

**TOP SIGNIFICANT CHANGES TO THE 2021 INTERNATIONAL BUILDING CODE (IBC)**

**1. MASS TIMBER CONSTRUCTION (IBC 202, 602, 722.7):**

New construction types (IV-A, IV-B, IV-C) were added to allow for the construction of mass timber buildings, with specific fire-resistance requirements and testing for connections.

**2. PUZZLE ROOMS (IBC 202, 411.5):**

These are now officially defined and regulated as "special amusement areas" with specific means of egress requirements, and subject to requirements for fire suppression, fire alarm, and interior finish provisions.

**3. OPEN PARKING GARAGES (IBC 903.2.10):**

Automatic sprinkler protection is required for Group S-2 open parking garages where any single fire area exceeds 48,000 square feet.

**4. ACCESSIBILITY (IBC 1009.6.3, 1102, 1107.2):**

Several updates were made, including increased clear floor space for wheelchairs to 30 X 52 inches, new requirements for accessible EV charging stations, and updated standards for accessibility compliance.

*(EV charging stations are treated more like accessible gas pumps than parking spaces, meaning they can be used by non-handicapped persons.)*

**5. FIRESTOP SYSTEMS (IBC 1705.18):**

Special inspections are now required for firestop, fire-resistant joint systems, and perimeter fire barrier systems in Group R fire areas.

*(Special Inspection, only when occupant load of greater than 250)*

**6. INTERMODAL SHIPPING CONTAINERS (IBC 3115):**

The code now provides criteria for using intermodal shipping containers as buildings, referencing specific structural requirements.

**7. DEFINITION UPDATES (IBC 202):**

Key definitions were revised to clarify terms such as "atrium," "change of occupancy," "impact protective system," "mass timber," and "nailable substrate".

*Change of Occupancy: “The intent is to limit the application of a Change of Occupancy where there is no change in Occupancy Classification to only those new uses that present a higher risk to the life safety or welfare of the occupants that was created by the previous use.”<sup>1</sup>*

**8. EGRESS REQUIREMENTS (IBC 1006.2.1, 1006.3, 1009.6.2):**

Changes were made to egress provisions, such as eliminating common path of travel limitations for unoccupied mechanical rooms, occupied roofs, and updating the location of areas of refuge.

**9. SOUND TRANSMISSION (IBC1206.2):**

Requirements for separating dwelling units from public spaces have been expanded to cover sound transmission not just through corridors and stairs, but also from other public areas.

**10. STAIRWAY CONSTRUCTION IN PODIUM BUILDINGS (IBC 510.2):**

Modification allowing the use of combustibile building materials within areas of noncombustible construction types in podium buildings.

**11. FIRE BARRIER CONTINUITY (IBC 707.5):**

Fire Barriers now permitted to stop at fire resistance rated “lid,” rather than extend to floor / roof above.

**12. NFPA 13R SPRINKLER SYSTEMS (IBC 903.3.1.2):**

Modifies language limit the use of 13R systems to residential buildings with the highest story above grade plane to 30 feet.

*(Consider modifying this provision to limit the highest story above grade plane to 33 feet. This would allow construction of projects such as Lincoln Lofts without increase in sprinkler requirements.)*

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<sup>1</sup> Significant Changes to the International Building Code 2021 Edition.

## **TOP SIGNIFICANT CHANGES TO THE 2021 INTERNATIONAL RESIDENTIAL CODE (IRC)**

### **1. INTERMODAL SHIPPING CONTAINERS (IRC R301.2.1.4):**

The use of shipping containers are now specifically referenced in the code. This requires shipping containers to be utilized per the requirements of the International Building Code and require an engineered design. Simplified design considerations are made for the use of only one container unit.

### **2. STORY HEIGHT (IRC R301.3):**

Clarification regarding the application of the code, allowing story heights of up to 13 feet 7 inches if the stud height does not exceed 12 feet.

### **3. TOWNHOUSES (IRC R302.2):**

Modifications permitting common walls of townhouses to terminate at exterior walls, provided that adequate fire blocking has been installed.

### **4. HABITABLE ATTICS (IRC R326):**

Addition of a new section for Habitable Attics, classifying them as a story above grade plane subject to story, height, and means of egress requirements. Exceptions apply based on usable floor area.

### **5. CARBON MONOXIDE ALARMS (IRC R315.2.2):**

Addition of a retroactive requirement requiring the installation of carbon monoxide alarms when mechanical systems are installed, altered.

### **6. STORM SHELTERS (IRC R323):**

Addition of requirements that construction documents for storm shelters be prepared by a Registered Design Professional.

### **7. DWELLING – GARAGE OPENING PROTECTION (IRC R302.2):**

Addition of requirement that doors between garages and dwellings be self-latching, in addition to the current requirement of being self-closing.

### **8. MINIMUM WIDTH AND THICKNESS OF CONCRETE FOOTINGS (IRC TABLE R403.1 (1)):**

Revisions have been made to the tables, in many cases reducing required widths and thicknesses of concrete footings.

### **9. VAPOR RETARDER UNDER CONCRETE SLABS (IRC R506.2.3):**

Modification now requires thicker vapor retarder underneath concrete slabs on grade (10-mil vs. 6-mil previously).

**10. ENERGY EFFICIENCY (IRC CHAPTER 11):**

Additions and modifications under this Chapter reflect changes already adopted by the State of Illinois, and required to be enforced by the City.

**11. ELECTRICAL (IRC R301.3):**

Additions and modifications under these Chapters reflect changes already adopted through the City's previous adoption of the 2020 National Electric Code.

**12. STORY HEIGHT (IRC R301.3):**

Clarification regarding the application of the code, allowing story heights of up to 13 feet 7 inches if the stud height does not exceed 12 feet.

## **TOP SIGNIFICANT CHANGES TO THE 2021 INTERNATIONAL MECHANICAL CODE (IMC)**

### **1. 307.2.1.1 – Condensate drainage**

**Modification:** New language clarifies where condensate discharge and drain connections are and aren't allowed. No direct connection to DWV piping allowed. Condensate may discharge into a floor drain, hub drain, mop sink, lavatory tailpiece, utility or laundry sink, or outdoors. Other than outdoor terminations, the point of condensate discharge must be within the same occupancy or dwelling unit.

### **2. 403.3.1.3 – Demand control ventilation**

**Modification:** Clarifies that demand control ventilation cannot reduce mechanical ventilation to zero while a space is intended to be occupied.

### **3. 403.3.2.1 – Outdoor air for dwelling units**

**Modification:** This modification grants a reduction in the required ventilation rate for high efficiency balanced ventilation systems in dwelling units.

### **4. 502.20 – Manicure and pedicure stations**

**Modification:** The controls for these systems must operate continuously while the space is occupied.

### **5. 504.4.1 – Termination location for dryer exhaust**

**Modification:** Establishes minimum clearance between dryer duct termination and building openings: clearance per manufacturer's specifications, or a minimum of 3 feet in any direction where not otherwise specified.

### **6. 507.1 – Smoker ovens with integral exhaust**

**Modification:** Clarifies that smoker ovens with integral exhaust systems, installed per manufacturer's specifications, are exempt from the Type I hood requirement specified elsewhere in the code.

### **7. 607.5.5 – Subducts penetrating shaft enclosures (modification)**

**Modification:** Revised conditions for allowing ducts to penetrate shaft enclosures without dampers.

### **8. 1105.9 – Machinery room means of egress**

**Addition:** To be consistent with the IBC, the IMC specifies that machinery rooms larger than 1000 sq. ft. shall have at least two exits. One of the exits can lead to a ladder or alternating tread device. Exit and exit access doorways shall have panic hardware and swing in the direction of travel regardless of the occupant load.

**9. 1107-1110 – Refrigerant piping**

**Addition:** The code sections on refrigerant piping were completely rewritten.

## **SUMMARY OF CHANGES TO THE 2021 INTERNATIONAL FIRE CODE (IFC)**

**\*Section 320-** Requirements for 3D printing operations.

**\*Section 321-** Regulations for artificial combustible vegetation when located on roofs within close proximity a building.

**Section 508.1-** Requirements for fire command centers in large buildings classified as Group F-1 and S-1 occupancies over 500,000 square feet.

**Section 510.4.1-** Modifications to Emergency Responder communications coverage with regard to signal strength.

**Section 603.4-** Modification to working space dimensions around electrical equipment revised to correlate with NFPA 70.

**\*Section 604.5.4-** Storage is prohibited in elevator lobbies, elevator cars, and elevator machine rooms.

**\*Section 610-** Provisions added to ensure clothes dryer lint trap and exhaust duct are cleaned and maintained properly.

**Section 701.6-** Owner inspections are required annually for fire resistance rated protection of mass timber Construction.

**\*Section 708-** Maintenance requirements for spray fire- resistant materials and intumescent fire-resistant Materials added to the code.

**\*Section 808.5-** Play structures added to existing buildings must comply with the requirements in the International Building Code.

**Section 901.1-** A definition for life safety systems is added and sections modified to address provisions In Chapter 9 that address life safety systems in addition to fire protection systems.

**\*Section 903.2.4.2-** Fire areas containing F-1 occupancies used for the manufacturing of distilled spirits or Group S-1 occupancies used for the storage of distilled spirits or wine are required to be equipped with an automatic sprinkler system.

**\*Section 903.2.4-** Requirements for the installation of an automatic sprinkler system in facilities

Manufacturing, storing, or selling upholstered furniture and mattresses have been revised. Eliminates the 2, 500 square foot recital.

**Section 903.2.10-** Open parking garages are required to be equipped with an automatic sprinkler system when the fire area exceeds 48,000 square feet.

**Section 903.2.10.2-** Mechanical access enclosed parking garages are defined and now require an automatic sprinkler system.

**Section 903.3.1.2-** The allowable use of NFPA 13R sprinkler systems in Group R occupancies is reduced, Especially those built with the podium concept, which increases the fire protection in these buildings.

**Section 903.3.1.2.2-** Revision modifies the requirements in NFPA 13R and specifies that sprinklers are required to protect corridors and egress balconies that are not adequately open to the exterior to provide for heat and smoke to escape.

**Section 905.3.1-** When a standpipe is required in a parking garage, whether open or enclosed, the standpipe will be a Class 1 standpipe without the requirement for spacing hose connections as required for Class II standpipes.

**\*Section 907.2.10-** A manual fire alarm system is required in self storage facilities which are three stories or more and have interior corridors.

**\*Section 910.3.4-** Smoke and heat vents must have a manual release in addition to an automatic release. If the automatic release is a fusible link, a minimum operating temperature is now specified.

**Section 913.1-** Fire pumps for fire sprinkler systems designed to International Residential Code Section P2904 or NFPA 13D are not required to be listed fire pumps or comply with NFPA 20.

**Section 913.2.2-** Conductors powering a fire pump can be covered with a minimum of 2 inches of concrete to provide the required fire-resistance-rated protection.

**Section 914.3.1.2-** Redundant water supply connections are required for fire pumps in high-rise buildings over 120 feet in height where constructed of Type IVA or IVB construction.

**Section 914.7-** Specific provisions are added to the code to address puzzle rooms that would require automatic sprinkler systems and smoke detection.

**Section 1006.3-** Clarifies that egress requirements are determined for each story or occupied roof level, and allows the path egress to traverse more than one story within an atrium.

**Section 1006.3.2-** Egress travel on exit access stairways and ramps that are exterior to the building and connecting occupied roofs are allowed to traverse more than one story.

**Section 1009.2.1-** Adds a requirement for an elevator to serve occupied roofs when the roof level is essentially the fourth story above the level of exit discharge.

**Section 1010.1.1-** The width of a swinging door is no longer limited to 48 inches and a consolidated exception allows for reduced size doors for single user showers, saunas, toilet compartments, dressing, fitting, or changing rooms.

**Section 101.2.4-** Two additional exceptions have been added into the general locking section to allow locked doors in the egress system when needed for either the clinical needs of care recipients or where exterior areas egress back into the building.

**Section 1010.2.8-** Exit door locks for protection from intruders are allowed in Group E occupancies, Group B educational occupancies, and Group I-4 occupancies. When remote operation is provided, the door must still be unlockable from outside the room.

**Section 1010.2.9-** Panic or fire exit hardware is now required in electrical rooms with equipment greater than 800 amperes rather than 1200 amperes, and in refrigeration machinery rooms exceeding more than 1000 square feet.

**Section 1020.5-** In Group I-2, dead end corridors are now allowed a maximum length of 30 feet where they do not serve patient rooms or treatment spaces.

**Section 1030.16-** Provides guidance to address handrails on stepped aisles, often called “social stairs”.

**Section 1103.5.4-** Un-Sprinklered high-rise buildings must either install automatic sprinkler system or meet specific egress and fire alarm criteria. This is contingent where Appendix M has not been adopted and where any of the following conditions apply:

1. The high rise building has an occupied floor located more than 120 feet above the lowest level of Fire department vehicle access.
2. The high rise building has occupied floors more than 75 feet and not more than 120 feet Above the lowest level of fire department vehicle access and the building does not have at least Two interior exit stairways complying with Section 1104.10 that are separated from the Building interior by fire assemblies having a fire-resistance rating of not less than 2 hours with Opening protection in accordance with Table 716.1(2) of the IBC.
3. The high-rise building has occupied floors located more than 75 feet and not more than 120 feet Above the lowest level of fire department vehicle access and the building does not have a fire Alarm system that includes smoke detection in mechanical equipment, electrical, transformer, Telephone equipment and similar rooms; corridors; elevator lobbies; and at doors penetrating Interior exit stairways enclosures.

Building owners shall file a compliance schedule with the fire code official not later than 365 days after receipt of a written notice. The compliance schedule shall not exceed 12 years for completion of the automatic sprinkler system retrofit.

**Section 1103.7.5.1-** The requirements for retrofitting a fire alarm system in existing hotels and Motels is reformatted and a new requirement for retrofitting un-sprinklered single story hotels and motels is added.

**Section 1103.9-** Carbon monoxide detection is required in existing Group I-1, I-3, I-4 and R Occupancies and in existing classrooms in Group E.

**Section 1203.1.2-** Several options are provided for protecting the fuel line supplying emergency and standby generators.

**Section 1204-** Portable generators are now regulated and safety issues are addressed.

**Section 1205.3.3-** The requirement for access pathways with Solar PV to smoke and heat vents is clarified.

**Section 1207-** The requirements for energy storage systems have been reformatted and revised to better address this growing and changing technology.

**Chapter 22-** Revisions in this chapter for mitigating the accumulation of combustible dust and control of Ignition sources, and provide guidance for fire code inspector.

**Section 2308-** Vehicle fueling with compressed natural gas previously allowed at only residential occupancies, is now allowed at other occupancies.

**Section 2311.8-** The requirements for repair of lighter than air fueled vehicles are clarified and expanded to ensure safe operations in repair garages.

**Section 2404.3.3.6-** Spray booths are no longer restricted to a maximum size of 1500 square feet.

**Table 2704.2.2.1-** The quantity of water reactive Class 3 solid materials in a fabrication area has been Increased with a new limit on maximum quantity per tool in semiconductor fabs.

**Section 2808-** Requirements for a fire protection plan are expanded including an increase in the separation distance between piles or stacks.

**Table 3203.8-** High piled storage of lithium ion batteries is considered a high hazard commodity.

**Section 3205.5-** Limited displays are allowed within aisles if the sprinkler system meets the design criteria and egress is still available.

**\*Section 3209.4-** Automatic shutdown of automated rack storage is required when the high piled storage area exceeds 500 square feet.

**Section 3303.3-** New provisions for buildings under construction require daily fire inspections by the Site safety director.

**Section 3303.5-** Passive fire safety requirements added during construction of buildings of construction types IV-A, IV-B, and IV C that are designed to be greater than 6 stories above grade plane.

**Section 3305.5-** Requirements are added for fire watch during non working hours at building construction for new construction that exceeds 40 feet in height above the lowest adjacent grade at any point along the building perimeter, any new multistory construction with an aggregate area exceeding 50,000 square feet per story or as required by the fire code official.

**Section 3305.9-** In Type I and II buildings, barriers installed to separate construction areas from the remainder of the building must be noncombustible, flame retardant or have a limited heat release rate.

**Section 3313-** New requirements for minimum water supply during construction specify minimum fire flow and distance from the structure.

**Section 3805-** The limitation on use and storage of oxidizer Class 4 and pyrophoric materials is reinforced.

**\*Chapter 40-** New provisions have been added that address storage of distilled spirits and wines in barrels and casks. Includes requirements for fire sprinkler systems the manufacture and storage.

**Chapters 50-67- Hazardous Materials-** Various modifications and clarifications throughout the chapters.