriate to the nature of the funds, the purpose for the funds, and the amount of the public funds within the investment portfolio;

(5) guidelines regarding collateral requirements, if any, for the deposit of public funds in a financial institution made pursuant to this Act, and, if applicable, guidelines for contractual arrangements for the custody and safekeeping of that collateral;

(6) a policy regarding the establishment of a system of internal controls and written operational procedures designed to prevent losses of funds that might arise from fraud, employee error, misrepresentation by third parties, or imprudent actions by employees of the entity;

(7) identification of the chief investment officer who is responsible for establishing the internal controls and written procedures for the operation of the investment program;

(8) performance measures that are appropriate to the nature of the funds, the purpose for the funds, and the amount of the public funds within the investment portfolio;

(9) a policy regarding appropriate periodic review of the investment portfolio, its effectiveness in meeting the public agency's needs for safety, liquidity, rate of return, and diversification, and its general performance;

(10) a policy establishing at least quarterly written reports of investment activities by the public agency's chief financial officer for submission to the governing body and chief executive officer of the public agency. The reports shall include information regarding securities in the portfolio by class or type, book value, income earned, and market value as of the report date;

(11) a policy regarding the selection of investment advisors, money managers, and financial institutions; and

(12) a policy regarding ethics and conflicts of interest.

(b) For purposes of the State or a county, the investment policy shall be adopted by the elected treasurer and presented to the chief executive officer and the governing body. For purposes of any other public agency, the investment policy shall be adopted by the governing body of the public agency.

(c) The investment policy shall be made available to the public at the main administrative office of the public agency.

(d) The written investment policy required under this Section shall be developed and implemented by January 1, 2000. (Source: P.A. 90-688, eff. 7-31-98.)

(30 ILCS 235/2.10)

Sec. 2.10. Unit of local government; deposit at reduced rate of interest. The treasurer of a unit of local government may, in his or her discretion, deposit public moneys of that unit of local government in a financial institution pursuant to an agreement that provides for a reduced rate of interest,

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provided that the institution agrees to expend an amount of money equal to the amount of the reduction for senior centers. (Source: P.A. 93-246, eff. 7-22-03.)

(30 ILCS 235/3) (from Ch. 85, par. 903)

Sec. 3. If any securities, purchased under authority of Section 2 hereof, are issuable to a designated payee or to the order of a designated payee, then the public agency shall be so designated, and further, if such securities are purchased with money taken from a particular fund of a public agency, the name of such fund shall be added to that of such public agency. If any such securities are registerable, either as to principal or interest, or both, then such securities shall be so registered in the name of the public agency, and in the name of the fund to which they are to be credited. (Source: Laws 1943, vol. 1, p. 951.)

(30 ILCS 235/4) (from Ch. 85, par. 904)

Sec. 4. All securities purchased under the authority of this Act shall be held for the benefit of the public agency which purchased them, and if purchased with money taken from a particular fund, such securities shall be credited to and deemed to be a part of such fund, and shall be held for the benefit thereof. All securities so purchased shall be deposited and held in a safe place by the person or persons having custody of the fund to which they are credited, and such person or persons are responsible upon his or their official bond or bonds for the safekeeping of all such securities. Any securities purchased by any such public agency under authority of this Act, may be sold at any time, at the then current market price thereof, by the governing authority of such public agency. Except as provided in Section 4.1 of "An Act in relation to State finance", all payments received as principal or interest, or otherwise, derived from any such securities shall be credited to the public agency and to the fund by or for which such securities were purchased. (Source: P.A. 84-1378.)

(30 ILCS 235/5) (from Ch. 85, par. 905)

Sec. 5. This Act, without reference to any other statute, shall be deemed full and complete authority for the investment of public funds, as hereinabove provided, and shall be construed as an additional and alternative method therefor. (Source: Laws 1943, vol. 1, p. 951.)

(30 ILCS 235/6) (from Ch. 85, par. 906)

Sec. 6. Report of financial institutions.

(a) No bank shall receive any public funds unless it has furnished the corporate authorities of a public agency submitting a deposit with copies of the last two sworn statements of resources and liabilities which the bank is required to furnish to the Commissioner of Banks and Real Estate or to the Comptroller of the Currency. Each bank designated as a depository for public funds shall, while acting as such depository, furnish the corporate authorities of a public agency with a copy of all statements of resources and liabilities which it is required to furnish to the Commissioner of Banks and Real Estate or to the Comptroller of the Currency; provided, that if such funds or moneys are

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deposited in a bank, the amount of all such deposits not collateralized or insured by an agency of the federal government shall not exceed 75% of the capital stock and surplus of such bank, and the corporate authorities of a public agency submitting a deposit shall not be discharged from responsibility for any funds or moneys deposited in any bank in excess of such limitation.

(b) No savings bank or savings and loan association shall receive public funds unless it has furnished the corporate authorities of a public agency submitting a deposit with copies of the last 2 sworn statements of resources and liabilities which the savings bank or savings and loan association is required to furnish to the Commissioner of Banks and Real Estate or the Federal Deposit Insurance Corporation. Each savings bank or savings and loan association designated as a depository for public funds shall, while acting as such depository, furnish the corporate authorities of a public agency with a copy of all statements of resources and liabilities which it is required to furnish to the Commissioner of Banks and Real Estate or the Federal Deposit Insurance Corporation; provided, that if such funds or moneys are deposited in a savings bank or savings and loan association, the amount of all such deposits not collateralized or insured by an agency of the federal government shall not exceed 75% of the net worth of such savings bank or savings and loan association as defined by the Federal Deposit Insurance Corporation, and the corporate authorities of a public agency submitting a deposit shall not be discharged from responsibility for any funds or moneys deposited in any savings bank or savings and loan association in excess of such limitation.

(c) No credit union shall receive public funds unless it has furnished the corporate authorities of a public agency submitting a share deposit with copies of the last two reports of examination prepared by or submitted to the Illinois Department of Financial Institutions or the National Credit Union Administration. Each credit union designated as a depository for public funds shall, while acting as such depository, furnish the corporate authorities of a public agency with a copy of all reports of examination prepared by or furnished to the Illinois Department of Financial Institutions or the National Credit Union Administration; provided that if such funds or moneys are invested in a credit union account, the amount of all such investments not collateralized or insured by an agency of the federal government or other approved share insurer shall not exceed 50% of the unimpaired capital and surplus of such credit union, which shall include shares, reserves and undivided earnings and the corporate authorities of a public agency making an investment shall not be discharged from responsibility for any funds or moneys invested in a credit union in excess of such limitation.

(d) Whenever a public agency deposits any public funds in a financial institution, the public agency may enter into an agreement with the financial institution requiring any funds not insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration or other approved share insurer to be collateralized by any of the following classes of securities, provided there has been no default in the payment of principal or interest thereon:

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(1) Bonds, notes, or other securities constituting direct and general obligations of the United States, the bonds, notes, or other securities constituting the direct and general obligation of any agency or instrumentality of the United States, the interest and principal of which is unconditionally guaranteed by the United States, and bonds, notes, or other securities or evidence of indebtedness constituting the obligation of a U.S. agency or instrumentality.

(2) Direct and general obligation bonds of the State of Illinois or of any other state of the United States.

(3) Revenue bonds of this State or any authority, board, commission, or similar agency thereof.

(4) Direct and general obligation bonds of any city, town, county, school district, or other taxing body of any state, the debt service of which is payable from general ad valorem taxes.

(5) Revenue bonds of any city, town, county, or school district of the State of Illinois.

(6) Obligations issued, assumed, or guaranteed by the International Finance Corporation, the principal of which is not amortized during the life of the obligation, but no such obligation shall be accepted at more than 90% of its market value.

(7) Illinois Affordable Housing Program Trust Fund Bonds or Notes as defined in and issued pursuant to the Illinois Housing Development Act.

(8) In an amount equal to at least market value of that amount of funds deposited exceeding the insurance limitation provided by the Federal Deposit Insurance Corporation or the National Credit Union Administration or other approved share insurer: (i) securities, (ii) mortgages, (iii) letters of credit issued by a Federal Home Loan Bank, or (iv) loans covered by a State Guarantee under the Illinois Farm Development Act, if that guarantee has been assumed by the Illinois Finance Authority under Section 845-75 of the Illinois Finance Authority Act, and loans covered by a State Guarantee under Article 830 of the Illinois Finance Authority Act.

(9) Certificates of deposit or share certificates issued to the depository institution pledging them as security. The public agency may require security in the amount of 125% of the value of the public agency deposit. Such certificate of deposit or share certificate shall:

(i) be fully insured by the Federal Deposit Insurance Corporation, the Federal Savings and Loan Insurance Corporation, or the National Credit Union Share Insurance Fund or issued by a depository institution which is rated within the 3 highest classifications established by at least one of the 2 standard rating services;

(ii) be issued by a financial institution having assets of \$15,000,000 or more; and

(iii) be issued by either a savings and loan association having a capital to asset ratio of at least 2%, by a bank having a capital to asset ratio of at least 6% or by a credit union having a capital to asset ratio of at least 4%.

The depository institution shall effect the assignment of the certificate of deposit or share certificate to the public

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agency and shall agree that, in the event the issuer of the certificate fails to maintain the capital to asset ratio required by this Section, such certificate of deposit or share certificate shall be replaced by additional suitable security.

(e) The public agency may accept a system established by the State Treasurer to aggregate permissible securities received as collateral from financial institutions in a collateral pool to secure public deposits of the institutions that have pledged securities to the pool.

(f) The public agency may at any time declare any particular security ineligible to qualify as collateral when, in the public agency's judgment, it is deemed desirable to do so.

(g) Notwithstanding any other provision of this Section, as security a public agency may, at its discretion, accept a bond, executed by a company authorized to transact the kinds of business described in clause (g) of Section 4 of the Illinois Insurance Code, in an amount not less than the amount of the deposits required by this Section to be secured, payable to the public agency for the benefit of the People of the unit of government, in a form that is acceptable to the public agency.

(h) Paragraphs (a), (b), (c), (d), (e), (f), and (g) of this Section do not apply to the University of Illinois, Southern Illinois University, Chicago State University, Eastern Illinois University, Governors State University, Illinois State University, Northeastern Illinois University, Northern Illinois University, Western Illinois University, the Cooperative Computer Center and public community colleges.
(Source: P.A. 95-331, eff. 8-21-07.)

(30 ILCS 235/6.5)

Sec. 6.5. Federally insured deposits at Illinois financial institutions.

(a) Notwithstanding any other provision of this Act or any other statute, whenever a public agency invests public funds in an interest-bearing savings account, interest-bearing certificate of deposit, or interest-bearing time deposit under Section 2 of this Act, the provisions of Section 6 of this Act and any other statutory requirements pertaining to the eligibility of a bank to receive or hold public deposits or to the pledging of collateral by a bank to secure public deposits do not apply to any bank receiving or holding all or part of the invested public funds if (i) the public agency initiates the investment at or through a bank located in Illinois and (ii) the invested public funds are at all time fully insured by an agency or instrumentality of the federal government.

(b) Nothing in this Section is intended to:

(1) prohibit a public agency from requiring the bank at or through which the investment of public funds is initiated to provide the public agency with the information otherwise required by subsections (a), (b), or (c) of Section 6 of this Act as a condition of investing the public funds at or through that bank; or

(2) permit a bank to receive or hold public deposits if that bank is prohibited from doing so by any rule, sanction, or order issued by a regulatory agency or by a court.

(c) For purposes of this Section, the term "bank" includes any person doing a banking business whether subject to the

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laws of this or any other jurisdiction.
(Source: P.A. 93-756, eff. 7-16-04.)

(30 ILCS 235/7) (from Ch. 85, par. 907)

Sec. 7. When investing or depositing public funds, each custodian shall, to the extent permitted by this Act and by the lawful and reasonable performance of his custodial duties, invest or deposit such funds with or in minority-owned financial institutions within this State.

(Source: P.A. 84-754.)

(30 ILCS 235/8)

Sec. 8. Consideration of financial institution's commitment to its community.

(a) In addition to any other requirements of this Act, a public agency is authorized to consider the financial institution's record and current level of financial commitment to its local community when deciding whether to deposit public funds in that financial institution. The public agency may consider factors including, but not necessarily limited to:

(1) for financial institutions subject to the federal Community Reinvestment Act of 1977, the current and historical ratings that the financial institution has received, to the extent that those ratings are publicly available, under the federal Community Reinvestment Act of 1977;

(2) any changes in ownership, management, policies, or practices of the financial institution that may affect the level of the financial institution's commitment to its community;

(3) the financial impact that the withdrawal or denial of deposits of public funds might have on the financial institution;

(4) the financial impact to the public agency as a result of withdrawing public funds or refusing to deposit additional public funds in the financial institution; and

(5) any additional burden on the resources of the public agency that might result from ceasing to maintain deposits of public funds at the financial institution under consideration.

(b) Nothing in this Section shall be construed as authorizing the public agency to conduct an examination or investigation of a financial institution or to receive information that is not publicly available and the disclosure of which is otherwise prohibited by law.

(Source: P.A. 93-251, eff. 7-1-04.)

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Information maintained by the Legislative Reference Bureau

Updating the database of the Illinois Compiled Statutes (ILCS) is an ongoing process. Recent laws may not yet be included in the ILCS database, but they are found on this site as [Public Acts](#) soon after they become law. For information concerning the relationship between statutes and Public Acts, refer to the [Guide](#).

Because the statute database is maintained primarily for legislative drafting purposes, statutory changes are sometimes included in the statute database before they take effect. If the source note at the end of a Section of the statutes includes a Public Act that has not yet taken effect, the version of the law that is currently in effect may have already been removed from the database and you should refer to that Public Act to see the changes made to the current law.

**LOCAL GOVERNMENT
(50 ILCS 340/) Investment of Municipal Funds Act.**

(50 ILCS 340/0.01) (from Ch. 146 1/2, par. 3.01)

Sec. 0.01. Short title. This Act may be cited as the Investment of Municipal Funds Act.
(Source: P.A. 86-1324.)

(50 ILCS 340/1) (from Ch. 146 1/2, par. 3.1)

Sec. 1. Every county, park district, sanitary district, or other municipal corporation, holding in its treasury funds which are set aside for use for particular purposes, including any funds that are disbursed to a county or municipality as their share of the taxes collected under the "Motor Fuel Tax Law", but which are not immediately necessary for those purposes, by ordinance, may use those funds, or any of them, in the purchase of tax anticipation warrants issued by the county, park district, sanitary district, or other municipal corporation possessing the funds against taxes levied by that county, park district, sanitary district, or other municipal corporation. These warrants shall bear interest not to exceed four percent annually. All interest upon these warrants, and all money paid in redemption of these warrants, or received from the resale thereof, shall at once be credited to and placed in the particular fund used to purchase the specified warrants. Likewise, every county, park district, sanitary district, or other municipal corporation, by resolution or ordinance may use the money in the specified funds in the purchase of municipal bonds issued by the county, park district, sanitary district, or other municipal corporation, possessing the funds and representing an obligation and pledging the credit of that county, park district, sanitary district, or other municipal corporation, or bonds and other interest bearing obligations of the United States, of the State of Illinois, or of any other state or of any political subdivision or agency of the State of Illinois or of any other state, whether the interest earned thereon is taxable or tax-exempt under federal law, including savings accounts and savings certificates of deposit of any State or National Bank if such accounts and certificates are fully insured by the Federal Deposit Insurance Corporation, withdrawable capital accounts or deposits of State or federal chartered savings and loan associations which are fully insured by the Federal Savings and Loan Insurance Corporation, or treasury notes and other securities issued by agencies of the United States. All interest upon these bonds or obligations and all money paid in redemption of these bonds or obligations or realized from the sale thereof, if afterwards sold, shall at once be credited to

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and placed in the particular fund used to purchase the specified bonds or obligations.

No bank or savings and loan association shall receive public funds as permitted by this Section, unless it has complied with the requirements established pursuant to Section 6 of "An Act relating to certain investments of public funds by public agencies", approved July 23, 1943, as now or hereafter amended.

This amendatory Act of 1975 is not a limit on any home rule unit.

(Source: P.A. 93-360, eff. 7-24-03.)

(50 ILCS 340/2) (from Ch. 146 1/2, par. 3.2)

Sec. 2. If at any time it is deemed expedient to convert into money any tax anticipation warrants theretofore issued and purchased with public funds pursuant to the provisions of Section 1 of this Act, before receipt of the taxes in anticipation of which the warrants were issued, the governing body of the county, park district, sanitary district, or other municipal corporation, by ordinance or resolution, may authorize a resale of such warrants and adjust the interest rate thereon or may authorize the issuance and sale of a like principal amount of any warrants for the same purpose and in anticipation of the same taxes as the original warrants were issued. These new warrants may have any date subsequent to the date of the original tax anticipation warrants. The new tax anticipation warrants shall be of the denomination and shall bear interest at the rate, not to exceed the statutory rate, that is authorized by the ordinance or resolution specified in this section.

Simultaneously with the delivery of these new tax anticipation warrants a like principal amount of the original warrants that were issued against the same tax that is anticipated by the new warrants shall be paid and cancelled. The proceeds of the sale of these new tax anticipation warrants shall be used first to restore to the fund or funds so invested in the original tax anticipation warrants, money equivalent to the par value and accrued interest of the original tax anticipation warrants and the balance, if any, shall revert to the fund for the creation of which the tax so anticipated was levied.

When tax anticipation warrants are reissued they shall bear the index numerical designation of the original warrants and shall be subnumbered consecutively in the order of reissuance, and shall be paid in the direct order of reissuance, beginning with the earliest subnumber.

In determining the priority of payment of more than one series of tax anticipation warrants against the collection of the same tax the various series shall be treated as having been issued on the date of the original issue of each series of warrants. The series prior in point of time as thus determined shall be paid first.

This Act shall not apply to cities, villages, and incorporated towns.

(Source: Laws 1941, vol. 2, p. 473.)

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(605 ILCS 5/9-101) (from Ch. 121, par. 9-101)

Sec. 9-101. Nothing in this Code shall prevent the execution of cooperative agreements among governmental agencies.

Any municipality may negotiate an agreement with the Department whereby the municipality may use such funds as are available to it for that purpose for the construction or maintenance of a State highway within its boundaries or with the corporate authority of a county or road district for the construction or maintenance of a highway on the county highway system or township or district road system outside of its municipal boundaries.

The county board may negotiate an agreement with the Department whereby the county may use such funds as are available to it for that purpose for the construction or maintenance of a highway on the State highway system or with a municipality for the construction or maintenance of streets on the municipal street system of such municipality.

(Source: Laws 1959, p. 196.)

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2013-08
SUBJECT: BICYCLE FACILITIES
ISSUED DATE: October 23, 2013
EFFECTIVE DATE: October 25, 2013

This memorandum supersedes Chapter 42 dated January 2006 of the Bureau of Local Roads & Streets Manual.

The Department has updated Chapter 42, Bicycle Facilities, to use design recommendations contained in AASHTO's *Guide for the Development of Bicycle Facilities, 4th edition, 2012* when bicycle accommodations are provided. No changes have been made as to when bicycle accommodations are required except when a local agency project impacts a state highway the design policies in Chapter 17 of the Bureau of Design & Environment will apply.

The Federal Highway Administration has also recommended the use of the National Association of City Transportation Officials' *Urban Bikeway Design Guide* and the Institute of Transportation Engineers' *Designing Urban Walkable Thoroughfares* for the development of bikeways in urban areas.

Please contact the Bureau's Local Policy & Technology Unit at IDOT.LocalPolicy@illinois.gov with any questions.

James K. Klein

Acting Engineer of Local Roads and Streets

KB/kb

Attachments

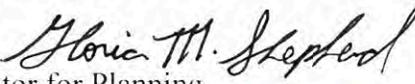


U.S. Department
of Transportation
**Federal Highway
Administration**

Memorandum

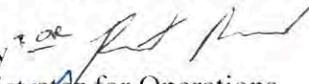
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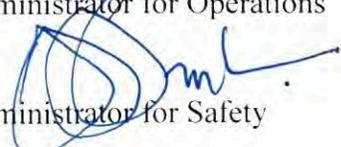
Subject: **GUIDANCE:** Bicycle and Pedestrian Facility Design Flexibility Date: August 20, 2013

From: Gloria M. Shepherd 
Associate Administrator for Planning,
Environment and Realty

In Reply Refer To:
HEPH-10

Walter C. (Butch) Waidelich, Jr. 
Associate Administrator for Infrastructure

Jeffrey A. Lindley 
Associate Administrator for Operations

Tony T. Furst 
Associate Administrator for Safety

To: Division Administrators
cc: Directors of Field Services

This memorandum expresses the Federal Highway Administration's (FHWA) support for taking a flexible approach to bicycle and pedestrian facility design. The American Association of State Highway and Transportation Officials (AASHTO) bicycle and pedestrian design guides are the primary national resources for planning, designing, and operating bicycle and pedestrian facilities. The National Association of City Transportation Officials (NACTO) [Urban Bikeway Design Guide](#) and the Institute of Transportation Engineers (ITE) [Designing Urban Walkable Thoroughfares](#) guide builds upon the flexibilities provided in the AASHTO guides, which can help communities plan and design safe and convenient facilities for pedestrian and bicyclists. FHWA supports the use of these resources to further develop nonmotorized transportation networks, particularly in urban areas.

AASHTO Guides

AASHTO publishes two guides that address pedestrian and bicycle facilities:

- [Guide for the Planning, Design, and Operation of Pedestrian Facilities](#), July 2004, (AASHTO Pedestrian Guide) provides guidelines for the planning, design, operation, and maintenance of pedestrian facilities, including signals and signing. The guide recommends methods for accommodating pedestrians, which vary among roadway and facility types, and addresses the effects of land use planning and site design on pedestrian mobility.
- [Guide for the Development of Bicycle Facilities 2012, Fourth Edition](#) (AASHTO Bike Guide) provides detailed planning and design guidelines on how to accommodate bicycle travel and operation in most riding environments. It covers the planning, design, operation,

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maintenance, and safety of on-road facilities, shared use paths, and parking facilities. Flexibility is provided through ranges in design values to encourage facilities that are sensitive to local context and incorporate the needs of bicyclists, pedestrians, and motorists.

NACTO Guide

NACTO first released the [Urban Bikeway Design Guide](#) (NACTO Guide) in 2010 to address more recently developed bicycle design treatments and techniques. It provides options that can help create “complete streets” that better accommodate bicyclists. While not directly referenced in the AASHTO Bike Guide, many of the treatments in the NACTO Guide are compatible with the AASHTO Bike Guide and demonstrate new and innovative solutions for the varied urban settings across the country.

The vast majority of treatments illustrated in the NACTO Guide are either allowed or not precluded by the Manual on Uniform Traffic Control Devices (MUTCD). In addition, non-compliant traffic control devices may be piloted through the MUTCD experimentation process. That process is described in [Section 1A.10](#) of the MUTCD and a table on the FHWA's bicycle and pedestrian design guidance Web page is regularly updated ([FHWA Bicycle and Pedestrian Design Guidance](#)), and explains what bicycle facilities, signs, and markings are allowed in accordance with the MUTCD. Other elements of the NACTO Guide's new and revised provisions will be considered in the rulemaking cycle for the next edition of the MUTCD.

ITE Guide

In 2010, FHWA supported production of the ITE Guide [Designing Walkable Urban Thoroughfares: A Context Sensitive Approach](#). This guide is useful in gaining an understanding of the flexibility that is inherent in the AASHTO “Green Book,” [A Policy on Geometric Design of Highways and Streets](#). The chapters emphasize thoroughfares in “walkable communities” – compact, pedestrian-scaled villages, neighborhoods, town centers, urban centers, urban cores and other areas where walking, bicycling and transit are encouraged. It describes the relationship, compatibility and trade-offs that may be appropriate when balancing the needs of all users, adjoining land uses, environment and community interests when making decisions in the project development process.

Summary

FHWA encourages agencies to appropriately use these guides and other resources to help fulfill the aims of the 2010 [US DOT Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations](#) – “...DOT encourages transportation agencies to go beyond the minimum requirements, and proactively provide convenient, safe, and context-sensitive facilities that foster increased use by bicyclists and pedestrians of all ages and abilities, and utilize universal design characteristics when appropriate.”

Accompanying this memo are the latest versions of the: 1) AASHTO Bike Guide, 2) NACTO Bike Guide; and 3) the ITE [Designing Walkable Urban Thoroughfares](#) Guide.

The attachments provide two examples that demonstrate the use of treatments illustrated in the NACTO Guide (i.e., buffered bike lanes and green colored pavement for bicycle lanes) by State or local DOTs, and a list of FHWA staff that can help with questions about pedestrian and bicycle design issues.

Attachments

Attachment 1 – Example 1 & 2

Example 1: Michigan DOT's Buffered Bike Lanes

One of the innovative bicycle facilities discussed in the NACTO *Urban Bikeway Design Guide* is buffered bike lanes. Buffered bike lanes create more space between motor vehicles and bicycles by delineating extra space between the bike lane and parked cars and/or a motor vehicle lane. Buffered bike lanes can be implemented if the pavement markings and channelizing devices are compliant with the MUTCD (see [Bicycle Facilities and the Manual on Uniform Traffic Control Devices](#)). Michigan DOT developed a video that describes their efforts to install buffered bike lanes in Oakland County (see [Northwestern Highway Bicycle Lane: A Safer Place to Ride](#)). Michigan DOT also developed a brochure that explains buffered bike lanes to the public (see [What Every Michigan Driver Should Know About Bike Lanes](#)).

Example 2: Missoula's Colored Bike Lanes

MUTCD experimentation is a methodology that analyzes innovative traffic control devices through field deployment for the purpose of testing or evaluating its application or manner of use. An approved request to experiment numbered and titled as Official Ruling “[3\(09\)-3\(E\) – Colored Bike Lanes – Missoula, MT](#)” illustrates a successful experiment. The City of Missoula submitted a request to experiment in January 2010 in accordance with all Items in Paragraph 11 of [Section 1A.10](#) in the 2009 MUTCD.

The experiment was conducted for one year and revealed that approximately 70 percent of motorists noticed the color conspicuity enhancement to the bike lane. This was interpreted as an increased awareness by motorists of the potential presence of bicyclists at intersections where those motorists would be making a right turn.

The City also reported ancillary findings that were not anticipated in the original Evaluation Plan of the request to experiment. This included psychological discomfort of the cyclist with the lateral locations of the colored bicycle lane with respect to door zones in parallel parking corridors. In addition, the experiment revealed an unintended design weakness where colored bike lanes that achieve high compliance of little or no occupation of motorized vehicles can also be attractive to pedestrians who wish to use them to facilitate their travel in lieu of crowded sidewalks or to patronize parking meters. For these reasons, a successful experiment can reveal unanticipated findings, further demonstrating the value of official experimentation.

This particular experiment provided two conclusions that supported FHWA's decision to issue [Interim Approval](#) for green colored pavement for bicycle lanes in April 2011.

For more information see <http://mutcd.fhwa.dot.gov/reqdetails.asp?id=1135>.



Attachment 2

FHWA Bicycle and Pedestrian Staff Resources

Human Environment — Livability and Bicycle and Pedestrian Programs

- Shana Baker, Livability Team Leader, 202-366-4649, shana.baker@dot.gov: Livability, Context Sensitive Solutions
- Christopher Douwes, Trails and Enhancements Program Manager 202-366-5013, christopher.douwes@dot.gov: Transportation Alternatives Program/Enhancement Activities: Recreational Trails Program related activities: Bicycle and pedestrian policy and guidance
- Daniel Goodman, Transportation Specialist, 202-366-9064, daniel.goodman@dot.gov: Bicycle and pedestrian activities: Livability
- Wesley Blount, Program Manager, 202-366-0799, wesley.blount@dot.gov: Safe Routes to School, Discretionary programs

Planning

- Brian Gardner, 202-366-4061, brian.gardner@dot.gov: Modeling
- Jeremy Raw, 202-366-0986, jeremy.raw@dot.gov: Modeling
- Harlan Miller, 202-366-0847, harlan.miller@dot.gov: Planning Oversight
- Kenneth Petty, 202-366-6654 kenneth.petty@dot.gov: Planning Capacity Building

Policy

- Steven Jessberger, 202-366-5052, steven.jessberger@dot.gov, Traffic Monitoring Guide

Infrastructure — Design (including accessible design)

- Michael Matzke, 202-366-4658, michael.matzke@dot.gov

Resource Center— Design (including accessible design)

- Brooke Struve, Safety and Design Team, 720-963-3270, brooke.struve@dot.gov
- Peter Eun, Safety and Design Team, 360-753-9551, peter.eun@dot.gov

Operations — Manual on Uniform Traffic Control Devices

- Kevin Dunn, Transportation Specialist, 202-366-6054, kevin.dunn@dot.gov: MUTCD Team

Pedestrian and Bicycle Safety

- Gabe Rousseau, Safety Operations Team Leader, 202-366-8044, gabe.rousseau@dot.gov: Bicycle and pedestrian safety programs
- Tamara Redmon, Pedestrian Safety Program Manager, 202-366-4077, tamara.redmon@dot.gov: Pedestrian safety

Pedestrian and Bicyclist Safety Research

- Ann Do, 202-493-3319, ann.do@dot.gov
- Jim Shurbutt, 202-493-3420, jimmy.shurbutt@dot.gov

Civil Rights — Accessibility Policy and Compliance

- Patrick Gomez, Resource Center Civil Rights Team, 720-963-3269, patrick.gomez@dot.gov
- Candace Groudine, Director of External Civil Rights Programs, 202-366-4634, candace.groudine@dot.gov



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2013-09
SUBJECT: SPEED HUMPS AND SPEED TABLES
ISSUED DATE: October 29, 2013
EFFECTIVE DATE: October 29, 2013

This memorandum creates a new Section 41-12 of the Bureau of Local Roads & Streets Manual.

Speed humps and speed tables are raised sections of pavement that are placed across the entire width of a highway to reduce vehicle speeds and enhance pedestrian safety. These traffic calming designs are eligible for federal, state, and motor fuel tax funds provided that they are designed according to guidelines.

Speed humps and speed tables may be controversial in some localities due to their appearance, jarring effects on vehicles and passengers, and impact to emergency response vehicles. Furthermore, speed humps and speed tables may create drainage problems.

Please contact the Bureau's Local Policy & Technology Unit at IDOT.LocalPolicy@illinois.gov with any questions.

James K. Klein

Acting Engineer of Local Roads and Streets

KB/kb

Attachments

Traffic Calming Measures - Speed Hump



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PUZZLE

Description:

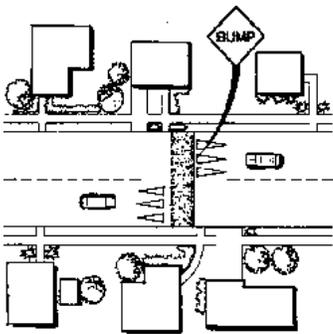
- rounded raised areas of pavement typically 12 to 14 feet in length
- often placed in a series (typically spaced 300 to 600 feet apart)
- sometimes called road humps or undulations

Applications:

- residential streets
- not typically used on major roads, bus routes, or primary emergency response routes
- midblock placement, not at an intersection
- not on grades greater than 8 percent
- work well with curb extensions



Design/Installation Issues:



- typically 12 to 14 feet in length; other lengths (10, 22, and 30 feet) reported in practice in U.S.
- speed hump shapes include parabolic, circular, and sinusoidal
- hump heights range between 3 and 4 inches with trend toward 3 - 3 ½ inches maximum
- difficult to construct precisely; may need to specify a construction tolerance (e.g. ± 1/8 inch) on height
- often have signage (advance warning sign before first hump in series and warning sign or object marker at hump)
- typically have pavement marking (zigzag, shark's tooth, chevron, zebra)
- taper edge near curb to allow gap for drainage
- some have speed advisories
- bicyclists prefer that it not cover or cross a bike lane

Potential Impacts:

- no effect on non-emergency access
- speeds determined by height and spacing; speeds between humps have been observed to be reduced between 20 and 25 percent on average
- based on a limited sample of sites, typical crossing speeds (85th percentile) of 19 mph have been measured for 3½ inch high, 12 foot humps and of 21 mph for 3 inch high, 14 foot humps; speeds have been observed to rise to 27 mph within 200 feet downstream
- speeds typically increase approximately 0.5 mph midway between humps for each 100 feet of separation
- studies indicate that traffic volumes have been reduced on average by 18 percent depending on alternative routes available
- studies indicate that collisions have been reduced on average by 13 percent on treated streets (not adjusted for traffic diversion)
- most communities limit height to 3-3½ inches, partly because of harsh ride over 4-inch high humps
- possible increase in traffic noise from braking and acceleration of vehicles, particularly buses and trucks

Emergency Response Issues:

- Concern over jarring of emergency rescue vehicles
- Approximate delay of between 3 and 5 seconds per hump for fire trucks and up to 10 seconds for ambulance with patient

Typical Cost:

- Approximately \$2,000 (1997 dollars)

For additional detail, refer to ITE's Recommended Practice entitled *Guidelines for the Design and Application of Speed Humps*. Visit the [ITE Bookstore](#) for more information about this publication.

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U.S. Department of Transportation
Federal Highway Administration



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SPEED HUMP | SPEED TABLE | RAISED INTERSECTION | CLOSURE | NEIGHBORHOOD TRAFFIC CIRCLE | CHICANE | CHOKER | CENTER ISLAND NARROWING

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Traffic Calming Measures - Speed Table



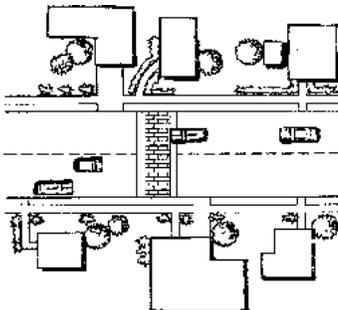
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Description:

- long raised speed humps with a flat section in the middle and ramps on the ends; sometimes constructed with brick or other textured materials on the flat section
- sometimes called flat top speed humps, trapezoidal humps, speed platforms, raised crosswalks, or raised crossings

Applications:

- local and collector streets
- main roads through small communities
- typically long enough for the entire wheelbase of a passenger car to rest on top
- work well in combination with textured crosswalks, curb extensions, and curb radius reductions
- can include a crosswalk



Design/Installation Issues:

- typically 22 feet in the direction of travel with 6 foot ramps on each end and a 10 foot flat section in the middle; other lengths (32 and 48 feet) reported in U.S. practice
- most common height is between 3 and 4 inches (and reported as high as 6 inches)
- ramps are typically 6 feet long (reported up to 10 feet long) and are either parabolic or linear
- careful design is needed for drainage

Potential Impacts:

- no effect on access
- speeds are reduced, but usually to a higher crossing speed than at speed humps (typically between 25 and 27 miles per hour)
- traffic volumes have been reduced on average by 12 percent depending on alternative routes available
- collisions have been reduced on average by 45 percent on treated streets (not adjusted for traffic diversion)
- reported to increase pedestrian visibility and likelihood that driver yields to pedestrian

Emergency Response Issues:

- typically preferred by fire departments over 12 to 14-foot speed humps
- generally less than 3 seconds of delay per hump for fire trucks

Typical Cost:

- approximately \$2,500 (in 1997 dollars) for asphalt tables; higher for brickwork, stamped asphalt, concrete ramps and other enhancements sometimes used at pedestrian crossings

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ITE Canon of Ethics
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9.2 Speed Control Measures

Two types of traffic calming measures that control the speed of vehicles on streets and impact pedestrian access are (Institute of Transportation Engineers, 1999):

- Vertical measures, which rely on forces of vertical rise acceleration to discourage speeding; and
- Horizontal measures, which rely on forces of lateral shift acceleration to discourage speeding.

A third form of speed control is a narrowing measure, which relies on a psycho-perceptive sense of enclosure to discourage speeding. Installing a tree canopy to create a sense of enclosure is an example of a narrowing measure. This type of traffic calming does not impact pedestrian access if a sidewalk is provided. A 915 mm (36 in) clear space on both sides of the street allows for bicyclists to travel through. The general benefits of slower motorist speeds benefits all pedestrians.



Figure 9-8. Speed humps are a common vertical measure for controlling the speed of motorists in residential neighborhoods.

Vertical speed control measures that will be evaluated in the following sections include:

- Speed humps;
- Speed tables;
- Raised crosswalks;
- Raised intersections; and
- Textured pavement.

Horizontal measures that will be evaluated in the following sections include:

- Roundabouts;
- Neighborhood traffic circles;
- Chicanes, lateral shifts, and chokers;
- Curb extensions; and,
- Center island narrowings.

9.2.1 Speed humps

Speed humps are raised sections of pavement that are placed across the street to force motorists to travel at reduced speeds. Speed humps have a more gradual slope than traditional speed bumps, which are often found in parking lots. Speed humps are more effective at slowing traffic than speed bumps because the driver actually benefits from traveling at slower speeds. Speed bumps typically jar the motorist regardless of speed. The best speed hump designs employ a very gradual slope, such as a 3.66 m (12 ft) long speed

hump with a 101 mm (4 in) vertical elevation change, to reduce jarring and potential vehicle damage. Speed humps are effective in reducing traffic speeds and are a low cost tool. However, speed humps may be controversial in some localities due to their appearance and jarring effects on vehicles and passengers.

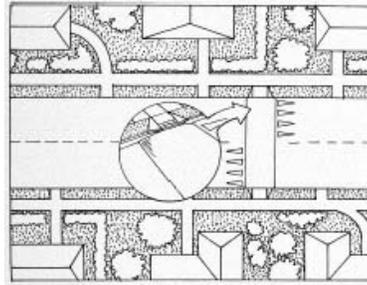


Figure 9-9. A 3.66 m (12 ft) long speed hump with a 101 mm (4 in) vertical elevation change minimizes the jarring effect and potential vehicle damage experienced with traditionally designed speed bumps.

9.2.1.1 Impact on pedestrian access

In general, speed humps effectively slow traffic and benefit all pedestrians including people with disabilities. However, people with mobility impairments may experience problems on speed humps. For example, people with back or neck problems may experience pain or discomfort caused by the jarring effect when traveling over speed humps in an automobile. This is further complicated if the person relies on para or public transit and does not have control over the speed of the vehicle.

9.2.1.2 Design recommendations speed humps

The following recommendations are intended to enhance pedestrian access at speed humps:

- Design speed humps with gradual slopes and minimal changes in elevation to limit jarring; and
- Do not install speed humps in the path of a pedestrian crossing or curb ramp.

9.2.2 Speed tables and raised crosswalks

Speed tables are similar to speed humps; however, they include a flat section on top. Oftentimes, the top of the speed table is constructed with a decorative surface material. When marked as a pedestrian crossing, speed tables are called raised crosswalks. The length of speed tables or raised crosswalks allow all four wheels of a vehicle to rest on the raised section at the same time. Combined with gently sloped ramps, speed tables permit slightly higher motorist speeds and smoother transitions than speed humps. Additional information about raised crosswalks is contained in Sections 6.3 and 8.5.

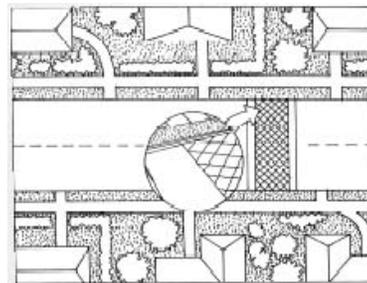


Figure 9-10. Speed tables and raised crosswalks are flush with the curb and do not provide a clear distinction for people with vision impairments unless detectable warnings are installed.

9.2.2.1 Impact on pedestrian access

Speed tables resolve some of the access problems for people with mobility impairments. However, they can be problematic for people with vision impairments if their needs are not considered. Speed tables impact pedestrian access as follows:

Negative impacts

- People with back and neck problems may experience pain or discomfort when traveling over speed tables in motor vehicles (though less jarring than traveling over speed humps); and
- When used as a crosswalk, unless detectable warnings are provided, there is no distinction between the sidewalk and the street for people with vision impairments.

Note: When used as a crosswalk, there is no negative impact on pedestrians with visual impairments when detectable warnings are installed.

Positive impacts

- Speed tables used as raised crosswalks increase pedestrian visibility; and
- Speed tables used as crosswalks eliminate the need for a curb ramp, which improves access for people with mobility impairments and increases the sidewalk area available to pedestrians waiting to cross the street.

9.2.2.2 Design recommendations for speed tables

The following recommendations are intended to enhance pedestrian access at speed tables and raised crosswalks:

- Install detectable warnings whenever speed tables are used as raised crosswalks to identify the transition between the sidewalk and the street; and
- Select colored asphalt rather than brick or other decorative surface materials to enhance rollibility for people with mobility impairments. Brick trim may be used in outlining the pedestrian travel path, but not in the pathway. (See Section 4.3.1.4).

Traffic Calming

28. Speed Hump / Table

Speed humps are paved (usually asphalt) and approximately 3-4 inches high at their center, and extend the full width of the street. Speed humps should not be confused with a speed "bump" that is often found in mall parking lots. There are several designs for speed humps. The traditional 12-foot hump has a design speed of 15 to 20 mph, a 14-foot one a few mph higher, and a 22-foot table, of 25 to 30 mph. The longer humps are much gentler for larger vehicles.

A speed table is a term used to describe a very long and broad speed hump, or for a flat-topped speed hump, where sometimes a pedestrian crossing is provided in the flat portion of the speed table. The speed table can either be parabolic, making it more like a speed hump, or trapezoidal, which is used more frequently in Europe. Speed tables can be used in combination with curb extensions where parking exists.



Speed humps are frequently used on residential streets to reduce speeds. However, they can create unwanted noise if they are too severe, or cause motorists to slow down more than is necessary.

Purpose:

- Reduces vehicle speeds. Raised measures tend to have the most predictable speed reduction impacts.
- Enhances the pedestrian environment and pedestrian crossings.

Considerations:

- Do not use if sight distance is limited and/or if the street is on a steep grade.
- If the street is a bus route or primary emergency route, design must be coordinated with operators. Usually some devices are acceptable if used prudently - one device may be appropriate and may serve the primary need, e.g. if there is a particular location along a street that is most in need of slowing traffic and improving pedestrian conditions.
- The aesthetics of speed humps and speed tables can be improved through the use of color and specialized paving materials.
- Noise may increase particularly if trucks use the route regularly.

- May create drainage problems on some streets.

Estimated cost

The cost for each speed hump is approximately \$2,000. Speed tables are \$5,000–\$15,000, again depending on drainage conditions and materials used.

Close

Print



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2013-10
SUBJECT: PUBLIC RIGHTS-OF-WAY ACCESSIBILITY
GUIDELINES (PROWAG)
ISSUED DATE: October 31, 2013
EFFECTIVE DATE: January 1, 2014

This memorandum replaces Chapter 8 dated April 2005 and supersedes Section 41-6 dated October 2008 of the Bureau of Local Roads & Streets Manual.

Local public agencies (LPA) are required to comply with Title II of the Americans with Disabilities Act (ADA). The 2010 ADA accessibility guidelines (ADAAG) specify the minimum level of accessibility in new construction and alteration projects and serve as the basis for enforceable standards. However, ADAAG does not adequately address many features common on the public rights-of-way. Various constraints posed by space limitations at sidewalks, roadway design practices, slope, and terrain raise valid questions on how and to what extent access may be achieved. Accessibility for individuals with disabilities at street crossings and on sidewalks is typical of the issues for which additional guidance is needed.

Therefore, on November 23, 2005, the United States Access Board (US Access Board) published rulemaking with revised draft guidelines to cover access to sidewalks and streets, including crosswalks, curb ramps, street furnishings, parking, and other components of public rights-of-way [Public Rights-of-Way Accessibility Guidelines (PROWAG)]. On January 23, 2006, the Federal Highway Administration issued a memorandum recognizing that PROWAG "are the currently recommended best practices, and can be considered the state of the practice that could be followed for areas not fully addressed by the present ADAAG standards." Then, on July 26, 2011, the US Access Board published proposed final PROWAG rulemaking. The comment period closed on February 2, 2012. The final rule is expected to be published in the Federal Register in the near future.

The Bureau of Local Roads & Streets based on discussion with the Office of Illinois Attorney General Disability Rights Bureau and the Federal Highway Administration Illinois Division is recommending using the 2011 proposed final PROWAG for compliance with ADA on LPA projects funded with federal, state, or motor fuel tax funds. Since all new facilities (and altered facilities to the maximum extent practical) must be designed and constructed to be accessible to and useable by people with disabilities, LPAs should consider using these PROWAG for all projects on the public rights of way regardless of funding.

Please contact the Bureau's Local Policy & Technology Unit at IDOT.LocalPolicy@illinois.gov with any questions.



Acting Engineer of Local Roads and Streets

KB/kb

Attachments

cc: Catherine (Kay) Batey, FHWA
Vickie Simpson, Office of the Illinois Attorney General

[Home](#) > [Guidelines and Standards](#) > [Streets & Sidewalks](#) > Public Rights-of-Way

About the Rulemaking on Public Rights-of-Way

Sidewalks, street crossings, and other elements in the public right-of-way can pose challenges to accessibility. The Board's ADA and ABA Accessibility Guidelines focus mainly on facilities on sites. While they address certain features common to public sidewalks, such as curb ramps, further guidance is necessary to address conditions and constraints unique to public rights-of-way.

The Board is developing new guidelines for public rights-of-way that will address various issues, including access for blind pedestrians at street crossings, wheelchair access to on-street parking, and various constraints posed by space limitations, roadway design practices, slope, and terrain. The new guidelines will cover pedestrian access to sidewalks and streets, including crosswalks, curb ramps, street furnishings, pedestrian signals, parking, and other components of public rights-of-way. The Board's aim in developing these guidelines is to ensure that access for persons with disabilities is provided wherever a pedestrian way is newly built or altered, and that the same degree of convenience, connection, and safety afforded the public generally is available to pedestrians with disabilities. Once these guidelines are adopted by the Department of Justice, they will become enforceable standards under title II of the ADA.



PUBLIC RIGHTS-OF-WAY

[About this Rulemaking](#)

[Proposed Guidelines \(2011\)](#)

[Public Comments](#)

[Guidance and Research](#)

[Background](#)

[Other Resources](#)

EMAIL UPDATES

Sign up for updates on Streets & Sidewalks:

TECHNICAL ASSISTANCE:

(800) 872-2253

TTY: (800) 993-2822

Fax: (202) 272-0081

row@access-board.gov

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2013-11
SUBJECT: LOCAL LETTINGS
ISSUED DATE: December 31, 2013
EFFECTIVE DATE: January 1, 2014

This memorandum replaces Chapter 12 dated December 2009 of the Bureau of Local Roads & Streets Manual.

The Department has updated Chapter 12, "Letting and Contract Award," of the Bureau of Local Roads & Streets Manual due to several Public Acts passed by the 98th General Assembly. Summaries of the major changes are outlined below.

Invitation for Bid Contents: The BLR Forms for a local letting have been streamlined into two forms for Formal Contract Proposals. Forms BLR 12200 and 12200a replace Forms BLR 12210, 12220, 12221, 12222, and 12223. Also, the BLR forms for a local material proposal and deliver & install proposal have been combined into Form BLR 12240. Finally, Form BLR 12320 has been updated to include a cover sheet.

The BLR forms that have been replaced will still be accepted until March 31, 2014 for existing projects that have utilized them and will proceed to letting in the near future.

Wage Rates: Public Acts 98-0328 and 98-0482 amended the Illinois Prevailing Wage Act to include additional reporting requirements by the Contractor on monthly certified payroll documents. These acts also increased the required retention period of these certified payroll documents by the public body responsible for the contract.

LPA Ordinances / Resolutions: The Local Public Agency (LPA) may include language within their contracts requiring bidders to comply with regulations established by local ordinances or resolutions. If this language is found to be in conflict with federal or state regulations, the Federal, State, or MFT funding used for the project may be jeopardized.

Prequalification of Bidders: The LPA is responsible to ensure that the prequalification requirement is advertised in the Notice to Contractor's Bulletin where applicable. In addition, Public Act 97-0369 requires the bidder to sign an affidavit stating that they will maintain an Illinois office as the primary place of employment for persons employed as part of the contract. Form BLR 12326 "Affidavit of Illinois Business Office" was created to accommodate this legislation.

Conflict of Interest: The Public Officer Prohibited Activities Act (50 ILCS 105/3) indicates that no appointed or elected official may be in direct or indirect conflict of interest with the performance of any work in the making or letting of a contract in which the officer may be called to act or vote.

Award with Two Low Bidders: In the event that two or more bidders submit equal bids, the LPA should consult with the District BLRS on how to proceed. The LPA may conduct a tie breaker of their choice, so long as the low bidders are given the opportunity to be present when the tie breaker is conducted.

Contract Bond for Formal Contracts, Material Proposals, and Deliver & Install Proposals: Public Act 98-0216 amended the Public Construction Bond Act to indicate that every Contractor shall supply and deliver a performance and payment bond to the LPA for any public works costing more than \$50,000.

Local Letting Complaints or Protests: A bid complaint that concerns compliance with the Apprenticeship and Training Certification program may be filed with the Department. The Department will resolve bid complaints. A bid protest that concerns fraud, corruption, or illegal acts with the contract procurement process may be filed with the LPA. The LPA will resolve bid protests.

Contractor or Subcontractor Suspension: The Chief Procurement Officer (CPO) of the Department may suspend a contractor or subcontractor from participation on any contract or subcontract awarded by or requiring approval or concurrence of the Department upon a determination by the CPO based upon adequate evidence that the contractor or subcontractor has engaged in conduct proscribed in Section 6.520 of Subpart I of the Illinois Administrative Code.

Please contact the Bureau's Local Policy & Technology Unit at DOT.LocalPolicy@illinois.gov with any questions.



Acting Engineer of Local Roads and Streets

TW/tw

Attachments



Local Public Agency
Formal Contract Proposal

PROPOSAL SUBMITTED BY		
Contractor's Name		
Street	P.O. Box	
City	State	Zip Code

STATE OF ILLINOIS

COUNTY OF _____

(Name of City, Village, Town or Road District)

FOR THE IMPROVEMENT OF

STREET NAME OR ROUTE NO. _____

SECTION NO. _____

TYPES OF FUNDS _____

SPECIFICATIONS (required)

PLANS (required)

For Municipal Projects
Submitted/Approved/Passed

 Mayor President of Board of Trustees Municipal Official

Date

Department of Transportation

Released for bid based on limited review

Regional Engineer

Date

For County and Road District Projects
Submitted/Approved

Highway Commissioner

Date

Submitted/Approved

County Engineer/Superintendent of Highways

Date

Note: All proposal documents, including Proposal Guaranty Checks or Proposal Bid Bonds, should be stapled together to prevent loss when bids are processed.

RETURN WITH BID

NOTICE TO BIDDERS

County _____
Local Public Agency _____
Section Number _____
Route _____

Sealed proposals for the improvement described below will be received at the office of _____,
_____ until _____ on _____
Address Time Date

Sealed proposals will be opened and read publicly at the office of _____
_____ at _____ on _____
Address Time Date

DESCRIPTION OF WORK

Name _____ Length: _____ feet (_____ miles)
Location _____
Proposed Improvement _____

1. Plans and proposal forms will be available in the office of _____

Address

2. [] Prequalification
If checked, the 2 low bidders must file within 24 hours after the letting an "Affidavit of Availability" (Form BC 57), in duplicate, showing all uncompleted contracts awarded to them and all low bids pending award for Federal, State, County, Municipal and private work. One original shall be filed with the Awarding Authority and one original with the IDOT District Office.

3. The Awarding Authority reserves the right to waive technicalities and to reject any or all proposals as provided in BLRS Special Provision for Bidding Requirements and Conditions for Contract Proposals.

- 4. The following BLR Forms shall be returned by the bidder to the Awarding Authority:
a. BLR 12200: Local Public Agency Formal Contract Proposal
b. BLR 12200a Schedule of Prices
c. BLR 12230: Proposal Bid Bond (if applicable)
d. BLR 12325: Apprenticeship or Training Program Certification (do not use for federally funded projects)
e. BLR 12326: Affidavit of Illinois Business Office

5. The quantities appearing in the bid schedule are approximate and are prepared for the comparison of bids. Payment to the Contractor will be made only for the actual quantities of work performed and accepted or materials furnished according to the contract. The scheduled quantities of work to be done and materials to be furnished may be increased, decreased or omitted as hereinafter provided.

6. Submission of a bid shall be conclusive assurance and warranty the bidder has examined the plans and understands all requirements for the performance of work. The bidder will be responsible for all errors in the proposal resulting from failure or neglect to conduct an in depth examination. The Awarding Authority will, in no case be responsible for any costs, expenses, losses or changes in anticipated profits resulting from such failure or neglect of the bidder.

7. The bidder shall take no advantage of any error or omission in the proposal and advertised contract.

8. If a special envelope is supplied by the Awarding Authority, each proposal should be submitted in that envelope furnished by the Awarding Agency and the blank spaces on the envelope shall be filled in correctly to clearly indicate its contents. When an envelope other than the special one furnished by the Awarding Authority is used, it shall be marked to clearly indicate its contents. When sent by mail, the sealed proposal shall be addressed to the Awarding Authority at the address and in care of the official in whose office the bids are to be received. All proposals shall be filed prior to the time and at the place specified in the Notice to Bidders. Proposals received after the time specified will be returned to the bidder unopened.

9. Permission will be given to a bidder to withdraw a proposal if the bidder makes the request in writing or in person before the time for opening proposals.



RETURN WITH BID

PROPOSAL

County _____
Local Public Agency _____
Section Number _____
Route _____

1. Proposal of _____
for the improvement of the above section by the construction of _____

a total distance of _____ feet, of which a distance of _____ feet, (_____ miles) are to be improved.

2. The plans for the proposed work are those prepared by _____
and approved by the Department of Transportation on _____

3. The specifications referred to herein are those prepared by the Department of Transportation and designated as
"Standard Specifications for Road and Bridge Construction" and the "Supplemental Specifications and Recurring Special
Provisions" thereto, adopted and in effect on the date of invitation for bids.

4. The undersigned agrees to accept, as part of the contract, the applicable Special Provisions indicated on the "Check
Sheet for Recurring Special Provisions" contained in this proposal.

5. The undersigned agrees to complete the work within _____ working days or by _____
unless additional time is granted in accordance with the specifications.

6. A proposal guaranty in the proper amount, as specified in BLRS Special Provision for Bidding Requirements and
Conditions for Contract Proposals, will be required. Bid Bonds _____ be allowed as a proposal guaranty.
Accompanying this proposal is either a bid bond if allowed, on Department form BLR 12230 or a proposal guaranty check,
complying with the specifications, made payable to:

_____ Treasurer of _____

The amount of the check is _____ (_____).

7. In the event that one proposal guaranty check is intended to cover two or more proposals, the amount must be equal to
the sum of the proposal guaranties, which would be required for each individual proposal. If the proposal guaranty check
is placed in another proposal, it will be found in the proposal for: Section Number _____.

8. The successful bidder at the time of execution of the contract _____ be required to deposit a contract bond for the
full amount of the award. When a contract bond is not required, the proposal guaranty check will be held in lieu thereof. If
this proposal is accepted and the undersigned fails to execute a contract and contract bond as required, it is hereby
agreed that the Bid Bond or check shall be forfeited to the Awarding Authority.

9. Each pay item should have a unit price and a total price. If no total price is shown or if there is a discrepancy between the
product of the unit price multiplied by the quantity, the unit price shall govern. If a unit price is omitted, the total price will
be divided by the quantity in order to establish a unit price.

10. A bid will be declared unacceptable if neither a unit price nor a total price is shown.

11. The undersigned submits herewith the schedule of prices on BLR 12200a covering the work to be performed under this
contract.

12. The undersigned further agrees that if awarded the contract for the sections contained in the combinations on
BLR 12200a, the work shall be in accordance with the requirements of each individual proposal for the multiple bid
specified in the Schedule for Multiple Bids below.

RETURN WITH BID

(REPLACE THIS PAGE WITH FORM BLR 12200a)

CONTRACTOR CERTIFICATIONS

County _____
Local Public Agency _____
Section Number _____
Route _____

The certifications hereinafter made by the bidder are each a material representation of fact upon which reliance is placed should the Department enter into the contract with the bidder.

1. Debt Delinquency. The bidder or contractor or subcontractor, respectively, certifies that it is not delinquent in the payment of any tax administered by the Department of Revenue unless the individual or other entity is contesting, in accordance with the procedures established by the appropriate revenue Act, its liability for the tax or the amount of tax. Making a false statement voids the contract and allows the Department to recover all amounts paid to the individual or entity under the contract in a civil action.

2. Bid-Rigging or Bid Rotating. The bidder or contractor or subcontractor, respectively, certifies that it is not barred from contracting with the Department by reason of a violation of either 720 ILCS 5/33E-3 or 720 ILCS 5/33E-4.

A violation of Section 33E-3 would be represented by a conviction of the crime of bid-rigging which, in addition to Class 3 felony sentencing, provides that any person convicted of this offense or any similar offense of any state or the United States which contains the same elements as this offense shall be barred for 5 years from the date of conviction from contracting with any unit of State or local government. No corporation shall be barred from contracting with any unit of State or local government as a result of a conviction under this Section of any employee or agent of such corporation if the employee so convicted is no longer employed by the corporation and: (1) it has been finally adjudicated not guilty or (2) if it demonstrates to the governmental entity with which it seeks to contract and that entity finds that the commission of the offense was neither authorized, requested, commanded, nor performed by a director, officer or a high managerial agent in behalf of the corporation.

A violation of Section 33E-4 would be represented by a conviction of the crime of bid-rotating which, in addition to Class 2 felony sentencing, provides that any person convicted of this offense or any similar offense of any state or the United States which contains the same elements as this offense shall be permanently barred from contracting with any unit of State or local government. No corporation shall be barred from contracting with any unit of State or local government as a result of a conviction under this Section of any employee or agent of such corporation if the employee so convicted is no longer employed by the corporation and: (1) it has been finally adjudicated not guilty or (2) if it demonstrates to the governmental entity with which it seeks to contract and that entity finds that the commission of the offense was neither authorized, requested, commanded, nor performed by a director, officer or a high managerial agent in behalf of the corporation.

3. Bribery. The bidder or contractor or subcontractor, respectively, certifies that it has not been convicted of bribery or attempting to bribe an officer or employee of the State of Illinois or any unit of local government, nor has the firm made an admission of guilt of such conduct which is a matter of record, nor has an official, agent, or employee of the firm committed bribery or attempted bribery on behalf of the firm and pursuant to the direction or authorization of a responsible official of the firm.

4. Interim Suspension or Suspension. The bidder or contractor or subcontractor, respectively, certifies that it is not currently under a suspension as defined in Subpart I of Title 44 Subtitle A Chapter III Part 6 of the Illinois Administrative Code. Furthermore, if suspended prior to completion of this work, the contract or contracts executed for the completion of this work may be cancelled.

RETURN WITH BID

SIGNATURES

County _____
Local Public Agency _____
Section Number _____
Route _____

(If an individual)

Signature of Bidder _____

Business Address _____

(If a partnership)

Firm Name _____

Signed By _____

Business Address _____

Inset Names and Addressed of All Partners



(If a corporation)

Corporate Name _____

Signed By _____

President

Business Address _____

Inset Names of Officers



President _____

Secretary _____

Treasurer _____

Attest: _____
Secretary



Illinois Department of Transportation

**Local Public Agency
Material Proposal or
Deliver & Install Proposal**

PROPOSAL SUBMITTED BY		
Contractor's Name		
Street		P.O. Box
City	State	Zip Code

STATE OF ILLINOIS

COUNTY OF _____

(Name of City, Village, Town or Road District)

FOR THE IMPROVEMENT OF

STREET NAME OR ROUTE NO. _____

SECTION NO. _____

TYPES OF FUNDS _____

- MATERIAL PROPOSAL
- SPECIFICATIONS (required)

- DELIVER & INSTALL PROPOSAL
- PLANS (if applicable)

For Municipal Projects Submitted/Approved/Passed
<input type="checkbox"/> Mayor <input type="checkbox"/> President of Board of Trustees <input type="checkbox"/> Municipal Official
Date

Department of Transportation
<input type="checkbox"/> Released for bid based on limited review
_____ Regional Engineer
_____ Date

For County and Road District Projects Submitted/Approved
_____ Highway Commissioner
_____ Date
 Submitted/Approved
_____ County Engineer/Superintendent of Highways
_____ Date

Note: All proposal documents, including Proposal Guaranty Checks or Proposal Bid Bonds, should be stapled together to prevent loss when bids are processed.

RETURN WITH BID

NOTICE TO BIDDERS

County _____
Local Public Agency _____
Section Number _____
Route _____

Sealed proposals for the furnishing or delivering & installing materials required in the construction/maintenance of the above Section will be received and at that time publicly opened and read at the office of _____

_____ until _____ on _____
Address Time Date

1. Plans and proposal forms will be available in the office of _____

Address

- 2. [] Prequalification. If checked, the 2 low bidders must file within 24 hours after the letting an "Affidavit of Availability" (Form BC 57), in duplicate, showing all uncompleted contracts awarded to them and all low bids pending award for Federal, State, County, Municipal and private work.
3. The Awarding Authority reserves the right to waive technicalities and to reject any or all proposals as provided in BLRS Special Provision for Bidding Requirements and Conditions for Material Proposals.
4. A proposal guaranty in the proper amount, as specified in BLRS Special Provision for Bidding Requirements and Conditions for Material Proposals, will be required. Bid Bonds _____ be allowed as a proposal guaranty.
5. The successful bidder at the time of execution of the contract _____ be required to deposit a contract bond for the full amount of the award. When a contract bond is not required, the proposal guaranty check will be held in lieu thereof. Failure on the part of the contractor to deliver the material within the time specified or to do the work specified herein will be considered just cause to forfeit his surety as provided in Article 108.10 of the Standard Specifications.
6. Proposals shall be submitted on forms furnished by the Awarding Authority and shall be enclosed in an envelope endorsed "Material Proposal, Section - - -".

By Order of _____ (Awarding Authority) _____ Date _____ (County Engineer/Superintendent of Highways/Municipal Clerk)

Material Proposal or Deliver & Install Proposal

To _____ (Awarding Authority)

If this bid is accepted within 45 days from date of opening, the undersigned agrees to furnish or to deliver & install any or all of the materials, at the quoted unit prices, subject to the following:

- 1. It is understood and agreed that the "Standard Specifications for Road and Bridge Construction", adopted _____, and the "Supplemental Specifications and Recurring Special Provisions", adopted _____, prepared by the Department of Transportation, shall govern insofar as they may be applied and insofar as they do not conflict with the special provisions and supplemental specifications attached hereto.
2. It is understood that quantities listed are approximate only and that they may be increased or decreased as may be needed to properly complete the improvement within its present limits or extensions thereto, at the unit price stated and that bids will be compared on the basis of the total price bid for each group.
3. Delivery in total or partial shipments as ordered shall be made within the time specified in the special provisions or by the acceptance at the point and in the manner specified in the "Schedule of Prices". If delivery on the job site is specified, it shall mean any place or places on the road designated by the awarding authority or its authorized representative.
4. The contractor and/or local agency performing the actual material placement operations shall be responsible for providing work zone traffic control, unless otherwise specified in this proposal. Such devices shall meet the requirements of and be installed in accordance with applicable provisions of the "Illinois Manual on Uniform Traffic Control Devices" and any referenced Illinois Highway Standards.
5. Each pay item should have a unit price and a total price. If no total price is shown or if there is a discrepancy between the product of the unit price multiplied by the quantity, the unit price shall govern. If a unit price is omitted, the total price will be divided by the quantity in order to establish a unit price. A bid will be declared unacceptable if neither a unit price nor a total price is shown.

Discounts will be allowed for payment as follows: _____ % _____ calendar days: _____ % _____ calendar days.
Discounts will not be considered in determining the low bidder.

Bidder _____ By _____ (Signature)
Address _____ Title _____



PROPOSAL SUBMITTED BY		
Contractor's Name		
Street		P.O. Box
City	State	Zip Code

STATE OF ILLINOIS
 COUNTY _____

 (Name of City, Village, Town or Road District)

FOR THE IMPROVEMENT OF
 STREET NAME OR ROUTE _____
 SECTION NO. _____
 TYPES OF FUNDS _____

SPECIFICATIONS (required)

PLANS (required)

CONTRACT BOND (when required)

For Municipal Projects
 Submitted/Approved/Passed

Mayor President of Board of Trustees Municipal Official

Date

Department of Transportation

Concurrence in approval of award

Regional Engineer

Date

For County and Road District Projects
 Submitted/Approved

Highway Commissioner

Date

Submitted/Approved

County Engineer/Superintendent of Highways

Date

County _____
Local Public Agency _____
Section Number _____
Route _____

1. THIS AGREEMENT, made and concluded the _____ day of _____, _____
Month and Year
between the _____ of _____
acting by and through its _____ known as the party of the first part, and
_____ his/their executors, administrators, successors or assigns,
known as the party of the second part.
2. Witnesseth: That for and in consideration of the payments and agreements mentioned in the Proposal hereto attached, to be made and performed by the party of the first part, and according to the terms expressed in the Bond referring to these presents, the party of the second part agrees with said party of the first part at his/their own proper cost and expense to do all the work, furnish all materials and all labor necessary to complete the work in accordance with the plans and specifications hereinafter described, and in full compliance with all of the terms of this agreement and the requirements of the Engineer under it.
3. And it is also understood and agreed that the LPA Formal Contract Proposal, Special Provisions, Affidavit of Illinois Business Office, Apprenticeship or Training Program Certification, and Contract Bond hereto attached, and the Plans for Section _____, in _____, approved by the Illinois Department of Transportation on _____, _____
Date
are essential documents of this contract and are a part hereof.
4. IN WITNESS WHEREOF, The said parties have executed these presents on the date above mentioned.

Attest: _____ Clerk
_____ Clerk
(Seal)

The _____ of _____
By _____
Party of the First Part

(If a Corporation)
Corporate Name _____
By _____
President Party of the Second Part
(If a Co-Partnership)

Attest: _____
Secretary

Partners doing Business under the firm name of _____
Party of the Second Part
(If an individual)
_____ Party of the Second Part

AN ACT concerning finance.

**Be it enacted by the People of the State of Illinois,
represented in the General Assembly:**

Section 5. The Illinois Procurement Code is amended by changing Section 30-22 as follows:

(30 ILCS 500/30-22)

Sec. 30-22. Construction contracts; responsible bidder requirements. To be considered a responsible bidder on a construction contract for purposes of this Code, a bidder must comply with all of the following requirements and must present satisfactory evidence of that compliance to the appropriate construction agency:

(1) The bidder must comply with all applicable laws concerning the bidder's entitlement to conduct business in Illinois.

(2) The bidder must comply with all applicable provisions of the Prevailing Wage Act.

(3) The bidder must comply with Subchapter VI ("Equal Employment Opportunities") of Chapter 21 of Title 42 of the United States Code (42 U.S.C. 2000e and following) and with Federal Executive Order No. 11246 as amended by Executive Order No. 11375.

(4) The bidder must have a valid Federal Employer

Identification Number or, if an individual, a valid Social Security Number.

(5) The bidder must have a valid certificate of insurance showing the following coverages: general liability, professional liability, product liability, workers' compensation, completed operations, hazardous occupation, and automobile.

(6) The bidder and all bidder's subcontractors must participate in applicable apprenticeship and training programs approved by and registered with the United States Department of Labor's Bureau of Apprenticeship and Training.

(7) For contracts with the Illinois Power Agency, the Director of the Illinois Power Agency may establish additional requirements for responsible bidders. These additional requirements, if established, shall be set forth together with the other criteria contained in the invitation for bids, and shall appear in the appropriate volume of the Illinois Procurement Bulletin.

(8) The bidder must submit a signed affidavit stating that the bidder will maintain an Illinois office as the primary place of employment for persons employed in the construction authorized by the contract.

The provisions of this Section shall not apply to federally funded construction projects if such application would jeopardize the receipt or use of federal funds in support of

Public Act 097-0369

HB1375 Enrolled

LRB097 09020 PJG 49154 b

such a project.

(Source: P.A. 95-431, eff. 3-28-07.)

Section 99. Effective date. This Act takes effect upon becoming law.

AN ACT concerning finance.

**Be it enacted by the People of the State of Illinois,
represented in the General Assembly:**

Section 5. The Public Construction Bond Act is amended by changing Section 1 as follows:

(30 ILCS 550/1) (from Ch. 29, par. 15)

Sec. 1. Except as otherwise provided by this Act, all officials, boards, commissions, or agents of this State, or of any political subdivision thereof, in making contracts for public work of any kind costing over \$50,000 to be performed for the State, or of any political subdivision thereof, and ~~all officials, boards, commissions, or agents of any political subdivision of this State in making contracts for public work of any kind costing over \$5,000 to be performed for the political subdivision,~~ shall require every contractor for the work to furnish, supply and deliver a bond to the State, or to the political subdivision thereof entering into the contract, as the case may be, with good and sufficient sureties. The amount of the bond shall be fixed by the officials, boards, commissions, commissioners or agents, and the bond, among other conditions, shall be conditioned for the completion of the contract, for the payment of material used in the work and for all labor performed in the work, whether by subcontractor or

otherwise.

If the contract is for emergency repairs as provided in the Illinois Procurement Code, proof of payment for all labor, materials, apparatus, fixtures, and machinery may be furnished in lieu of the bond required by this Section.

Each such bond is deemed to contain the following provisions whether such provisions are inserted in such bond or not:

"The principal and sureties on this bond agree that all the undertakings, covenants, terms, conditions and agreements of the contract or contracts entered into between the principal and the State or any political subdivision thereof will be performed and fulfilled and to pay all persons, firms and corporations having contracts with the principal or with subcontractors, all just claims due them under the provisions of such contracts for labor performed or materials furnished in the performance of the contract on account of which this bond is given, when such claims are not satisfied out of the contract price of the contract on account of which this bond is given, after final settlement between the officer, board, commission or agent of the State or of any political subdivision thereof and the principal has been made."

Each bond securing contracts between the Capital Development Board or any board of a public institution of higher education and a contractor shall contain the following provisions, whether the provisions are inserted in the bond or

act:

"Upon the default of the principal with respect to undertakings, covenants, terms, conditions, and agreements, the termination of the contractor's right to proceed with the work, and written notice of that default and termination by the State or any political subdivision to the surety ("Notice"), the surety shall promptly remedy the default by taking one of the following actions:

(1) The surety shall complete the work pursuant to a written takeover agreement, using a completing contractor jointly selected by the surety and the State or any political subdivision; or

(2) The surety shall pay a sum of money to the obligee, up to the penal sum of the bond, that represents the reasonable cost to complete the work that exceeds the unpaid balance of the contract sum.

The surety shall respond to the Notice within 15 working days of receipt indicating the course of action that it intends to take or advising that it requires more time to investigate the default and select a course of action. If the surety requires more than 15 working days to investigate the default and select a course of action or if the surety elects to complete the work with a completing contractor that is not prepared to commence performance within 15 working days after receipt of Notice, and if the State or any political subdivision determines it is in the best interest of the State

to maintain the progress of the work, the State or any political subdivision may continue to work until the completing contractor is prepared to commence performance. Unless otherwise agreed to by the procuring agency, in no case may the surety take longer than 30 working days to advise the State or political subdivision on the course of action it intends to take. The surety shall be liable for reasonable costs incurred by the State or any political subdivision to maintain the progress to the extent the costs exceed the unpaid balance of the contract sum, subject to the penal sum of the bond."

The surety bond required by this Section may be acquired from the company, agent or broker of the contractor's choice. The bond and sureties shall be subject to the right of reasonable approval or disapproval, including suspension, by the State or political subdivision thereof concerned. In the case of State construction contracts, a contractor shall not be required to post a cash bond or letter of credit in addition to or as a substitute for the surety bond required by this Section.

When other than motor fuel tax funds, federal-aid funds, or other funds received from the State are used, a political subdivision may allow the contractor to provide a non-diminishing irrevocable bank letter of credit, in lieu of the bond required by this Section, on contracts under \$100,000 to comply with the requirements of this Section. Any such bank letter of credit shall contain all provisions required for

Public Act 098-0216

HB1404 Enrolled

LRB098 04290 OMW 34317 b

bonds by this Section.

(Source: P.A. 95-1011, eff. 12-15-08; 96-1000, eff. 7-2-10.)

Section 99. Effective date. This Act takes effect upon becoming law.

AN ACT concerning employment.

**Be it enacted by the People of the State of Illinois,
represented in the General Assembly:**

Section 5. The Prevailing Wage Act is amended by changing Sections 5 and 11 as follows:

(820 ILCS 130/5) (from Ch. 48, par. 39s-5)

Sec. 5. Certified payroll.

(a) Any contractor and each subcontractor who participates in public works shall:

(1) make and keep, for a period of not less than 3 years from the date of the last payment made before the effective date of this amendatory Act of the 98th General Assembly and for a period of 5 years from the date of the last payment made on or after the effective date of this amendatory Act of the 98th General Assembly on a contract or subcontract for public works, records of all laborers, mechanics, and other workers employed by them on the project; the records shall include each worker's name, address, telephone number when available, social security number, classification or classifications, the hourly wages paid in each pay period, the number of hours worked each day, and the starting and ending times of work each day; and

(2) no later than the tenth day of each calendar month file a certified payroll for the immediately preceding month with the public body in charge of the project. A certified payroll must be filed for only those calendar months during which construction on a public works project has occurred. The certified payroll shall consist of a complete copy of the records identified in paragraph (1) of this subsection (a), but may exclude the starting and ending times of work each day. The certified payroll shall be accompanied by a statement signed by the contractor or subcontractor or an officer, employee, or agent of the contractor or subcontractor which avers that: (i) he or she has examined the certified payroll records required to be submitted by the Act and such records are true and accurate; (ii) the hourly rate paid to each worker is not less than the general prevailing rate of hourly wages required by this Act; and (iii) the contractor or subcontractor is aware that filing a certified payroll that he or she knows to be false is a Class A misdemeanor. A general contractor is not prohibited from relying on the certification of a lower tier subcontractor, provided the general contractor does not knowingly rely upon a subcontractor's false certification. Any contractor or subcontractor subject to this Act and any officer, employee, or agent of such contractor or subcontractor whose duty as such officer, employee, or agent it is to

file such certified payroll who willfully fails to file such a certified payroll on or before the date such certified payroll is required by this paragraph to be filed and any person who willfully files a false certified payroll that is false as to any material fact is in violation of this Act and guilty of a Class A misdemeanor. The public body in charge of the project shall keep the records submitted in accordance with this paragraph (2) of subsection (a) before the effective date of this amendatory Act of the 98th General Assembly for a period of not less than 3 years, and the records submitted in accordance with this paragraph (2) of subsection (a) on or after the effective date of this amendatory Act of the 98th General Assembly for a period of 5 years, from the date of the last payment for work on a contract or subcontract for public works. The records submitted in accordance with this paragraph (2) of subsection (a) shall be considered public records, except an employee's address, telephone number, and social security number, and made available in accordance with the Freedom of Information Act. The public body shall accept any reasonable submissions by the contractor that meet the requirements of this Section.

A contractor, subcontractor, or public body may retain records required under this Section in paper or electronic format.

(b) Upon 7 business days' notice, the contractor and each

subcontractor shall make available for inspection and copying at a location within this State during reasonable hours, the records identified in paragraph (1) of subsection (a) of this Section to the public body in charge of the project, its officers and agents, the Director of Labor and his deputies and agents, and to federal, State, or local law enforcement agencies and prosecutors.

(Source: P.A. 97-571, eff. 1-1-12.)

(820 ILCS 130/11) (from Ch. 48, par. 39s-11)

Sec. 11. No public works project shall be instituted unless the provisions of this Act have been complied with. The provisions of this Act shall not be applicable to Federal construction projects which require a prevailing wage determination by the United States Secretary of Labor. The Illinois Department of Labor represented by the Attorney General is empowered to sue for injunctive relief against the awarding of any contract or the continuation of work under any contract for public works at a time when the prevailing wage prerequisites have not been met. Any contract for public works awarded at a time when the prevailing wage prerequisites had not been met shall be void as against public policy and the contractor is prohibited from recovering any damages for the voiding of the contract or pursuant to the terms of the contract. The contractor is limited to a claim for amounts actually paid for labor and materials supplied to the public

body. Where objections to a determination of the prevailing rate of wages or a court action relative thereto is pending, the public body shall not continue work on the project unless sufficient funds are available to pay increased wages if such are finally determined or unless the Department of Labor certifies such determination of the prevailing rate of wages as correct.

Any laborer, worker or mechanic employed by the contractor or by any sub-contractor under him who is paid for his services in a sum less than the stipulated rates for work done under such contract, shall have a right of action for whatever difference there may be between the amount so paid, and the rates provided by the contract together with costs and such reasonable attorney's fees as shall be allowed by the court. Such contractor or subcontractor shall also be liable to the Department of Labor for 20% of such underpayments and shall be additionally liable to the laborer, worker or mechanic for punitive damages in the amount of 2% of the amount of any such penalty to the State for underpayments for each month following the date of payment during which such underpayments remain unpaid. Where a second or subsequent action to recover underpayments is brought against a contractor or subcontractor and the contractor or subcontractor is found liable for underpayments to any laborer, worker, or mechanic, the contractor or subcontractor shall also be liable to the Department of Labor for 50% of the underpayments payable as a

result of the second or subsequent action, and shall be additionally liable for 5% of the amount of any such penalty to the State for underpayments for each month following the date of payment during which the underpayments remain unpaid. The Department shall also have a right of action on behalf of any individual who has a right of action under this Section. An action brought to recover same shall be deemed to be a suit for wages, and any and all judgments entered therein shall have the same force and effect as other judgments for wages. The action shall be brought within 5 years from the date of the failure to pay the wages or compensation. At the request of any laborer, workman or mechanic employed by the contractor or by any subcontractor under him who is paid less than the prevailing wage rate required by this Act, the Department of Labor may take an assignment of such wage claim in trust for the assigning laborer, workman or mechanic and may bring any legal action necessary to collect such claim, and the contractor or subcontractor shall be required to pay the costs incurred in collecting such claim.

(Source: P.A. 94-488, eff. 1-1-06.)

AN ACT concerning wages.

**Be it enacted by the People of the State of Illinois,
represented in the General Assembly:**

Section 5. The Prevailing Wage Act is amended by changing Sections 2 and 5 and by adding Section 5.1 as follows:

(820 ILCS 130/2) (from Ch. 48, par. 39s-2)

Sec. 2. This Act applies to the wages of laborers, mechanics and other workers employed in any public works, as hereinafter defined, by any public body and to anyone under contracts for public works. This includes any maintenance, repair, assembly, or disassembly work performed on equipment whether owned, leased, or rented.

As used in this Act, unless the context indicates otherwise:

"Public works" means all fixed works constructed or demolished by any public body, or paid for wholly or in part out of public funds. "Public works" as defined herein includes all projects financed in whole or in part with bonds, grants, loans, or other funds made available by or through the State or any of its political subdivisions, including but not limited to: bonds issued under the Industrial Project Revenue Bond Act (Article 11, Division 74 of the Illinois Municipal Code), the Industrial Building Revenue Bond Act, the Illinois Finance

Authority Act, the Illinois Sports Facilities Authority Act, or the Build Illinois Bond Act; loans or other funds made available pursuant to the Build Illinois Act; or funds from the Fund for Illinois' Future under Section 6z-47 of the State Finance Act, funds for school construction under Section 5 of the General Obligation Bond Act, funds authorized under Section 3 of the School Construction Bond Act, funds for school infrastructure under Section 6z-45 of the State Finance Act, and funds for transportation purposes under Section 4 of the General Obligation Bond Act. "Public works" also includes (i) all projects financed in whole or in part with funds from the Department of Commerce and Economic Opportunity under the Illinois Renewable Fuels Development Program Act for which there is no project labor agreement; (ii) all work performed pursuant to a public private agreement under the Public Private Agreements for the Illiana Expressway Act; and (iii) all projects undertaken under a public-private agreement under the Public-Private Partnerships for Transportation Act. "Public works" also includes all projects at leased facility property used for airport purposes under Section 35 of the Local Government Facility Lease Act. "Public works" also includes the construction of a new wind power facility by a business designated as a High Impact Business under Section 5.5(a)(3)(E) of the Illinois Enterprise Zone Act. "Public works" does not include work done directly by any public utility company, whether or not done under public supervision or direction, or

paid for wholly or in part out of public funds. "Public works" does not include projects undertaken by the owner at an owner-occupied single-family residence or at an owner-occupied unit of a multi-family residence.

"Construction" means all work on public works involving laborers, workers or mechanics. This includes any maintenance, repair, assembly, or disassembly work performed on equipment whether owned, leased, or rented.

"Locality" means the county where the physical work upon public works is performed, except (1) that if there is not available in the county a sufficient number of competent skilled laborers, workers and mechanics to construct the public works efficiently and properly, "locality" includes any other county nearest the one in which the work or construction is to be performed and from which such persons may be obtained in sufficient numbers to perform the work and (2) that, with respect to contracts for highway work with the Department of Transportation of this State, "locality" may at the discretion of the Secretary of the Department of Transportation be construed to include two or more adjacent counties from which workers may be accessible for work on such construction.

"Public body" means the State or any officer, board or commission of the State or any political subdivision or department thereof, or any institution supported in whole or in part by public funds, and includes every county, city, town, village, township, school district, irrigation, utility,

reclamation improvement or other district and every other political subdivision, district or municipality of the state whether such political subdivision, municipality or district operates under a special charter or not.

The terms "general prevailing rate of hourly wages", "general prevailing rate of wages" or "prevailing rate of wages" when used in this Act mean the hourly cash wages plus annualized fringe benefits for training and apprenticeship programs approved by the U.S. Department of Labor, Bureau of Apprenticeship and Training, health and welfare, insurance, vacations and pensions paid generally, in the locality in which the work is being performed, to employees engaged in work of a similar character on public works.

(Source: P.A. 96-28, eff. 7-1-09; 96-58, eff. 1-1-10; 96-186, eff. 1-1-10; 96-913, eff. 6-9-10; 96-1000, eff. 7-2-10; 97-502, eff. 8-23-11.)

(820 ILCS 130/5) (from Ch. 48, par. 39s-5)

Sec. 5. Certified payroll.

(a) Any contractor and each subcontractor who participates in public works shall:

(1) make and keep, for a period of not less than 3 years from the date of the last payment on a contract or subcontract for public works, records of all laborers, mechanics, and other workers employed by them on the project; the records shall include (i) the ~~each~~ worker's

name, (ii) the worker's address, (iii) the worker's telephone number when available, (iv) the worker's social security number, (v) the worker's classification or classifications, (vi) the worker's gross and net the hourly wages paid in each pay period, (vii) the worker's number of hours worked each day, (viii) the worker's starting and ending times of work each day, (ix) the worker's hourly wage rate, (x) the worker's hourly overtime wage rate, (xi) the worker's hourly fringe benefit rates, (xii) the name and address of each fringe benefit fund, (xiii) the plan sponsor of each fringe benefit, if applicable, and (xiv) the plan administrator of each fringe benefit, if applicable and the ~~starting and ending times of work each day;~~ and

(2) no later than the 15th ~~tenth~~ day of each calendar month file a certified payroll for the immediately preceding month with the public body in charge of the project. A certified payroll must be filed for only those calendar months during which construction on a public works project has occurred. The certified payroll shall consist of a complete copy of the records identified in paragraph (1) of this subsection (a), but may exclude the starting and ending times of work each day. The certified payroll shall be accompanied by a statement signed by the contractor or subcontractor or an officer, employee, or agent of the contractor or subcontractor which avers that:

(i) he or she has examined the certified payroll records required to be submitted by the Act and such records are true and accurate; (ii) the hourly rate paid to each worker is not less than the general prevailing rate of hourly wages required by this Act; and (iii) the contractor or subcontractor is aware that filing a certified payroll that he or she knows to be false is a Class A misdemeanor. A general contractor is not prohibited from relying on the certification of a lower tier subcontractor, provided the general contractor does not knowingly rely upon a subcontractor's false certification. Any contractor or subcontractor subject to this Act and any officer, employee, or agent of such contractor or subcontractor whose duty as such officer, employee, or agent it is to file such certified payroll who willfully fails to file such a certified payroll on or before the date such certified payroll is required by this paragraph to be filed and any person who willfully files a false certified payroll that is false as to any material fact is in violation of this Act and guilty of a Class A misdemeanor. The public body in charge of the project shall keep the records submitted in accordance with this paragraph (2) of subsection (a) for a period of not less than 3 years from the date of the last payment for work on a contract or subcontract for public works. The records submitted in accordance with this paragraph (2) of subsection (a) shall

be considered public records, except an employee's address, telephone number, and social security number, and made available in accordance with the Freedom of Information Act. The public body shall accept any reasonable submissions by the contractor that meet the requirements of this Section.

(b) Upon 7 business days' notice, the contractor and each subcontractor shall make available for inspection and copying at a location within this State during reasonable hours, the records identified in paragraph (1) of subsection (a) of this Section to the public body in charge of the project, its officers and agents, the Director of Labor and his deputies and agents, and to federal, State, or local law enforcement agencies and prosecutors.

(c) A contractor or subcontractor who remits contributions to fringe benefit funds that are jointly maintained and jointly governed by one or more employers and one or more labor organizations in accordance with the federal Labor Management Relations Act shall make and keep certified payroll records that include the information required under items (i) through (viii) of paragraph (1) of subsection (a) only. However, the information required under items (ix) through (xiv) of paragraph (1) of subsection (a) shall be required for any contractor or subcontractor who remits contributions to a fringe benefit fund that is not jointly maintained and jointly governed by one or more employers and one or more labor

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organizations in accordance with the federal Labor Management Relations Act.

(Source: P.A. 91-571, eff. 1-1-12.)

(820 ILCS 130/5.1 new)

Sec. 5.1. Electronic database. Subject to appropriation, the Department shall develop and maintain an electronic database capable of accepting and retaining certified payrolls submitted under this Act. The database shall accept certified payroll forms provided by the Department that are fillable and designed to accept electronic signatures.

INTEREST IN CONTRACTS

105.3. Prohibited interest in contracts

§ 3. Prohibited interest in contracts.

(a) No person holding any office, either by election or appointment under the laws or Constitution of this State, may be in any manner financially interested directly in his own name or indirectly in the name of any other person, association, trust, or corporation, in any contract or the performance of any work in the making or letting of which such officer may be called upon to act or vote. No such officer may represent, either as agent or otherwise, any person, association, trust, or corporation, with respect to any application or bid for any contract or work in regard to which such officer may be called upon to vote. Nor may any such officer take or receive, or offer to take or receive, either directly or indirectly, any money or other thing of value as a gift or bribe or means of influencing his vote or action in his official character. Any contract made and procured in violation hereof is void. This Section shall not apply to any person serving on an advisory panel or commission, to any director serving on a hospital district board as provided under subsection (a-5) of Section 13 of the Hospital District Law,¹ or to any person serving as both a contractual employee and as a member of a public hospital board as provided under Article 11 of the Illinois Municipal Code in a municipality with a population between 13,000 and 16,000 that is located in a county with a population between 50,000 and 70,000.

(b) However, any elected or appointed member of the governing body may provide materials, merchandise, property, services, or labor, subject to the following provisions under either paragraph (1) or (2):

(1) If:

A. the contract is with a person, firm, partnership, association, corporation, or cooperative association in which such interested member of the governing body of the municipality has less than a 7 $\frac{1}{2}$ % share in the ownership; and

B. such interested member publicly discloses the nature and extent of his interest prior to or during deliberations concerning the proposed award of the contract; and

C. such interested member abstains from voting on the award of the contract, though he shall be considered present for the purposes of establishing a quorum; and

D. such contract is approved by a majority vote of those members presently holding office; and

E. the contract is awarded after sealed bids to the lowest responsible bidder if the amount of the contract exceeds \$1500, or awarded without bidding if the amount of the contract is less than \$1500; and

F. the award of the contract would not cause the aggregate amount of all such contracts so awarded to the same person, firm, association, partnership, corporation, or cooperative association in the same fiscal year to exceed \$25,000.

(2) If:

A. the award of the contract is approved by a majority vote of the governing body of the municipality provided that any such interested member shall abstain from voting; and

B. the amount of the contract does not exceed \$2,000; and

C. the award of the contract would not cause the aggregate amount of all such contracts so awarded to the same person, firm, association, partnership, corporation, or cooperative association in the same fiscal year to exceed \$4,000; and

D. such interested member publicly discloses the nature and extent of his interest prior to or during deliberations concerning the proposed award of the contract; and

E. such interested member abstains from voting on the award of the contract, though he shall be considered present for the purposes of establishing a quorum.

(b-5) In addition to the above exemptions, any elected or appointed member of the governing body may provide materials, merchandise, property, services, or labor if:

A. the contract is with a person, firm, partnership, association, corporation, or cooperative association in which the interested member of the governing body of the municipality, advisory panel, or commission has less than a 1% share in the ownership; and

B. the award of the contract is approved by a majority vote of the governing body of the municipality provided that any such interested member shall abstain from voting; and

C. such interested member publicly discloses the nature and extent of his interest before or during deliberations concerning the proposed award of the contract; and

D. such interested member abstains from voting on the award of the contract, though he shall be considered present for the purposes of establishing a quorum.

(c) A contract for the procurement of public utility services by a public entity with a public utility company is not barred by this Section by one or more members of the governing body of the public entity being an officer or employee of the public utility company or holding an ownership interest of no more than 7 $\frac{1}{2}$ % in the public utility company, or holding an ownership interest of any size if the public entity is a municipality with a population of less than 7,500 and the public utility's rates are approved by the Illinois Commerce Commission. An elected or appointed member of the governing body of the public entity having such an interest shall be deemed not to have a prohibited interest under this Section.

(d) Notwithstanding any other provision of this Section or any other law to the contrary, until January 1, 1994, a member of the city council of a municipality with a population under 20,000 may purchase real estate from the municipality, at a price of not less than 100% of the value of the real estate as determined by a written MAI certified appraisal or by a written certified appraisal of a State certified or licensed real estate appraiser, if the purchase is approved by a unanimous vote of the city council members then holding office (except for the member desiring to purchase the real estate, who shall not vote on the question).

(e) For the purposes of this Section only, a municipal officer shall not be deemed interested if the officer is an employee of a company or owns or holds an interest of 1% or less in the municipal officer's individual name in a company, or both, that company is involved in the transaction of business with the municipality, and that company's stock is traded on a nationally recognized securities market, provided the interested member: (i) publicly discloses the fact that he or she is an employee or holds an interest of 1% or less in a company before deliberation of the proposed award of the contract; (ii) refrains from evaluating, recommending, approving, deliberating, or otherwise participating in negotia-

tion, approval, or both, of the contract, work, or business; (iii) abstains from voting on the award of the contract though he or she shall be considered present for purposes of establishing a quorum; and (iv) the contract is approved by a majority vote of those members currently holding office.

A municipal officer shall not be deemed interested if the officer owns or holds an interest of 1% or less, not in the officer's individual name but through a mutual fund or exchange traded fund, in a company, that company is involved in the transaction of business with the municipality, and that company's stock is traded on a nationally recognized securities market.

(f) Under either of the following circumstances, a municipal officer may hold a position on the board of a not-for-profit corporation that is interested in a contract, work, or business of the municipality:

(1) If the municipal officer is appointed by the governing body of the municipality to represent the interests of the municipality on a not-for-profit corporation's board, then the municipal officer may actively vote on matters involving either that board or the municipality, at any time, so long as the membership on the not-for-profit board is not a paid position, except that the municipal officer may be reimbursed by the non-for-profit board for expenses incurred as the result of membership on the non-for-profit board.

(2) If the municipal officer is not appointed to the governing body of a not-for-profit corporation by the governing body of the municipality, then the municipal officer may continue to serve; however, the municipal officer shall abstain from voting on any proposition before the municipal governing body directly involving the not-for-profit corporation and, for those matters, shall not be counted as present for the purposes of a quorum of the municipal governing body.

Laws 1871-72, p. 612, § 3, eff. July 1, 1872. Amended by Laws 1949, p. 1162, § 1, eff. July 1, 1949; P.A. 80-938, § 2, eff. July 1, 1978; P.A. 80-1086, § 2, eff. July 1, 1978; P.A. 81-291, § 2, eff. Aug. 28, 1979; P.A. 82-389, § 2, eff. Sept. 4, 1981; P.A. 87-855, § 4, eff. July 1, 1982; P.A. 87-1197, Art. 1, § 2, eff. Sept. 25, 1992; P.A. 90-197, § 5, eff. Jan. 1, 1998; P.A. 90-364, § 5, eff. Jan. 1, 1998; P.A. 90-655, § 50, eff. July 30, 1998; P.A. 96-277, § 5, eff. Jan. 1, 2010; P.A. 96-1058, § 5, eff. July 14, 2010; P.A. 97-520, § 5, eff. Aug. 23, 2011.

Formerly Ill.Rev.Stat.1991, ch. 102, § 3.

170 ILCS 91013.

105/3.1. Disclosure of identity of owners, beneficiaries, members, shareholders and partners; written disclosure; letter of direction; construction

§ 3.1. Before any contract relating to the ownership or use of real property is entered into by and between the State or any local governmental unit or any agency of either the identity of every owner and beneficiary having any interest, real or personal, in such property, and every member, shareholder, limited partner, or general partner entitled to receive more than 7% of the total distributable income of any limited liability company, corporation, or limited partnership having any interest, real or personal, in such property must be disclosed. The disclosure shall be in writing and shall be subscribed by a member, an owner, authorized trustee, corporate official, general partner, or managing agent, or his or her authorized attorney, under oath. However, if the interest, stock, or shares in a limited liability company, corpora-

tion, or general partnership is publicly traded and there is no readily known individual having greater than a 7% interest, then a statement to that effect, subscribed to under oath by a member, officer of the corporation, general partner, or managing agent, or his or her authorized attorney, shall fulfill the disclosure statement requirement of this Section. As a condition of contracts entered into on or after the effective date of this amendatory Act of 1995, the beneficiaries of a lease shall furnish the trustee of a trust subject to disclosure under this Section with a binding non-revocable letter of direction authorizing the trustee to provide the State with an up-to-date disclosure whenever requested by the State. The letter of direction shall be binding on beneficiaries' heirs, successors, and assigns during the term of the contract. This Section shall be liberally construed to accomplish the purpose of requiring the identification of the actual parties benefiting from any transaction with a governmental unit or agency involving the procurement of the ownership or use of real property thereby.

For any entity that is wholly or partially owned by another entity, the names of the owners of the wholly or partially owning entity shall be disclosed under this Section, as well as the names of the owners of the wholly or partially owned entity.

Laws 1871-72, p. 612, § 3.1, added by P.A. 76-1613, § 1, eff. Sept. 30, 1969. Amended by P.A. 80-1495, § 41, eff. Jan. 8, 1979; P.A. 83-257, § 1, eff. Jan. 1, 1984; P.A. 89-91, § 5, eff. June 30, 1995; P.A. 91-361, § 5, eff. July 29, 1999.

Formerly Ill.Rev.Stat.1991, ch. 102, § 3.1.

105/3.2. Pecuniary interest allowed in contracts of deposit and financial service with local banks and savings and loan associations

§ 3.2. Pecuniary interest allowed in contracts of deposit and financial service with local banks and savings and loan associations. Nothing contained in this Act, including the restrictions set forth in subsections (b), (c), and (d) of Section 3, shall preclude a contract of deposit of monies, loans, or other financial services by a unit of local government, school district, community college district, State university, or a police or firefighter's pension fund established under Article 3 or 4 of the Illinois Pension Code¹ with a local bank or local savings and loan association, regardless of whether a member or members of the governing body of the unit (including any director serving on a hospital district board as provided under subsection (a-5) of Section 13 of the Hospital District Law)² are interested in the bank or savings and loan association as a director, an officer, employee, or holder of less than 7% of the total ownership interest. A member or members holding such an interest in such a contract shall not be deemed to be holding a prohibited interest for purposes of this Act. The interested member or members of the governing body must publicly state the nature and extent of their interest during deliberations concerning the proposed award of such a contract, but shall not participate in any further deliberations concerning the proposed award. The interested member or members shall not vote on such a proposed award. Any member or members abstaining from participation in deliberations and voting under this Section may be considered present for purposes of establishing a quorum. Award of such a contract shall require approval by a majority vote of those members presently holding office. Consideration and award of any such contract in which a member or members are interested may only be made at a regularly

scheduled public meeting of the governing body of the unit or district.

Laws 1871-72, p. 612, § 3.2, added by P.A. 80-376, § 2, eff. Oct. 1, 1977. Amended by P.A. 80-1086, § 2, eff. July 1, 1978; P.A. 81-291, § 2, eff. Aug. 28, 1979; P.A. 86-1179, § 3, eff. Aug. 17, 1990; P.A. 87-1096, § 1, eff. Sept. 15, 1992; P.A. 90-197, § 5, eff. Jan. 1, 1998.

Formerly Ill.Rev.Stat.1991, ch. 102, § 3.2.

¹ 10 ILCS 5.3-101 et seq. or 10 ILCS 5.4-101 et seq.

² 70 ILCS 910.13.

PENALTIES

105/4. Violations

§ 4. Any alderman, member of a board of trustees, supervisor or county commissioner, or other person holding any office, either by election or appointment under the laws or constitution of this state, who violates any provision of the preceding sections, is guilty of a Class 4 felony and in addition thereto, any office or official position held by any person so convicted shall become vacant, and shall be so declared as part of the judgment of court.

Laws 1871-72, p. 612, § 4, eff. July 1, 1872. Amended by Laws 1949, p. 1162, § 1, eff. July 1, 1949; P.A. 77-2721, § 1, eff. Jan. 1, 1973.

Formerly Ill.Rev.Stat.1991, ch. 102, § 4.

105/4.5. False verification; perjury

§ 4.5. False verification; perjury. A person is guilty of perjury who:

(1) In swearing on oath or otherwise affirming a statement in writing as required under this Act, knowingly makes a false statement as to, or knowingly omits a material fact relating to, the identification of an individual or entity that has an ownership interest in real property, or that is material to an issue or point in question in the written disclosure pertaining to a contract for the ownership or use of real property.

(2) Having taken a lawful oath or made affirmation, testifies willfully and falsely as to any of those matters for the purpose of inducing the State or any local governmental unit or any agency of either to enter into a contract for the ownership or use of real property.

(3) Suborns any other person to so swear, affirm, or testify.

Upon conviction of perjury, a person shall be sentenced as provided in Section 32-2 or 32-3, respectively, of the Criminal Code of 2012¹ for those offenses.

This Section applies to written statements made or testimony given on or after the effective date of this amendatory Act of 1995.

Laws 1871-72, p. 612, § 4.5, added by P.A. 89-91, § 5, eff. June 30, 1995. Amended by P.A. 97-1150, § 170, eff. Jan. 25, 2013.

¹ 720 ILCS 5.32-2 or 5.32-3.

ACT 110. PUBLIC OFFICER SIMULTANEOUS TENURE ACT

110/2. Simultaneous tenure declared to be lawful

§ 2. Simultaneous tenure declared to be lawful. It is lawful for any person to hold the office of county board

member and township supervisor, and in counties of less than 100,000 population the office of county board member and township trustee, simultaneously. It is lawful for any person to hold the office of county board member and the office of township assessor or town clerk, simultaneously, in counties of less than 300,000 population.

P.A. 79-457, § 2, eff. Oct. 1, 1975. Amended by P.A. 80-1424, § 1, eff. Sept. 8, 1978; P.A. 82-554, § 1, eff. Sept. 17, 1981; P.A. 82-948, § 1, eff. Aug. 19, 1982; P.A. 90-748, § 10, eff. Aug. 14, 1998.

Formerly Ill.Rev.Stat.1991, ch. 102, § 4.11.

FINANCES

ACT 310. INVESTMENT OF MUNICIPAL FUNDS ACT

310/0.01. Short title

§ 0.01. Short title. This Act may be cited as the Investment of Municipal Funds Act.

Laws 1941, vol. 2, p. 473, § 0.01, added by P.A. 86-1324, § 1184, eff. Sept. 6, 1990.

Formerly Ill.Rev.Stat.1991, ch. 146 ½, § 3.01.

310/1. Surplus funds of counties, park districts, sanitary districts or other municipal corporations; purchase of tax anticipation warrants or municipal bonds

§ 1. Every county, park district, sanitary district, or other municipal corporation, holding in its treasury funds which are set aside for use for particular purposes, including any funds that are disbursed to a county or municipality as their share of the taxes collected under the "Motor Fuel Tax Law",¹ but which are not immediately necessary for those purposes, by ordinance, may use those funds, or any of them, in the purchase of tax anticipation warrants issued by the county, park district, sanitary district, or other municipal corporation possessing the funds against taxes levied by that county, park district, sanitary district, or other municipal corporation. These warrants shall bear interest not to exceed four percent annually. All interest upon these warrants, and all money paid in redemption of these warrants, or received from the resale thereof, shall at once be credited to and placed in the particular fund used to purchase the specified warrants. Likewise, every county, park district, sanitary district, or other municipal corporation, by resolution or ordinance may use the money in the specified funds in the purchase of municipal bonds issued by the county, park district, sanitary district, or other municipal corporation, possessing the funds and representing an obligation and pledging the credit of that county, park district, sanitary district, or other municipal corporation, or bonds and other interest bearing obligations of the United States, of the State of Illinois, or of any other state or of any political subdivision or agency of the State of Illinois or of any other state, whether the interest earned thereon is taxable or tax exempt under federal law, including savings accounts and savings certificates of deposit of any State or National Bank if such accounts and certificates are fully insured by the Federal Deposit Insurance Corporation, withdrawable capital accounts or deposits of State or federal chartered savings and loan associations which are fully insured by the Federal Savings and Loan Insurance Corporation, or treasury notes and other securities issued by agencies of the United States. All interest upon those bonds or obligations and all money

Joint Committee on Administrative Rules
ADMINISTRATIVE CODE

**TITLE 44: GOVERNMENT CONTRACTS, PROCUREMENT AND PROPERTY
MANAGEMENT
SUBTITLE A: PROCUREMENT AND CONTRACT PROVISIONS
CHAPTER III: CHIEF PROCUREMENT OFFICER FOR THE DEPARTMENT OF
TRANSPORTATION
PART 6 CHIEF PROCUREMENT OFFICER FOR THE DEPARTMENT OF
TRANSPORTATION - CONTRACT PROCUREMENT
SECTION 6.520 CAUSES FOR SUSPENSION OR DEBARMENT**

Section 6.520 Causes for Suspension or Debarment

A contractor or subcontractor may be suspended or debarred from participation due to acts or omissions that indicate that the contractor or subcontractor lacks integrity and honesty in the conduct of business or the performance of contracts. Acts or omissions that indicate the lack of business integrity and honesty include but are not limited to:

- a) fraud, bribery, embezzlement, theft, collusion, conspiracy, anti-competitive activity or other misconduct and offenses prohibited by law whether or not any such misconduct or offense is in connection with a Department contract or subcontract or any contract or subcontract requiring Department approval;
- b) making a material false statement in an application for prequalification or any forms or affidavits required as part of a prequalification process;
- c) materially violating any rule or procurement procedure or making a material false statement in connection with any rules or procurement procedures of the Department;
- d) making a material false statement, representation, claim or report respecting the character, quality, quantity, or cost of any work performed or materials furnished in connection with a contract or subcontract administered or supervised by the Department;
- e) doing business with a suspended contractor or subcontractor in connection with a contract or subcontract of the Department or subject to approval of the Department during the period of suspension; or
- f) being debarred or suspended by another agency of this State or the United States.

(Source: Amended at 35 Ill. Reg. 16518, effective September 30, 2011)



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2014-01
SUBJECT: LOCAL LETTINGS
ISSUED DATE: April 25, 2014
EFFECTIVE DATE: April 25, 2014

This memorandum supersedes portions of PM2013-11 dated December 31, 2013, and Sections 12-2.01(b), 12-3.04(a), 12-3.06(b), 12-3.07, and 12-3.08(a) dated December 2013 of the Bureau of Local Roads & Streets Manual.

The Department has updated sections of Chapter 12, "Letting and Contract Award," of the Bureau of Local Roads & Streets Manual for clarification on the requirements for Contract Bonds and the Affidavit of Illinois Business Office.

Contract Bonds will be required for public construction work costing over \$50,000 on Deliver & Install Proposals and Formal Contracts. Contract Bonds will not be required on Material Proposals.

The Affidavit of Illinois Business Office will be required on all Deliver & Install Proposals and Formal Contracts that include information on the Apprenticeship and Training Certification in the contract documents. The Affidavit of Illinois Business Office will not be required on Material Proposals.

Please contact the Bureau's Local Policy & Technology Unit at DOT.LocalPolicy@illinois.gov with any questions.

A handwritten signature in cursive script that reads "James K. Klein".

Acting Engineer of Local Roads and Streets

TW/tw

Attachments

AN ACT concerning finance.

**Be it enacted by the People of the State of Illinois,
represented in the General Assembly:**

Section 5. The Public Construction Bond Act is amended by changing Section 1 as follows:

(30 ILCS 550/1) (from Ch. 29, par. 15)

Sec. 1. Except as otherwise provided by this Act, all officials, boards, commissions, or agents of this State, or of any political subdivision thereof, in making contracts for public work of any kind costing over \$50,000 to be performed for the State, or of any political subdivision thereof, ~~and all officials, boards, commissions, or agents of any political subdivision of this State in making contracts for public work of any kind costing over \$5,000 to be performed for the political subdivision,~~ shall require every contractor for the work to furnish, supply and deliver a bond to the State, or to the political subdivision thereof entering into the contract, as the case may be, with good and sufficient sureties. The amount of the bond shall be fixed by the officials, boards, commissions, commissioners or agents, and the bond, among other conditions, shall be conditioned for the completion of the contract, for the payment of material used in the work and for all labor performed in the work, whether by subcontractor or

otherwise.

If the contract is for emergency repairs as provided in the Illinois Procurement Code, proof of payment for all labor, materials, apparatus, fixtures, and machinery may be furnished in lieu of the bond required by this Section.

Each such bond is deemed to contain the following provisions whether such provisions are inserted in such bond or not:

"The principal and sureties on this bond agree that all the undertakings, covenants, terms, conditions and agreements of the contract or contracts entered into between the principal and the State or any political subdivision thereof will be performed and fulfilled and to pay all persons, firms and corporations having contracts with the principal or with subcontractors, all just claims due them under the provisions of such contracts for labor performed or materials furnished in the performance of the contract on account of which this bond is given, when such claims are not satisfied out of the contract price of the contract on account of which this bond is given, after final settlement between the officer, board, commission or agent of the State or of any political subdivision thereof and the principal has been made."

Each bond securing contracts between the Capital Development Board or any board of a public institution of higher education and a contractor shall contain the following provisions, whether the provisions are inserted in the bond or

not:

"Upon the default of the principal with respect to undertakings, covenants, terms, conditions, and agreements, the termination of the contractor's right to proceed with the work, and written notice of that default and termination by the State or any political subdivision to the surety ("Notice"), the surety shall promptly remedy the default by taking one of the following actions:

(1) The surety shall complete the work pursuant to a written takeover agreement, using a completing contractor jointly selected by the surety and the State or any political subdivision; or

(2) The surety shall pay a sum of money to the obligee, up to the penal sum of the bond, that represents the reasonable cost to complete the work that exceeds the unpaid balance of the contract sum.

The surety shall respond to the Notice within 15 working days of receipt indicating the course of action that it intends to take or advising that it requires more time to investigate the default and select a course of action. If the surety requires more than 15 working days to investigate the default and select a course of action or if the surety elects to complete the work with a completing contractor that is not prepared to commence performance within 15 working days after receipt of Notice, and if the State or any political subdivision determines it is in the best interest of the State

to maintain the progress of the work, the State or any political subdivision may continue to work until the completing contractor is prepared to commence performance. Unless otherwise agreed to by the procuring agency, in no case may the surety take longer than 30 working days to advise the State or political subdivision on the course of action it intends to take. The surety shall be liable for reasonable costs incurred by the State or any political subdivision to maintain the progress to the extent the costs exceed the unpaid balance of the contract sum, subject to the penal sum of the bond.".

The surety bond required by this Section may be acquired from the company, agent or broker of the contractor's choice. The bond and sureties shall be subject to the right of reasonable approval or disapproval, including suspension, by the State or political subdivision thereof concerned. In the case of State construction contracts, a contractor shall not be required to post a cash bond or letter of credit in addition to or as a substitute for the surety bond required by this Section.

When other than motor fuel tax funds, federal-aid funds, or other funds received from the State are used, a political subdivision may allow the contractor to provide a non-diminishing irrevocable bank letter of credit, in lieu of the bond required by this Section, on contracts under \$100,000 to comply with the requirements of this Section. Any such bank letter of credit shall contain all provisions required for

Public Act 098-0216

HB1404 Enrolled

LRB098 04290 OMW 34317 b

bonds by this Section.

(Source: P.A. 95-1011, eff. 12-15-08; 96-1000, eff. 7-2-10.)

Section 99. Effective date. This Act takes effect upon becoming law.

AN ACT concerning finance.

**Be it enacted by the People of the State of Illinois,
represented in the General Assembly:**

Section 5. The Illinois Procurement Code is amended by changing Section 30-22 as follows:

(30 ILCS 500/30-22)

Sec. 30-22. Construction contracts; responsible bidder requirements. To be considered a responsible bidder on a construction contract for purposes of this Code, a bidder must comply with all of the following requirements and must present satisfactory evidence of that compliance to the appropriate construction agency:

(1) The bidder must comply with all applicable laws concerning the bidder's entitlement to conduct business in Illinois.

(2) The bidder must comply with all applicable provisions of the Prevailing Wage Act.

(3) The bidder must comply with Subchapter VI ("Equal Employment Opportunities") of Chapter 21 of Title 42 of the United States Code (42 U.S.C. 2000e and following) and with Federal Executive Order No. 11246 as amended by Executive Order No. 11375.

(4) The bidder must have a valid Federal Employer

Identification Number or, if an individual, a valid Social Security Number.

(5) The bidder must have a valid certificate of insurance showing the following coverages: general liability, professional liability, product liability, workers' compensation, completed operations, hazardous occupation, and automobile.

(6) The bidder and all bidder's subcontractors must participate in applicable apprenticeship and training programs approved by and registered with the United States Department of Labor's Bureau of Apprenticeship and Training.

(7) For contracts with the Illinois Power Agency, the Director of the Illinois Power Agency may establish additional requirements for responsible bidders. These additional requirements, if established, shall be set forth together with the other criteria contained in the invitation for bids, and shall appear in the appropriate volume of the Illinois Procurement Bulletin.

(8) The bidder must submit a signed affidavit stating that the bidder will maintain an Illinois office as the primary place of employment for persons employed in the construction authorized by the contract.

The provisions of this Section shall not apply to federally funded construction projects if such application would jeopardize the receipt or use of federal funds in support of

Public Act 097-0369

HB1375 Enrolled

LRB097 09020 PJG 49154 b

such a project.

(Source: P.A. 95-481, eff. 8-28-07.)

Section 99. Effective date. This Act takes effect upon becoming law.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2014-02
SUBJECT: TREATMENT OR REMOVAL OF ASH TREES DUE TO EMERALD ASH BORER
ISSUED DATE: May 23, 2014
EFFECTIVE DATE: May 23, 2014

This memorandum supersedes Procedure Memorandum 2012-07 dated November 26, 2012 and revises Section 14-1 dated October 2013 of the Bureau of Local Roads & Streets Manual.

The Emerald Ash Borer (EAB), *Agilus planipennis* Fairmaire, is an exotic beetle that was discovered in southeastern Michigan near Detroit in the summer of 2002. The adult beetles nibble on ash foliage but cause little damage. The larvae (the immature stage) feed on the inner bark of ash trees, disrupting the tree's ability to transport water and nutrients. EAB probably arrived in the United States on solid wood packing material carried in cargo ships or airplanes originating in its native Asia. EAB is also established in Windsor, Ontario, was found in Ohio in 2003, northern Indiana in 2004, northern Illinois and Maryland in 2006, western Pennsylvania and West Virginia in 2007, Wisconsin, Missouri and Virginia in the summer of 2008, Minnesota, New York, Kentucky in the spring of 2009, Iowa in the spring of 2010, Tennessee in the summer of 2010, and Connecticut, Kansas, and Massachusetts in the summer of 2012. Since its discovery, EAB has:

- Killed tens of millions of ash trees;
- Caused regulatory agencies and the USDA to enforce quarantines and fines to prevent potentially infested ash trees, logs or hardwood firewood from moving out of areas where EAB occurs.
- Cost governmental agencies, property owners, nursery operators and forest products industries tens of millions of dollars.

EAB infestation may be controlled or managed by using a combination of methods (biological, chemical, systematic removal, or complete removal). For detailed information and management resources, visit the Emerald Ash Borer website at www.emeraldashborer.info.

The Illinois Department of Agriculture (IDOA) has established a web site to assist and educate individuals about EAB. For the most recent information about confirmed locations, please visit www.agr.state.il.us/eab/.

If a Local Public Agency (LPA) endeavors to treat ash trees for EAB, we recommend the LPA visit the above websites and seek the assistance of experts to determine if treatment will be a cost effective measure.

A (LPA) may use Motor Fuel Tax (MFT) funds under the general maintenance program for the treatment and systematic or complete removal of Ash trees if the following criteria are met:

- LPA is located in the Emerald Ash Borer quarantined zone published by the Illinois Department of Agriculture;
- the Ash trees are located on the public right-of-way or are a potential hazard to vehicle travel;
- the Ash trees to be treated or removed are shown in a detailed inventory; and
- MFT funds are not used to plant replacement trees.

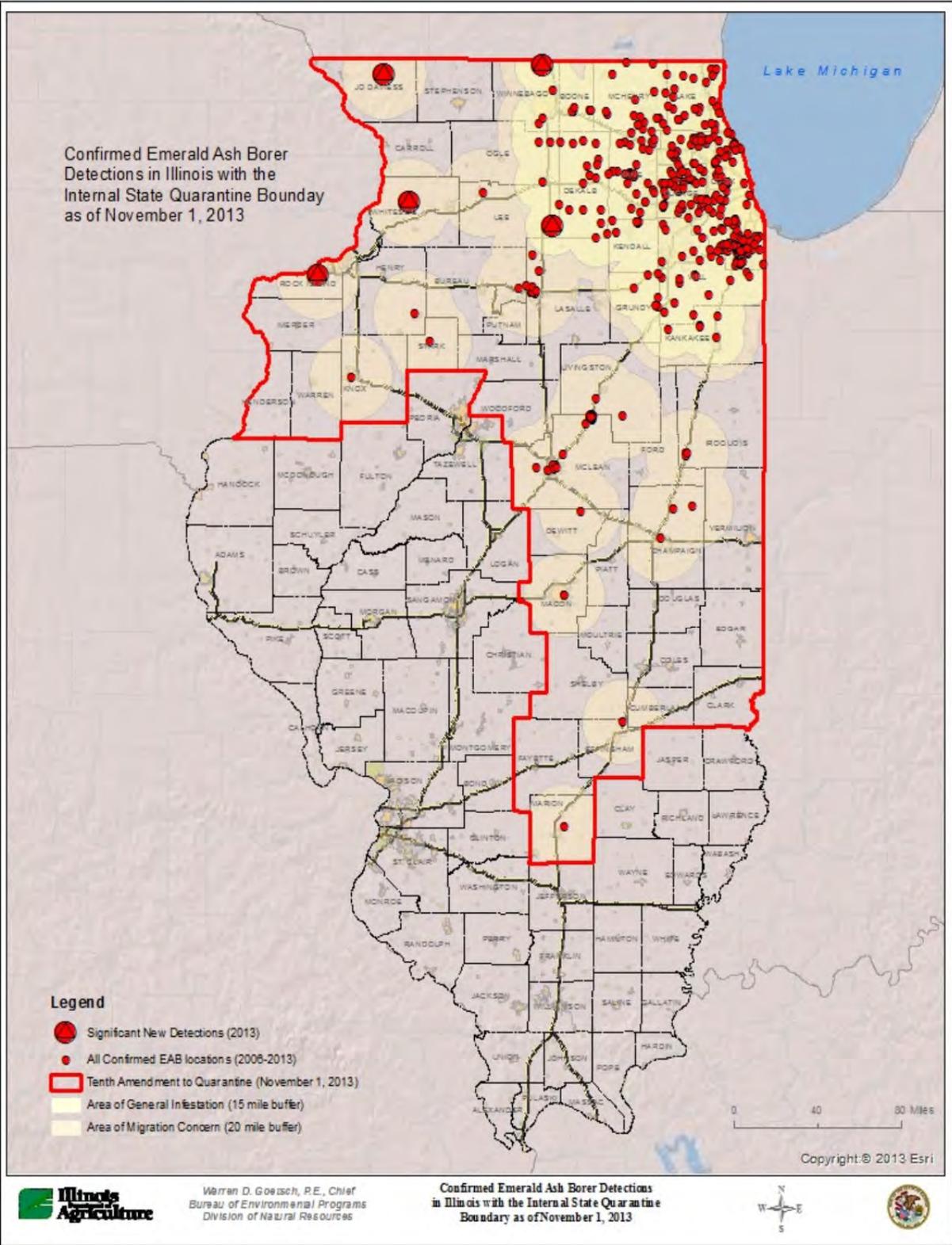
Contact the Local Policy & Technology Unit at IDOT.LocalPolicy@illinois.gov with any questions.

A handwritten signature in black ink that reads "James K. Klein". The signature is written in a cursive, flowing style.

Acting Engineer of Local Roads and Streets

TW/

Attachments



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AshSeed
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Dispersal Information
Economic Impact

Insecticide Research
Biosurveillance
Ash Tree Genetics and Ecology

Survey Research
Host Range Information

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Test/Research Results

- Factors affecting the survival of ash (*Fraxinus* spp.) trees infested by emerald ash borer (*Agrilus planipennis*)**
 2012 - Kathleen S. Knight, John P. Brown and Robert P. Long
 The article is on the survival analysis of ash trees in Ohio. According to Kathleen Knight, the main take-home message was that ash trees actually died slightly faster in stands with lower densities of ash, the opposite of what the authors thought would happen. This is just the speed of mortality, not the % mortality (almost all the ash trees die eventually no matter what).

- Historical Accumulation of Nonindigenous Forest Pests in the Continental United States**
 December 2010 - American Institute of Biological Sciences
Link to this publication will be available mid-January 2014

Nonindigenous insects and pathogens continue to become established in US forests with regularity despite regulations intended to prevent this, according to a study published in the December 2010 issue of BioScience. The study, by a team led by Juliann E. Aukema, of the National Center for Ecological Analysis and Synthesis in Santa Barbara, California, (including MSU's Deb McCullough), found that nonindigenous insects are being newly detected in US forests at a rate of about 2.5 per year, and high-impact insects and pathogens that cause significant effects in forests, including tree death, are being newly detected every 2 to 2.5 years. The rate of detection of harmful forest invaders seems to have increased in the past two decades.



- Risk Assessment of the Movement of Firewood within the United States**

(PDF, 3,315 KB)

May 2010 - USDA APHIS

Exotic and native forest pests such as *Agrilus planipennis* (emerald ash borer), *Anoplophora glabripennis* (Asian longhorned beetle), and others cause serious damage to urban and natural forests in the United States. These pests and many others disperse various distances through multiple pathways including movement of nursery stock and firewood. Firewood is a raw forest product that is widely utilized and moved throughout the United States with relatively limited consideration of the potential pests within or the associated risks. We conducted an assessment and examined factors that may affect the risk associated with the movement of firewood such as users, movement, insects and diseases, potential impact to natural and urban forests, and trends in firewood use.

- Geographic Origin of North America's Emerald Ash Borer** (PDF, 0.08MB)

Jim Smith, Michigan State University - This research is looking for the origins of EAB found in North America by looking at the genetic similarities in samples of EAB populations from Asia and comparing them to North American populations.

- Studies to Develop an Emerald Ash Borer Survey Trap** (PDF, 0.09MB)

Jason B. Oliver, Joe Francese, Vic Mastro, Ivich Fraser, Dave Lance, Nadeer Youssef - Studies to develop an emerald ash borer survey trap through trap location, seedling tree damage, trap design evaluation.

- Developing a Fast, Inexpensive Method to Extract and Analyze Imidacloprid Residue in Plant Tissue**

(PDF, 0.06MB)

Phil Lewis and Deborah G. McCullough - A cheap, rapid method to analyze chemical residue in treated trees is necessary in order to best assess efficacy of different treatments.

- Genetic Analysis of Emerald Ash Borer** (PDF, 0.02MB)

Jim Smith, Bob Haack and Leah Bauer - estimate the geographic origin of emerald ash borer populations in Asia that gave rise to EAB in North America

- Exploration for Emerald Ash Borer in China** (PDF, 0.03MB)

Houping Liu, Toby R. Petrice, Leah S. Bauer, Robert A. Haack, Ruitong Gao, and Tonghai Zhao - research on the study of the natural enemy complex of EAB in China

Is EAB in your state?

Learn more about...

Latest News

"In Defense of Urban Forestry" in Indiana; see the recorded webinar by Lindsey Purcell of Purdue Univ.:

emeraldashborer.info/eab_university..._#ashtrees

City of Guelph (Ontario) Formulates Plan To Deal With Emerald Ash Borer

- goo.gl/alerts/mvut
#GoogleAlerts #EAB
#ashtrees

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MAPS & STATE INFO



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Insecticide Research

Research on methods to control EAB began in 2002. Research is ongoing, and as methods are developed, more information will be available.

SPOT THE PURPLE BOXES



**CLICK THE PURPLE
BOX TO PLAY**

- **"Slow Ash Mortality" – SLAM Pilot Project**

Description: The SLAM project is a collaborative effort involving Michigan State University, the USDA Forest Service, USDA Animal and Plant Health Inspection Service (APHIS), Michigan Technological University (MTU), the Michigan Dept. of Agriculture and Rural Development (MDARD), the Michigan Dept. of Natural Resources (MDNR), and Michigan Conservation Districts in Michigan's Upper Peninsula. The goal of the SL.A.M. pilot project in Michigan's Upper Peninsula is to delay and slow the expansion of ash mortality by reducing populations of the beetle in newly-infested sites, outside of known EAB infestations.

- **Frequently Asked Questions Regarding Potential Side Effects of EAB Insecticides**  (PDF, 311KB)
February 2011

Research and Extension Specialists from Michigan State University, the Ohio State University OARDC and Extension, and University of Minnesota Extension have put together a comprehensive publication that addresses questions and concerns regarding insecticide use to control emerald ash borer.

- **Control of Emerald Ash Borer with Microbial Insecticides**  (PDF, 0.05MB)
Revised 4/14/04

Leah S. Bauer, Houping Liu, and Deborah L. Miller - studying the efficacy of registered microbial insecticides for EAB control in environmentally sensitive habitats

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- **Evaluation of Perma Guard D-20 and Imidacloprid to Control Emerald Ash Borer**  (PDF, 0.02MB)
Robert A. Haack and Toby R. Petrice - This study tested the effectiveness D-20 by Perma Guard (Albuquerque, NM) in controlling emerald ash borer

- Research abstracts and other information addressing the EAB problem in North America.

- **2009** 
- **2007** 
- **2006**  (PDF, 4.78MB)
- **2005** 
- **2004** 
- **2003** 

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Survey Research

- **Evaluation of Different Trap Types and Lures for Capturing Emerald Ash Borer Adults in Low Density Populations**

Therese M. Poland, Deborah G. McCullough, Andrew J. Storer, Jordan M. Marshall, and Ivich Fraser (from Proceedings of the 22nd U.S. Department of Agriculture Interagency Research Forum on Invasive Species 2011)

- **Utilizing Girdled Ash Trees for Optimal Detection, Delimitation and Survey of Low Density Emerald Ash Borer Populations**

Nathan W. Siegert, Nicholas J. Gooch, Deborah G. McCullough, Therese M. Poland, and Robert L. Heyd (from Proceedings of the 22nd U.S. Department of Agriculture Interagency Research Forum on Invasive Species 2011)

- **Optimization of Trap Color for Emerald Ash Borer (Coleoptera: Buprestidae)**

By Joseph A. Francese, Damon J. Crook, Ivich Fraser, David R. Lance, Alan J. Sawyer, and Victor C. Mastro (from Journal of Economic Entomology 103(4):1235-1241. 2010)

- **Effects of Trap Type, Placement and Ash Distribution on Emerald Ash Borer Captures in a Low Density Site**

By Deborah G. McCullough, Nathan W. Siegert, Therese M. Poland, Steven J. Pierce, and Su Zie Ahn (from Environmental Entomology 40(5):1239-1252. 2011)

- **"Slow Ash Mortality" – SLAM Pilot Project**

Description: The SLAM project is a collaborative effort involving Michigan State University, the USDA Forest Service, USDA Animal and Plant Health Inspection Service (APHIS), Michigan Technological University (MTU), the Michigan Dept. of Agriculture and Rural Development (MDARD), the Michigan Dept. of Natural Resources (MDNR), and Michigan Conservation Districts in Michigan's Upper Peninsula. The goal of the SL.A.M. pilot project in Michigan's Upper Peninsula is to delay and slow the expansion of ash mortality by reducing populations of the beetle in newly-infested sites, outside of known EAB infestations.

- **Using Double-Decker Traps to Detect Emerald Ash Borer**  (PDF, 496KB)
April 2009

Deborah G. McCullough and Therese Poland - Detecting or monitoring populations of emerald ash borer (*Agrilus planipennis* Fairmaire) is very difficult when infestations are relatively new or when densities of this invasive pest are low. The Double-Decker (DD) trap is designed to integrate several visual and olfactory cues

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that are likely to attract EAB beetles. The DD traps are designed to be highly apparent to beetles. The vertical silhouette of the DD trap somewhat mimics the silhouette of an open-grown tree. The trap includes two purple panels, partly because beetles respond positively to that particular shade of purple. The two panels help to mimic the shape of a tree "canopy." In addition, they increase the surface area available for trapping beetles.

- **Using Girdled Trap Trees Effectively For EAB Detection, Delimitation & Survey**  (PDF, 407KB)
July 2007 - Dr. Deborah G. McCullough and Dr. Nathan W. Siegert
- **Characteristics and distribution of potential ash tree hosts for Emerald Ash Borer**  (PDF, 0.07MB)
David W. MacFarlane and Shawna Patterson Meyer - This report highlights some potential risk factors related to ash host characteristics and spatial distribution to potential risk from EAB.
- **Improving Survey Methodology for Emerald Ash Borer**  (PDF, 0.03MB)
2004 - David W. MacFarlane - Ongoing research to improve survey methodologies for detecting emerald ash borer and establish baseline data for estimating risk of spread and establishment across Michigan.
- **Ash dieback survey slides**
(power point presentation) David Smitley - comparison of ash dieback for 2003 and 2004

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Survival of EAB

- **Risk Assessment of the Movement of Firewood within the United States**  (PDF, 3,315 KB)
May 2010 - USDA APHIS
Exotic and native forest pests such as *Agrilus planipennis* (emerald ash borer), *Anoplophora glabripennis* (Asian longhorned beetle), and others cause serious damage to urban and natural forests in the United States. These pests and many others disperse various distances through multiple pathways including movement of nursery stock and firewood. Firewood is a raw forest product that is widely utilized and moved throughout the United States with relatively limited consideration of the potential pests within or the associated risks. We conducted an assessment and examined factors that may affect the risk associated with the movement of firewood such as users, movement, insects and diseases, potential impact to natural and urban forests, and trends in firewood use.
- **Emerald Ash Borer Survival in Firewood**  (PDF, 0.03MB)
2003 - Robert A. Haack and Toby R. Petrice - This study looked at firewood infested with emerald ash borer, to determine the survival rate.
- **Survival of Emerald Ash Borer in Chips**  (PDF, 0.02MB)
2003 - Deborah G. McCullough, Therese M. Poland and David Cappaert - This study was to determine survival of EAB in chips of different sizes.

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Biosurveillance

- ***Cerceris fumipennis*?**  (PDF, 2MB)
2009 - A Biosurveillance Tool for Emerald Ash Borer. Canadian Food Inspection Agency

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Dispersal Information

- **Factors affecting the survival of ash (*Fraxinus* spp.) trees infested by emerald ash borer (*Agrilus planipennis*)**
2012 - Kathleen S. Knight, John P. Brown and Robert P. Long
The article is on the survival analysis of ash trees in Ohio. According to Kathleen Knight, the main take-home message was that ash trees actually died slightly faster in stands with lower densities of ash, the opposite of what the authors thought would happen. This is just the speed of mortality, not the % mortality (almost all the ash trees die eventually no matter what).
- **Emerald Ash Borer Flight Estimates Revised**  (PDF, 200 KB)
2007 - Robin A. J. Taylor, Therese M. Poland, Leah S. Bauer, Neith N. Windell, and James L. Kautz
- **Is Emerald Ash Borer an Obligate Migrant?**  (PDF, 59 KB)
2006 - Robin A. J. Taylor, Therese M. Poland, Leah S. Bauer, and Robert Haack
- **Emerald Ash Borer Flight Potential**  (PDF, 16 KB)
2005 - Robin A. J. Taylor, Leah S. Bauer, Deborah L. Miller, and Robert Haack
- **Flight Potential of the Emerald Ash Borer**  (PDF, 774 KB)
2004 - Leah S. Bauer, Deborah L. Miller, Robin A. J. Taylor, and Robert Haack
- **Dispersal of Emerald Ash Borer: A Case Study at Tipton, Michigan**  (PDF, 20 KB)
2003 - Deborah G. McCullough, Therese Poland and David Cappaert - assess dispersal of one generation of emerald ash borer adults in a rural area

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- **Emerald Ash Borer Adult Dispersal**  (PDF, 23 KB)
Robert A. Haack, Toby R. Petrice - This study evaluated emerald ash borer, adult dispersal at two Michigan sites in early summer 2003.

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Host Range Information

- **Host Range of Emerald Ash Borer**  (PDF, 0.02MB)
Robert A. Haack, Toby R. Petrice, Deborah L. Miller, Leah S. Bauer and Nathan M. Schiff - In 2003, foliage of several trees and shrubs as food for emerald ash borer (EAB), *Agrilus planipennis* Fairmaire, adults were evaluated in a series of no-choice and choice tests that were conducted indoors in Michigan
- **Host Range and Host Preference of Emerald Ash Borer**  (PDF, 0.02MB)
2003 - Deborah G. McCullough, Andrea Agius, David Cappaert, Therese Poland, Debbie Miller and Leah Bauer - Our first objective is to evaluate alternate species of concern to determine whether they are acceptable to ovipositing adult beetles and whether they are suitable for larval development. We also assessed alternate hosts with a series of field tests.

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Economic Impact

- **Economic Impacts of Non-Native Forest Insects in the Continental United States**  (PDF, 245KB)
January 2013 - Juliann E. Aukema, et. al. - The article examines how they developed a novel modeling approach that maximizes the use of available data, accounts for multiple sources of uncertainty, and provides cost estimates for three major feeding guilds of non-native forest insects. For each guild, they calculated the economic damages for five cost categories and estimated the probability of future introductions of damaging pests.
- **EAB Economic Impact (OSU)**  (PDF, 0.10MB)
January 2007 - Matt Bumgardner, Drew Todd and Davis Syndor, the Ohio State University - Outlines the potential economic impacts of EAB on Ohio, U.S., and communities.

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Ash Tree Genetics and Ecology

- **Ecological and Genetic Isolation of *Fraxinus***
1972 - By Sylvia May Obenauf Taylor
Scan  (PDF, 0.13MB) | **Scan**  (JPG, 1.84MB)

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: 2014-03
SUBJECT: BRIDGE INVENTORY AND INSPECTIONS
ISSUED DATE: June 27, 2014
EFFECTIVE DATE: June 30, 2014

This memorandum supersedes Chapter 6 of the Bureau of Local Roads and Streets Manual dated January 2006 and revised February 2008.

The proper weigh limit posting and closure of bridges is a vital component of highway safety. Existing weight limits cannot be enforced by law enforcement agencies without appropriate posting and closure signage. The Department has worked to establish effective procedures to ensure compliance with the requirements of bridge posting and closure in accordance with the Illinois Compiled Statutes, Chapter 625, Section 15-317.

Recognizing the need for a uniform methodology for the Annual Posting and Closure Review, the Department initiated study and review of the criteria for this annual process, and in doing so found other areas requiring improvement. Additionally, conformance with the National Bridge Inspection Standards (NBIS) 23 Metrics requires improvement to the expedient compliance and review of required bridge posting and closures. An outline and discussion of significant modifications are contained herein.

Sections of the BLRS Manual have been eliminated and now reference Section 3 of the Structural Services Manual maintained by the Bureau of Bridges and Structures.

BRIDGE POSTING AND CLOSURE REVIEW. Posting and Closure Form BBS PCR (04/01/14) has been developed to standardize, and provide a comprehensive and consistent method for, posting and closure reviews. This form must be used for the annual Posting and Closure Review. Photographs, preferably digital, are to be taken during the review to document and verify conditions. A copy of BBS PCR is attached, and in the future may also be obtained at the IDOT website.

The district must advise the Bureau of Bridges and Structures' Bridge Management Unit regarding the start date of the review. Recorded documentation and photographs should adequately describe the posting / closure compliance or deficiencies. The form also may be generated in SIMS - County using the Bridge Posting Closure Review report.

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BRIDGE POSTINGS. Attached is a new document illustrating measures for "Bridge Posting Traffic Control". This is now included in Chapter 6 of the BLRS Manual, and will be in the "Signing of Road District and Township Highways" booklet. We expect this document will be incorporated into future versions of the Structural Services Manual and the Bureau of Operations' Traffic Policies and Procedures Manual.

PERMANENT BRIDGE CLOSURE TRAFFIC CONTROL. Attached, please find the new document illustrating measures for "Permanent Bridge Closure Traffic Control." This is now included in Chapter 6 of the BLRS Manual, and will be in the "Signing of Road District and Township Highways" booklet as revised Figure IV-7 "Long Term Bridge Closure." We expect this document will also be incorporated into future versions of the Structural Services Manual and the Bureau of Operations' Traffic Policies and Procedures Manual.

Please note that object markers, used in conjunction with permanent road closures, adjacent to the "Road Ends" sign are now required to be red. The use of orange object markers for permanent closures is no longer acceptable. All new signs shall be red, and existing orange signs should be replaced with red as soon as practical.

Contact the Local Policy & Technology Unit at DOT.LocalPolicy@illinois.gov with any questions.

Sincerely,



D. Carl Puzey, P.E., S.E.
Acting Engineer of
Bridges and Structures



James K. Klein, P.E., S.E.
Acting Bureau Chief of
Local Roads and Streets

JKK/tw

Attachments

SIGNS FOR BRIDGE POSTINGS



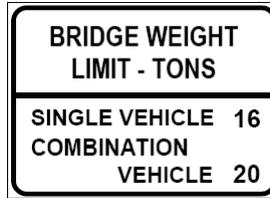
FOR SINGLE GROSS WEIGHT LIMIT



FOR SINGLE AXLE WEIGHT LIMIT



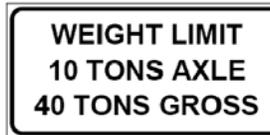
MAY BE PLACED BELOW WEIGHT LIMIT SIGN TO PROVIDE ADVANCE NOTICE



FOR TWO SEPARATE WEIGHT LIMITS



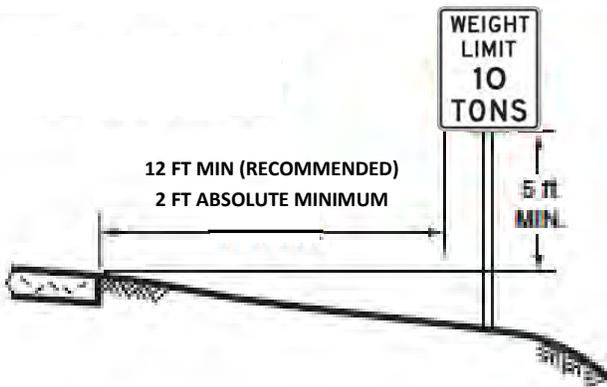
FOR THREE SEPARATE WEIGHT LIMITS



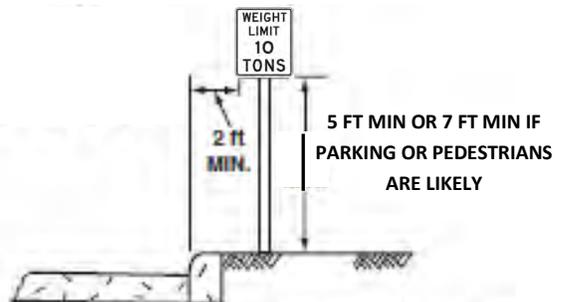
FOR LEGAL LOAD ONLY WEIGHT LIMITS

SIGN HEIGHT AND OFFSET REQUIREMENTS

RURAL LOCATIONS



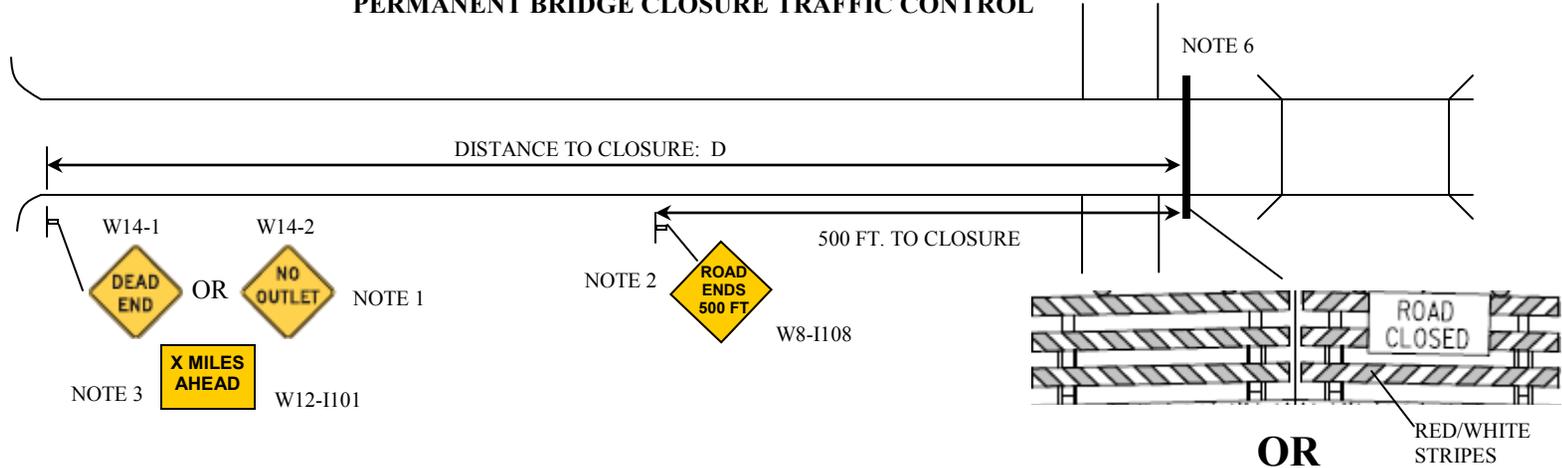
BUSINESS, COMMERCIAL, OR RESIDENTIAL LOCATIONS



SIGN PLACEMENT REQUIREMENTS

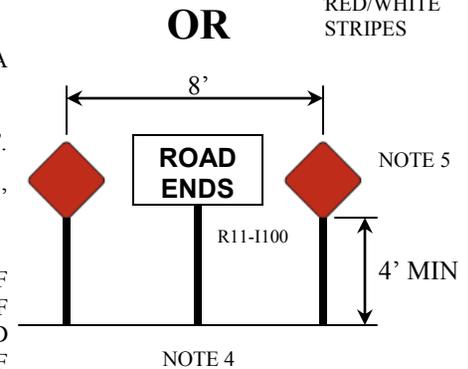
- 'SINGLE WEIGHT LIMIT' SIGNS SHALL BE LOCATED IMMEDIATELY IN ADVANCE OF THE BRIDGE.
- 'MULTIPLE WEIGHT LIMIT' SIGNS SHALL BE LOCATED WITHIN 500 FT IN ADVANCE OF THE BRIDGE.
- ADDITIONAL WEIGHT LIMIT SIGNS MAY BE INSTALLED IN ADVANCE OF THE RESTRICTION WITH AN 'X MILES AHEAD' PLAQUE TO PROVIDE ADVANCE NOTICE. ADVANCED SIGNS SHOULD BE INSTALLED NEAR JUNCTIONS WHERE A DRIVER COULD CHOOSE AN ALTERNATE ROUTE WITH A MINIMUM OF INCONVENIENCE.
- LEGAL LOAD ONLY SIGNS SHALL BE LOCATED IMMEDIATELY IN ADVANCE OF THE BRIDGE.

PERMANENT BRIDGE CLOSURE TRAFFIC CONTROL



NOTES:

1. SEE SECTION 2C.26 OF THE MUTCD. MULTI-LANE ROADS SHALL HAVE W14 SERIES SIGNS WITH A MINIMUM SIZE OF 36" X 36". SINGLE LANE ROADS MAY HAVE SIGNS OF 30" X 30".
2. USE WHERE 'D' EXCEEDS 1500 FT. OR WHERE SIGHT DISTANCE TO THE CLOSURE IS LESS THAN 500 FT.
3. WHERE THE POINT OF CLOSURE IS OVER 1 MILE FROM THE LAST CROSS ROAD, AN 'X MILES AHEAD' PLAQUE (W12-1101) MAY BE USED.
4. BARRICADES OR A ROAD ENDS SIGN WITH RED OBJECT MARKERS SHALL BE USED AT THE POINT OF CLOSURE. GUARDRAIL MAY BE USED IN CONJUNCTION WITH BARRICADES OR 'ROAD ENDS' SIGN. IF USED, BARRICADES SHALL BE RETRO-REFLECTORIZED RED/WHITE AND PERMANENTLY INSTALLED INTO THE PAVEMENT. ANY BARRIERS USED SHALL EXTEND BEYOND THE EDGE OF SHOULDER. IF PRACTICAL, OLD PAVEMENT SHOULD BE REMOVED BEYOND THE CLOSURE POINT OR COVERED WITH DIRT/ROCKS TO MINIMIZE THE ILLUSION OF THE ROAD CONTINUING. BARRICADES OR 'ROAD ENDS' SIGN SHOULD BE INSTALLED AT LEAST 100 FT. IN ADVANCE OF BROKEN PAVEMENT OR DIRT/ROCKS.
5. OBJECT MARKERS USED IN CONJUNCTION WITH A 'ROAD ENDS' SIGN SHALL BE RED AND CONFORM WITH SECTION 2C.66 OF THE MUTCD.
6. IF A CROSS ROAD OR ENTRANCE IS LOCATED NEAR THE ROAD CLOSURE, THE CLOSURE DEVICES SHALL BE OUTSIDE THE CLEAR ZONE OF THE CROSSROAD OR ENTRANCE.
7. IF THE BRIDGE IS UNDER ACTIVE CONSTRUCTION, TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH PART 6 OF THE MUTCD.





Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2015-01
SUBJECT: JOINT FUNDING AGREEMENTS
ISSUED DATE: September 1, 2015
EFFECTIVE DATE: September 1, 2015

This memorandum adds requirements to Sections 5-3.01(b) of the Bureau of Local Roads & Streets Manual, and revises BLR forms 05310 and BLR 05311.

The Department has updated Chapter 5, Section 3.01(b) of the Bureau of Local Roads & Streets Manual to include requirements for a Local Public Agency (LPA) appropriation resolution covering the local share of the project cost. This resolution shall be included as an addendum to Forms BLR 05310 and BLR 05311 on State-let construction projects. A sample appropriation resolution is attached for reference. This sample resolution is not intended to replace the LPA's normal format, but is included to highlight information required for inclusion in the appropriation resolution.

With this Procedure Memorandum, we are emphasizing the need to submit locally executed agreements in accordance with the due dates required by the respective District Bureau of Local Roads office. Submittals, with attachments and resolutions as appropriate, should be complete and accurate. Failure to meet the agreement deadline may result in the project's removal from the proposed letting advertisement.

Revisions to the agreement Forms BLR 05310 and BLR 05311 were necessitated by changes to federal policies. The current version of these forms found on the IDOT website shall be utilized on all federally funded projects. Revisions to the agreement forms are summarized below:

LPA Reference – Revised the local agency reference to “LPA”.

HSIP number – Added the HSIP number to the ITEP / SRTS box.

Inactive Projects - The federal Financial Integrity Review and Evaluation (FIRE) program defines project inactivity as the absence of expenditures within a twelve (12) month period. To comply with the requirements of this regulation and to verify project activity, agreement language was modified to require LPAs to invoice at intervals not to exceed six (6) months.

Additionally, if the joint agreement fails to be authorized by the FHWA in a twelve (12) month period beyond the execution of the joint agreement by the Department, the agreement will become null and void.

Invoicing – Additional information was added to define the required supporting documentation for reimbursement requests, and places a time limit of twelve (12) months for the submittal of the final invoice.

Single Audit – Several federal Office of Management and Budget (OMB) Circulars were recently combined into 2 CFR 200, commonly referred to as the “Supercircular”. Single audits are now required to be completed when a LPA expends \$750,000 or more of federal funds (from any source) in a year. This limit was increased from \$500,000. Additional clarification was also inserted to help LPA auditors define when funds from the Department should be included in the LPA’s single audit.

Final Closeout – Based on the FIRE program and Supercircular requirements, LPAs must provide the final closeout report to the Department within twelve (12) months of the physical completion of the project (typically corresponds with submission of the engineers final pay estimate). If the LPA is unable to meet this deadline, a written justification with the new anticipated date of completion will be required.

Record Retention – Language was changed to clarify when the record retention period begins. LPAs must retain records three (3) years from the point the Department final out the project (initiation of the State Job Completion Notice).

DUNS number – A Dun and Bradstreet (DUNS) number is required for execution of the agreement. Instructions on obtaining a number are now included for information.

Buy America – For emphasis on construction projects, reference to the federal Buy America provisions were added to the agreement.

Please contact the Bureau of Local Roads and Streets, Local Policy & Technology Unit, at DOT.LocalPolicy@illinois.gov with any questions.

A handwritten signature in blue ink, appearing to read "Johnson D. E.", is positioned above the typed name.

Acting Engineer of Local Roads and Streets

GSL/tjw

Attachments

COUNTY/CITY/VILLAGE of _____

Location: _____

Section No.: _____

Project No.: _____

Job No.: _____

SAMPLE RESOLUTION

WHEREAS, the [County/City/Village] of _____ endeavors to improve a segment of _____ from _____ to _____ that is approximately _____ miles in length and known to the Illinois Department of Transportation as MFT Section Number _____ and State Job Number _____.

WHEREAS, the cost of said improvement has necessitated the use of federal funds.

WHEREAS, the federal fund source requires a match of local funds.

WHEREAS, the use of federal funds requires a joint funding agreement (AGREEMENT) with the Department of Transportation.

NOW THEREFORE, BE IT RESOLVED that the [County/City/Village] of _____ authorizes _____ dollars, (\$_____) or as much of such sum as may be needed to match federal funds in the completion of the aforementioned project known as MFT Section Number _____.

BE IT FURTHER RESOLVED that the [Chairman/Mayor/President] is hereby authorized and directed to execute the above-mentioned AGREEMENT and any other such documents related to advancement and completion of said project.

Certificate:

I, _____, Clerk in and for said [County/City/Village] in the State of Illinois, and keeper of the records and files thereof, as provided by statute, do hereby certify the foregoing to be a true, perfect, and complete copy of a Resolution adopted by the [County/City/Village] [Board/Council] at its meeting held on _____, 20____.

In testimony whereof, I have hereunto set my hand and affixed the seal of said [County/City/Village] at my office in _____, in [County], this _____ day of _____, 20____.

(SEAL)

Clerk

 Illinois Department of Transportation Local Public Agency Agreement for Federal Participation	Local Public Agency	State Contract	Day Labor	Local Contract	RR Force Account
	Section	Fund Type		ITEP, SRTS, or HSIP Number(s)	
Construction		Engineering		Right-of-Way	
Job Number	Project Number	Job Number	Project Number	Job Number	Project Number

This Agreement is made and entered into between the above local public agency, hereinafter referred to as the "LPA", and the State of Illinois, acting by and through its Department of Transportation, hereinafter referred to as "STATE". The STATE and LPA jointly propose to improve the designated location as described below. The improvement shall be constructed in accordance with plans prepared by, or on behalf of the LPA, approved by the STATE and the STATE's policies and procedures approved and/or required by the Federal Highway Administration, hereinafter referred to as "FHWA".

Location

Local Name _____ Route _____ Length _____

Termini _____

Current Jurisdiction _____ TIP Number _____ Existing Structure No _____

Project Description

Division of Cost

Type of Work	%	%	LPA	%	Total
Participating Construction	()	()	()	()	
Non-Participating Construction	()	()	()	()	
Preliminary Engineering	()	()	()	()	
Construction Engineering	()	()	()	()	
Right of Way	()	()	()	()	
Railroads	()	()	()	()	
Utilities	()	()	()	()	
Materials					
TOTAL	\$ _____	\$ _____	\$ _____	\$ _____	

NOTE: The costs shown in the Division of Cost table are approximate and subject to change. The final LPA share is dependent on the final Federal and State participation. The actual costs will be used in the final division of cost for billing and reimbursement.

If funding is not a percentage of the total, place an asterisk in the space provided for the percentage and explain above.

Local Public Agency Appropriation

By execution of this Agreement, the LPA attests that sufficient moneys have been appropriated or reserved by resolution or ordinance to fund the LPA share of project costs. A copy of the authorizing resolution or ordinance is attached as an addendum (**required for State-let contracts only**)

Method of Financing (State Contract Work Only)

- METHOD A---Lump Sum (80% of LPA Obligation) _____
- METHOD B--- _____ Monthly Payments of _____ due by the _____ of each successive month.
- METHOD C---LPA's Share _____ divided by estimated total cost multiplied by actual progress payment.

(See page two for details of the above methods and the financing of Day Labor and Local Contracts)

Agreement Provisions

THE LPA AGREES:

- (1) To acquire in its name, or in the name of the **STATE** if on the **STATE** highway system, all right-of-way necessary for this project in accordance with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, and established State policies and procedures. Prior to advertising for bids, the **LPA** shall certify to the **STATE** that all requirements of Titles II and III of said Uniform Act have been satisfied. The disposition of encroachments, if any, will be cooperatively determined by representatives of the **LPA**, and the **STATE** and the **FHWA**, if required.
- (2) To provide for all utility adjustments, and to regulate the use of the right-of-way of this improvement by utilities, public and private, in accordance with the current Utility Accommodation Policy for Local Agency Highway and Street Systems.
- (3) To provide for surveys and the preparation of plans for the proposed improvement and engineering supervision during construction of the proposed improvement.
- (4) To retain jurisdiction of the completed improvement unless specified otherwise by addendum (addendum should be accompanied by a location map). If the improvement location is currently under road district jurisdiction, an addendum is required.
- (5) To maintain or cause to be maintained, in a manner satisfactory to the **STATE** and the **FHWA**, the completed improvement, or that portion of the completed improvement within its jurisdiction as established by addendum referred to in item 4 above.
- (6) To comply with all applicable Executive Orders and Federal Highway Acts pursuant to the Equal Employment Opportunity and Nondiscrimination Regulations required by the U.S. Department of Transportation.
- (7) To maintain, for a minimum of 3 years after final project close-out by the **STATE**, adequate books, records and supporting documents to verify the amounts, recipients and uses of all disbursements of funds passing in conjunction with the contract; the contract and all books, records and supporting documents related to the contract shall be available for review and audit by the Auditor General and the department; and the **LPA** agrees to cooperate fully with any audit conducted by the Auditor General and the **STATE**; and to provide full access to all relevant materials. Failure to maintain the books, records and supporting documents required by this section shall establish a presumption in favor of the **STATE** for the recovery of any funds paid by the **STATE** under the contract for which adequate books, records and supporting documentation are not available to support their purported disbursement.
- (8) To provide if required, for the improvement of any railroad-highway grade crossing and rail crossing protection within the limits of the proposed improvement.
- (9) To comply with Federal requirements or possibly lose (partial or total) Federal participation as determined by the **FHWA**.
- (10) (State Contracts Only) That the method of payment designated on page one will be as follows:
 - Method A - Lump Sum Payment. Upon award of the contract for this improvement, the **LPA** will pay to the **STATE** within thirty (30) calendar days of billing, in lump sum, an amount equal to 80% of the **LPA**'s estimated obligation incurred under this Agreement. The **LPA** will pay to the **STATE** the remainder of the **LPA**'s obligation (including any nonparticipating costs) within thirty (30) calendar days of billing in a lump sum, upon completion of the project based on final costs.
 - Method B - Monthly Payments. Upon award of the contract for this improvement, the **LPA** will pay to the **STATE**, a specified amount each month for an estimated period of months, or until 80% of the **LPA**'s estimated obligation under the provisions of the Agreement has been paid, and will pay to the **STATE** the remainder of the **LPA**'s obligation (including any nonparticipating costs) in a lump sum, upon completion of the project based upon final costs.
 - Method C - Progress Payments. Upon receipt of the contractor's first and subsequent progressive bills for this improvement, the **LPA** will pay to the **STATE** within thirty (30) calendar days of receipt, an amount equal to the **LPA**'s share of the construction cost divided by the estimated total cost, multiplied by the actual payment (appropriately adjusted for nonparticipating costs) made to the contractor until the entire obligation incurred under this Agreement has been paid.Failure to remit the payment(s) in a timely manner as required under Methods A, B, or C, shall allow the **STATE** to internally offset, reduce, or deduct the arrearage from any payment or reimbursement due or about to become due and payable from the **STATE** to **LPA** on this or any other contract. The **STATE**, at its sole option, upon notice to the **LPA**, may place the debt into the Illinois Comptroller's Offset System (15 ILCS 405/10.05) or take such other and further action as may be required to recover the debt.
- (11) (Local Contracts or Day Labor) To provide or cause to be provided all of the initial funding, equipment, labor, material and services necessary to construct the complete project.
- (12) (Preliminary Engineering) In the event that right-of-way acquisition for, or actual construction of, the project for which this preliminary engineering is undertaken with Federal participation is not started by the close of the tenth fiscal year following the fiscal year in which the project is federally authorized, the **LPA** will repay the **STATE** any Federal funds received under the terms of this Agreement.
- (13) (Right-of-Way Acquisition) In the event that the actual construction of the project on this right-of-way is not undertaken by the close of the twentieth fiscal year following the fiscal year in which the project is federally authorized, the **LPA** will repay the **STATE** any Federal Funds received under the terms of this Agreement.

- (14) (Railroad Related Work Only) The estimates and general layout plans for at-grade crossing improvements should be forwarded to the Rail Safety and Project Engineer, Room 204, Illinois Department of Transportation, 2300 South Dirksen Parkway, Springfield, Illinois, 62764. Approval of the estimates and general layout plans should be obtained prior to the commencement of railroad related work. All railroad related work is also subject to approval by the Illinois Commerce Commission (ICC). Final inspection for railroad related work should be coordinated through appropriate IDOT District Bureau of Local Roads and Streets office.
- Plans and preemption times for signal related work that will be interconnected with traffic signals shall be submitted to the ICC for review and approval prior to the commencement of work. Signal related work involving interconnects with state maintained traffic signals should also be coordinated with the IDOT's District Bureau of Operations.
- The **LPA** is responsible for the payment of the railroad related expenses in accordance with the **LPA**/railroad agreement prior to requesting reimbursement from IDOT. Requests for reimbursement should be sent to the appropriate IDOT District Bureau of Local Roads and Streets office.
- Engineer's Payment Estimates shall be in accordance with the Division of Cost on page one.
- (15) And certifies to the best of its knowledge and belief its officials:
- (a) are not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) have not within a three-year period preceding this Agreement been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements receiving stolen property;
 - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, local) with commission of any of the offenses enumerated in item (b) of this certification; and
 - (d) have not within a three-year period preceding the Agreement had one or more public transactions (Federal, State, local) terminated for cause or default.
- (16) To include the certifications, listed in item 15 above, and all other certifications required by State statutes, in every contract, including procurement of materials and leases of equipment.
- (17) (State Contracts) That execution of this agreement constitutes the **LPA's** concurrence in the award of the construction contract to the responsible low bidder as determined by the **STATE**.
- (18) That for agreements exceeding \$100,000 in federal funds, execution of this Agreement constitutes the **LPA's** certification that:
- (a) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress or any employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any cooperative agreement, and the extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan or cooperative agreement;
 - (b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress or an employee of a Member of Congress, in connection with this Federal contract, grant, loan or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions;
 - (c) The **LPA** shall require that the language of this certification be included in the award documents for all subawards at all ties (including subcontracts, subgrants and contracts under grants, loans and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.
- (19) To regulate parking and traffic in accordance with the approved project report.
- (20) To regulate encroachments on public right-of-way in accordance with current Illinois Compiled Statutes.
- (21) To regulate the discharge of sanitary sewage into any storm water drainage system constructed with this improvement in accordance with current Illinois Compiled Statutes.
- (22) To complete this phase of the project within three (3) years from the date this agreement is approved by the **STATE** if this portion of the project described in the Project Description does not exceed \$1,000,000 (five years if the project costs exceed \$1,000,000).
- (23) To comply with the federal Financial Integrity Review and Evaluation (FIRE) program, which requires States and subrecipients to justify continued federal funding on inactive projects. 23 CFR 630.106(a)(5) defines an inactive project as a project which no expenditures have been charged against Federal funds for the past twelve (12) months.
- To keep projects active, invoicing must occur a minimum of one time within any given twelve (12) month period. However, to ensure adequate processing time, the first invoice shall be submitted to the **STATE** within six (6) months of the federal authorization date. Subsequent invoices will be submitted in intervals not to exceed six (6) months.
- (24) The **LPA** will submit supporting documentation with each request for reimbursement from the **STATE**. Supporting documentation is defined as verification of payment, certified time sheets or summaries, vendor invoices, vendor receipts, cost plus fix fee invoice, progress report, and personnel and direct cost summaries and other documentation supporting the requested reimbursement amount (Form BLRS 05621 should be used for consultant invoicing purposes). **LPA** invoice requests to the **STATE** will be submitted with sequential invoice numbers by project.

The **LPA** will submit to the **STATE** a complete and detailed final invoice with applicable supporting documentation of all incurred costs, less previous payments, no later than twelve (12) months from the date of completion of this phase of the improvement or from the date of the previous invoice, which ever occurs first. If a final invoice is not received within this time frame, the most recent invoice may be considered the final invoice and the obligation of the funds closed.

- (25) The **LPA** shall provide the final report to the appropriate **STATE** district within twelve months of the physical completion date of the project so that the report may be audited and approved for payment. If the deadline cannot be met, a written explanation must be provided to the district prior to the end of the twelve months documenting the reason and the new anticipated date of completion. If the extended deadline is not met, this process must be repeated until the project is closed. Failure to follow this process may result in the immediate close-out of the project and loss of further funding.
- (26) (Single Audit Requirements) That if the **LPA** expends \$750,000 or more a year in federal financial assistance they shall have an audit made in accordance with 2 CFR 200. **LPAs** expending less than \$750,000 a year shall be exempt from compliance. A copy of the audit report must be submitted to the **STATE** (Office of Finance and Administration, Audit Coordination Section, 2300 South Dirksen Parkway, Springfield, Illinois, 62764), within 30 days after the completion of the audit, but no later than one year after the end of the **LPA's** fiscal year. The CFDA number for all highway planning and construction activities is 20.205.

Federal funds utilized for construction activities on projects let and awarded by the **STATE** (denoted by an "X" in the State Contract field at the top of page 1) are not included in a **LPA's** calculation of federal funds expended by the **LPA** for Single Audit purposes.

- (27) That the **LPA** is required to register with the System for Award Management or SAM (formerly Central Contractor Registration (CCR)), which is a web-enabled government-wide application that collects, validates, stores, and disseminates business information about the federal government's trading partners in support of the contract award and the electronic payment processes. To register or renew, please use the following website: <https://www.sam.gov/portal/public/SAM/#1>.

The **LPA** is also required to obtain a Dun & Bradstreet (D&B) D-U-N-S Number. This is a unique nine digit number required to identify subrecipients of federal funding. A D-U-N-S number can be obtained at the following website: <http://fedgov.dnb.com/webform>.

THE STATE AGREES:

- (1) To provide such guidance, assistance and supervision and to monitor and perform audits to the extent necessary to assure validity of the **LPA's** certification of compliance with Titles II and III requirements.
- (2) (State Contracts) To receive bids for the construction of the proposed improvement when the plans have been approved by the **STATE** (and **FHWA**, if required) and to award a contract for construction of the proposed improvement, after receipt of a satisfactory bid.
- (3) (Day Labor) To authorize the **LPA** to proceed with the construction of the improvement when Agreed Unit Prices are approved, and to reimburse the **LPA** for that portion of the cost payable from Federal and/or State funds based on the Agreed Unit Prices and Engineer's Payment Estimates in accordance with the Division of Cost on page one.
- (4) (Local Contracts) For agreements with Federal and/or State funds in engineering, right-of-way, utility work and/or construction work:
- (a) To reimburse the **LPA** for the Federal and/or State share on the basis of periodic billings, provided said billings contain sufficient cost information and show evidence of payment by the **LPA**;
- (b) To provide independent assurance sampling, to furnish off-site material inspection and testing at sources normally visited by **STATE** inspectors of steel, cement, aggregate, structural steel and other materials customarily tested by the **STATE**.

IT IS MUTUALLY AGREED:

- (1) Construction of the project will utilize domestic steel as required by Section 106.01 of the current edition of the Standard Specifications for Road and Bridge Construction and federal Buy America provisions.
- (2) That this Agreement and the covenants contained herein shall become null and void in the event that the **FHWA** does not approve the proposed improvement for Federal-aid participation within one (1) year of the date of execution of this Agreement.
- (3) This Agreement shall be binding upon the parties, their successors and assigns.
- (4) For contracts awarded by the **LPA**, the **LPA** shall not discriminate on the basis of race, color, national origin or sex in the award and performance of any USDOT – assisted contract or in the administration of its DBE program or the requirements of 49 CFR part 26. The **LPA** shall take all necessary and reasonable steps under 49 CFR part 26 to ensure nondiscrimination in the award and administration of USDOT – assisted contracts. The **LPA's** DBE program, as required by 49 CFR part 26 and as approved by USDOT, is incorporated by reference in this Agreement. Upon notification to the recipient of its failure to carry out its approved program, the **STATE** may impose sanctions as provided for under part 26 and may, in appropriate cases, refer the matter for

 Illinois Department of Transportation Local Public Agency Amendment # for Federal Participation	Local Public Agency	State Contract <input type="checkbox"/>	Day Labor <input type="checkbox"/>	Local Contract <input type="checkbox"/>	RR Force Account <input type="checkbox"/>
	Section:	Fund Type:		ITEP / SRTS / HSIP Number(s)	
Construction		Engineering		Right-of-Way	
Job Number	Project Number	Job Number	Project Number	Job Number	Project Number

This Amendment is made and entered into between the above local public agency, hereinafter referred to as the "LPA", and the state of Illinois, acting by and through its Department of Transportation, hereinafter referred to as "STATE". The STATE and LPA have jointly proposed to improve the designated location as described below and agree to the changes outlined in this Amendment. The improvement shall be constructed in accordance with plans approved by the STATE and the STATE's policies and procedures approved and/or required by the Federal Highway Administration, hereinafter referred to as "FHWA".

Location

Location _____ Route _____ Length _____
Termini _____

Current Jurisdiction _____ TIP Number _____ Existing Structure No _____

Amended Division of Cost

Type of Work	%	%	LPA	%	Total
Participating Construction	()	()		()	
Non-Participating Construction	()	()		()	
Preliminary Engineering	()	()		()	
Construction Engineering	()	()		()	
Right of Way	()	()		()	
Railroads	()	()		()	
Utilities	()	()		()	
Materials					
TOTAL	\$ _____	\$ _____	\$ _____	\$ _____	

NOTE:

The costs shown in the Division of Cost table are approximate and subject to change. The final LPA share is dependent on the final Federal and State participation. The actual costs will be used in the final division of cost for billing and reimbursement.

If funding is not a percentage of the total, place an asterisk in the space provided for the percentage and explain above.

Local Public Agency Appropriation

For Amendments Increasing the LPA share: By execution of this Amendment, the LPA attests that additional moneys have been appropriated or reserved by resolution or ordinance to fund the additional share of LPA project costs. A copy of the resolution or ordinance is attached as an addendum (required for increases to state-let contracts only).

ADDENDA

Additional information, changes, and/or stipulations to the original Agreement are hereby attached and identified below as being a part of this Amendment.

(Insert addendum numbers and titles as applicable)

BE IT MUTUALLY AGREED that all remaining provisions of the original agreement not altered by this Amendment shall remain in full force and effect and the Amendment shall be binding upon and inure to the benefit of the parties hereto, their successors and assigns.

The LPA further agrees, as a condition of payment, that it accepts and will comply with the applicable provisions set forth in this Amendment and all Addenda.

APPROVED

Local Public Agency

APPROVED

State of Illinois
Department of Transportation

Name of Official (Print or Type Name)

Randall S. Blankenhorn, Secretary Date

Title (County Board Chairperson/Mayor/Village President/etc.)

By: _____
Aaron A. Weatherholt, Deputy Director of Highways Date

(Signature) Date

Omer Osman, Director of Highways/Chief Engineer Date

The above signature certifies the agency's TIN number _____
conducting business as a Governmental Entity.

William M. Barnes, Chief Counsel Date

DUNS Number _____

Jim Ofcarcik, Acting Chief Fiscal Officer (CFO) Date

NOTE: If the LPA signature is by an APPOINTED official, a resolution authorizing said appointed official to execute this agreement is required.



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2016-01
SUBJECT: CATEGORICAL EXCLUSIONS
ISSUED DATE: July 7, 2016
EFFECTIVE DATE: July 7, 2016

This memorandum replaces Chapter 19 of the Bureau of Local Roads & Streets Manual dated February 2009 and Chapter 22 of the Bureau of Local Roads & Streets Manual dated January 2006 with revisions dated July 2013.

The Department has updated Chapters 19 and 22 of the Bureau of Local Roads & Streets Manual to include revisions based upon the new programmatic agreement for categorical exclusions signed between the Federal Highway Administration (FHWA) and IDOT.

The new programmatic agreement allows more latitude for IDOT to determine the level of categorical exclusion. The agreement also updates the nomenclature for the two different types of categorical exclusions; now referring to them as a State Approved CE or Federal Approved CE versus a CE 1 or CE 2.

Chapter 19 of the manual has been updated to include the new 16 criteria for determining unusual project circumstances versus the 11 in the prior programmatic agreement. The Environmental Class of Action Determination (ECAD) was deleted as this type of environmental processing is no longer used. Revisions were made to the categorical exclusion project processing done by IDOT and the FHWA based upon the new programmatic agreement. Finally, a new section of common acronyms was added to the end of the chapter.

Chapter 22 of the manual was updated to the new nomenclature for federal approved and state approved categorical exclusions. The terminology of design variance was also updated to design exception. Modifications were also made to the list of addenda required for a project development report (PDR) when significant changes are made to the PDR during the design engineering process. Finally, a new section of common acronyms and a new section of references were added to the end of the chapter.

PM2016-01
Page 2 of 2

Please contact the Bureau of Local Roads and Streets, Local Policy & Technology Unit, at DOT.LocalPolicy@illinois.gov with any questions.

A handwritten signature in blue ink that reads "Salmon O. Danmole". The signature is written in a cursive style with a large, stylized initial 'S'.

Salmon O. Danmole, P.E.
Acting Engineer of Local Roads and Streets

TJW/

Attachments

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Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2016-02
SUBJECT: BLRS POLICY MANUAL REWRITE
ISSUED DATE: July 29, 2016
EFFECTIVE DATE: August 1, 2016

This memorandum replaces Chapters 27 through 33 of the Bureau of Local Roads & Streets Policy Manual.

The Department has updated and revised Chapters 27 through 33 of the Bureau of Local Roads & Streets (BLRS) Policy Manual through a joint committee of representatives from IDOT, the Federal Highway Administration, the Illinois Association of County Engineers, the Illinois Municipal League, the American Council of Engineering Companies of Illinois, the Illinois Road and Transportation Builders Association, and comments from the public at large.

The remaining chapters of the BLRS Policy Manual are still under review and will be released as they are completed. Please contact the BLRS Local Policy & Technology Unit, at DOT.LocalPolicy@illinois.gov with any questions.

A handwritten signature in blue ink that reads "Salmon O. Danmole".

Salmon O. Danmole, P.E.
Acting Engineer of Local Roads and Streets

TJW/

Attachments



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2017-01
SUBJECT: BLRS POLICY MANUAL REWRITE - CHAPTER 5
ISSUED DATE: May 31, 2017
EFFECTIVE DATE: June 1, 2017

This memorandum replaces Chapter 5 of the Bureau of Local Roads & Streets Policy Manual.

The Department has updated and revised Chapter 5 of the Bureau of Local Roads & Streets (BLRS) Policy Manual through a joint committee of representatives from IDOT, the Federal Highway Administration, the Illinois Association of County Engineers, the Illinois Municipal League, the American Council of Engineering Companies of Illinois, the Illinois Road and Transportation Builders Association, and comments from the public at large.

Changes were made to Chapter 5 to reflect new rules published by the Federal Highway Administration for Procurement, Management, and Administration of Engineering and Design Related Services, commonly known as Qualification Based Selection (QBS). The revisions to Chapter 5 explain the specific requirements which must be followed when local public agencies are using federal funds to procure professional services. Other sections of Chapter 5 received minor updates as part of the manual revision process.

The remaining chapters of the BLRS Policy Manual are still under review and will be released as they are completed. Please contact the BLRS Local Policy & Technology Unit, at DOT.LocalPolicy@illinois.gov with any questions.

A handwritten signature in blue ink that reads "Maureen E. Kastl".

Maureen E. Kastl, P.E.
Engineer of Local Roads and Streets

TP/

Attachment



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2017-02
SUBJECT: BLRS POLICY MANUAL REWRITE - CHAPTER 5
ISSUED DATE: November 29, 2017
EFFECTIVE DATE: November 29, 2017

This memorandum replaces Chapter 5 of the Bureau of Local Roads & Streets Policy Manual.

The Department has further revised Chapter 5 of the Bureau of Local Roads & Streets (BLRS) Policy Manual with regard to Procurement, Management, and Administration of Engineering and Design Related Services, commonly known as Qualification Based Selection (QBS). The revisions to Chapter 5 explain the specific requirements which must be followed when local public agencies are using federal funds to procure professional services.

The most significant change since the June 1, 2017 revision to Chapter 5 includes the requirement for each local public agency using federal funding for professional services to have their QBS procedures in writing. Simply referencing Chapter 5 of the BLRS Policy Manual is not an acceptable procedure. If the local public agency's written QBS procedures follow the guidance outlined in Chapter 5 of the BLRS Policy Manual, then individual approval of the procedures from IDOT is not required. However, if the local public agency's QBS procedures differ from the guidance outlined in Chapter 5 of the BLRS Policy Manual, then approval will be required from IDOT before the procedures may be used.

In addition to the revisions for Chapter 5 of the BLRS Policy Manual, revisions were also made to BLR Form 05610 – Preliminary Engineering Services Agreement for Federal Participation and BLR Form 05611 – Construction Engineering Services Agreement for Federal Participation. These forms now include a QBS checklist (Exhibit C) to ensure the proper QBS procedures have been followed for the procurement of professional services with federal funding.

Finally, revisions were made to Chapter 5 regarding the standard engineering services agreements. Section 5-5.08 now references three forms for standard engineering services agreements: BLR 05510, BLR 05520, and BLR 05530. These forms are in final development by the Department and will be released in the near future.

Form BLR 05510 – Engineering Services Agreement, will consolidate and replace the following forms:

1. BLR 05510: Preliminary Engineering Services Agreement for Motor Fuel Tax Funds (11/06)
2. BLR 05511: Preliminary Engineering and Construction Guidance Agreement for MFT Funds (11/06)
3. BLR 05512: Preliminary/Construction Engineering Services Agreement for Motor Fuel Tax Funds (1/10/12)
4. BLR 05610: Preliminary Engineering Services Agreement for Federal Participation (11/21/13)
5. BLR 05611: Construction Engineering Services Agreement for Federal Participation (11/21/13)

Form BLR 05520 – Maintenance Engineering to be Performed by a Consulting Engineer, will be revised but continue with the same name, number, and no consolidation with other forms.

Form BLR 05530 – Request for Engineering Services Performed by Local Forces, will be a revision of the following form with no consolidation of other forms:

1. BLR 05612: Request for Construction Engineering Services Performed by Local Agency Employees (3/30/10)

Until BLR Forms 05510, 05520, and 05530 are released by the Department, local public agencies should continue to use the agreements in the numbered lists above.

Please contact the BLRS Local Policy & Technology Unit, at DOT.LocalPolicy@illinois.gov with any questions.



Maureen E. Kastl, P.E.
Engineer of Local Roads and Streets

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Attachment



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2018-01
SUBJECT: BLRS POLICY MANUAL REWRITE
ISSUED DATE: July 2, 2018
EFFECTIVE DATE: June 30, 2018

This memorandum replaces Chapters 1, 2, 3, 4, 6, 7, 18, 21, and 44 of the Bureau of Local Roads & Streets Policy Manual.

It also re-issues PM2016-01 and PM2016-02 to correct issues with the hyperlinks, the table of contents, and the PDF bookmarks in Chapters 19, 22, 27 through 33.

The Department has updated and revised Chapters 1, 2, 3, 4, 6, 7, 18, 21, and 44 of the Bureau of Local Roads & Streets (BLRS) Policy Manual through a joint committee of representatives from IDOT, the Federal Highway Administration, the Illinois Association of County Engineers, the Illinois Municipal League, the American Council of Engineering Companies of Illinois, the Illinois Road and Transportation Builders Association, and comments from the public at large.

The remaining chapters of the BLRS Policy Manual are still under review and will be released as they are completed. Please contact the BLRS Local Policy & Technology Unit, at DOT.LocalPolicy@illinois.gov with any questions.

A handwritten signature in blue ink that reads "Maureen E. Kastl".

Maureen E. Kastl, P.E.
Engineer of Local Roads and Streets

TJP/

Attachments



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

BLRS PROCEDURE MEMORANDUM

NUMBER: PM2018-02
SUBJECT: BLRS POLICY MANUAL REWRITE
ISSUED DATE: December 10, 2018
EFFECTIVE DATE: December 12, 2018

This memorandum replaces Chapters 9, 10, 12, 14, 15, and 17 of the Bureau of Local Roads & Streets Policy Manual.

The Department has updated and revised Chapters 9, 10, 12, 14, 15, and 17 of the Bureau of Local Roads & Streets (BLRS) Policy Manual through a joint committee of representatives from IDOT, the Federal Highway Administration, the Illinois Association of County Engineers, the Illinois Municipal League, the American Council of Engineering Companies of Illinois, the Illinois Road and Transportation Builders Association, and comments from the public at large.

Chapter 9

- Section 9-1.05 MFT Reimbursement for Bond Issues – Previous language was moved to Chapter 15.
- Section 9-1.06 Special Assessment Procedures – Previous language was moved to Chapter 15.
- Section 9-1.07(b) Automatic Authorization – Has been expanded and revised.

Chapter 10

- Sections 10-1.01(c), 10-1.01(d), 10-1.01(e), and 10-1.01(f) - Added to explain when IDOT approval was required depending on the funding source and/or a federal action.
- Section 10-1.10 Groundwater – Added to include Sole Source Aquifers.
- Section 10-2.01(d) Crash and Skid Reduction Analyses – Revised to reflect current terminology and procedures.
- Section 10-2.02 Intersection Design Studies – Revisions to the processing of IDS.
- Section 10-2.03 NBIS Length / Bridge Condition / Hydraulic Report – A number of revisions throughout on the procedures.

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Chapter 12

- Section 12-1.01(b) Material Proposals – Added to better explain how individual bid groups are considered individual contracts in preparation to revisions in Section 14-3.02(a) Overruns – Day Labor.
- Section 12-1.01(c) Deliver & Install Proposals – Added to better explain how individual bid groups are considered individual contracts in preparation to revisions in Section 14-3.02(a) Overruns – Day Labor.
- Figure 12-1A Dollar Limits Requiring Competitive Sealed Bids – Added to provide clarity to the bidding thresholds for various types of LPAs.
- Section 12-3.06(b)(Item 9) Award of Formal Contracts, Material Proposals and Deliver & Install Proposals - No Bids Received – Added to provide guidance when no bids are received.

Chapter 14

- Chapter 14 – Went under extensive revisions. BLR 14221 will serve as both “Estimate of Maintenance Costs” and “Maintenance Expenditure Statement” for all LPAs.
- Figure 14-1A Maintenance Operations Summary – Added to provide a quick reference the majority of allowable maintenance operations.
- Section 14-2.03 Maintenance Resolution – Revised to reflect MFT funds will be authorized on approval of the resolution or budget resolution. Authorization for road districts will occur with the submittal of either the estimate of maintenance costs or BLR 09150 “Request for Expenditure/Authorization of Motor Fuel Tax Funds”.
- Section 14-2.05 Maintenance Engineering Categories – Revised the name to eliminate “Group”.
- Figure 14-2A Maintenance Engineering Categories Flow Chart – Added to provide clarity on which Maintenance Engineering Categories should be used.
- Section 14-2.06 Estimate of Maintenance Costs – Revised, this does not need to be included with the resolution to have MFT funds authorized. A revised estimate of maintenance costs is only needed if, a new maintenance operation was added and would require the operation to seek competitive sealed bids per Section 12-1.
- Section 14-2.06(b) Listing of Material, Labor, and Equipment – Revised to allow the listing of material categories on the estimate of maintenance costs and not specific material.
- Section 14-3.02(a) Overruns – Day Labor – Revised to closely match the new revised Chapter 14 and 720 ILCS 5/33E-9. This corresponds with the Sections 12-1.01(b) and 12-1.01(c).
- Section 14-4 Maintenance Inspection (Counties and Road Districts) – Revised to give more control to the Districts on how to accomplish this task.

Chapter 15

- Chapter 15 – Renamed from “MFT Audits” to “Documentation Review, General Obligation Bonds, & Special Assessments. The chapter went under extensive revisions to cover the new BLRS documentation review process.
- Section 15-3 General Obligation Bond and Documentation Review – Revised to include language from the previous version of Chapter 9.
- Section 15-4 Special Assessment and Documentation Review – Revised to include language from the previous version of Chapter 9.
- Some roles and responsibilities may be further clarified by a future update to Chapter 15.

Chapter 17

- Section 17-3 Clearinghouse Clearance - Revised eliminating the Statewide Clearinghouse and directing LPA's to coordinate with their local Substate Clearinghouse.

The remaining chapters of the BLRS Policy Manual are still under review and will be released as they are completed. Please contact the BLRS Local Policy & Technology Unit, at DOT.LocalPolicy@illinois.gov with any questions.



Maureen E. Kastl, P.E.
Engineer of Local Roads and Streets

TJP/

Attachment

