



**Division of Community Risk Reduction**

**m e m o r a n d u m**

**To:** Building Safety Code Board of Appeals

**From:** Michael Phillips, Fire Code Official

**Date:** March 11, 2023

**Subject:** 2021 International Fire Code Significant Changes

**CC:** Nick Hanson, Building Code Official  
Demond Dade, Fire Chief

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This memo includes the proposed significant changes to the 2021 International Fire Code along with the proposed local amendments of this model code. This memo does not include the detailed significant changes in the previous codes released by the International Codes Council in the years 2012, 2015, or 2018.

A thorough review of previous local amendments revealed that many of our intended amendments were addressed in the code sets that were not adopted after adopting the 2009 International Fire Code in 2011. Therefore, many of the previous amendments have been removed from the current proposal.

In the following changes, you are provided the type of change; addition, modification, or deletion (Local or ICC changes); a summary of each change; and why that change is significant to the proposed codes.

They are proposed as follows:

**Chapter 1 - Sec 101.2.1 Appendices**

CHANGE TYPE: Addition (Local)

CHANGE SUMMARY: Addition of four additional appendices providing guidance and regulation on Cryogenic Fluids, Hazardous materials management plans, Fire protection systems in non-compliant conditions, and Indoor trade shows and exhibitions.

CHANGE SIGNIFICANCE:

Appendix G – Cryogenic Fluids – Weight and Volume Equivalents:

This appendix provides the fire codes official and registered design professionals with a reference tool for weight and volume equivalents for common cryogenic fluids.

Appendix H – Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) Instructions:

This appendix is intended to assist businesses in establishing a Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) based on the classification and quantities of materials found onsite in storage or use. The Urbana Fire Department has a custom HMMP & HMIS fillable form packet to assist businesses.

Appendix I – Fire Protection Systems – Non-compliant Conditions:

This appendix is intended to provide the fire code official with a list of conditions that are readily identifiable by the inspector during the course of an inspection utilizing this code. The specific conditions identified in this appendix are primarily derived from applicable NFPA standards and pose a hazard to the proper operation of the respective systems.

Appendix N – Indoor Trade Shows and Exhibitions:

This appendix was created to address the hazards associated with larger, more complex trade shows and exhibitions. Although many of these requirements are already included in various locations in this code, some of the more important items, such as requirements for covered and multiple-level booths, are not. The intent is to have the requirements covering these events in a single location with pointers to other locations within this code, making it easier for those organizing exhibitions and individual exhibitors unfamiliar with the fire code to locate the requirements applicable to them.

Chapter 3 - **Sec 320 - Additive Printing (3D)**

CHANGE TYPE: Addition (ICC)

CHANGE SUMMARY: Requirements for 3D printing operations are added to the code.

CHANGE SIGNIFICANCE: Additive manufacturing, also referred to as 3D printing, is becoming more prevalent in industrial, business, and personal (nonindustrial) applications. Definitions are added to the code to differentiate between industrial and nonindustrial equipment. This differentiation is critical because the requirements differ between the applications.

Generally, for business and personal (nonindustrial) additive manufacturing processes, relatively inexpensive 3D printers are available for use in residences, classrooms, offices, and businesses for producing customized products and prototypes.

Chapter 5 - **Sec 506.4 Motorized Gates and Doors**

CHANGE TYPE: Modification (Local)

CHANGE SUMMARY: Updates the current means of emergency access to areas secured by motorized gates or doors to an opening system that operates on the 800MHZ radio system utilized by all emergency responders in Champaign County.

CHANGE SIGNIFICANCE: This addresses the need for a universal means for emergency vehicles to gain access to secure areas with a high concentration of life or any business operation requiring immediate access to emergency vehicles. The previous system was only compatible with Fire Department operations. This new system allows all first responder agencies emergency access.

**Sec 506.4.1 Existing Gates and Doors**

CHANGE TYPE: Modification (Local)

CHANGE SUMMARY: Establishes a compliance date for the requirements in Sec 506.4.

CHANGE SIGNIFICANCE: This addresses the need to update all motorized gates and doors to the new standard. While the Fire Code Official can require updates to gates or doors in disrepair, it establishes a final date for compliance by January 1, 2026.

Chapter 7 -

### **Sec 701.6 Maintenance of Fire-Resistance-Rated Construction**

CHANGE TYPE: Modification (ICC)

CHANGE SUMMARY: Owner inspections are required annually for fire-resistance-rated protection of mass timber construction.

CHANGE SIGNIFICANCE: The use of cross-laminated timber is becoming more frequent. Several code changes occurred in the International Fire Code (IFC) and International Building Code (IBC) to address this construction method. Revisions in the IBC provide definitions for mass timber and noncombustible protection for mass timber.

#### **Sec 701.7.1 Fire Doors Propped Open**

CHANGE TYPE: Addition (Local)

CHANGE SUMMARY: Requires door-hold-open devices and automatic door closers in certain situations deemed necessary by the Fire Code Official.

CHANGE SIGNIFICANCE: This amendment is consistent with amendments by the Champaign Fire Department. Propped open doors are a common and ongoing life safety issue that reduces the effectiveness of certain life safety features in a building. Allowing the Fire Code Official to require these devices in certain situations of continued violations can reduce life hazards by taking certain human factors out of consideration.

#### **Sec 703.2, 704.2 Repair of Penetrations and Voids**

CHANGE TYPE: Addition (ICC)

CHANGE SUMMARY: Specific requirements have been added to the code for repairing or replacing penetrations, joints, and voids in fire-resistance-rated construction.

CHANGE SIGNIFICANCE: Fire barriers, firewalls, and horizontal assemblies require the protection of penetrations, joints, and voids. International Fire Code (IFC) Section 701.2 provides a general requirement for maintaining all fire-resistance ratings. These new sections provide specific guidance for repairing or replacing materials protecting penetrations, joints, and voids.

Chapter 9 -

### **Sec 901.7.5.1 Emergency Fire Watch by Fire Service Personnel**

CHANGE TYPE: Addition (Local)

CHANGE SUMMARY: Allows the fire department to bill for fire watch services where property owners or agents do not respond to scenes when summoned by the fire department where fire protection systems are inoperable.

CHANGE SIGNIFICANCE: There has been an alarming number of incidents where property owners fail to respond when summoned to the scene due to inoperable fire protection systems. Sec 901.7 requires a fire watch to be in place for certain occupancies. When property staff does not respond, the fire department has to remain onsite until a representative shows up or the system is returned to service.

#### **Sec 903.3.1.2 NFPA 13R Sprinkler Systems**

CHANGE TYPE: Modification (ICC)

CHANGE SUMMARY: 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.

CHANGE SIGNIFICANCE: This revised section now limits the height of the building where NFPA 13R sprinkler systems can be utilized. The sprinkler system can be designed to NFPA 13R if all of the following criteria are met:

- The upper floor of the Group R occupancy is no more than four stories above the grade plane.
- The upper floor level is no more than 30 feet above the lowest level of fire department vehicle access.
- The lowest floor level is no more than 30 below the lowest level of fire department vehicle access.

#### **Sec 905.2.1 Minimum Design Pressure**

CHANGE TYPE: Addition (Local)

CHANGE SUMMARY: Requires all Class I and Class III standpipe systems to be hydraulically calculated to certain requirements in NFPA 14.

CHANGE SIGNIFICANCE: Recent large residential redevelopments have resulted in large four to five-story buildings stretched over several blocks with limited site access. These types of structures are built to heights just under 75' to avoid certain highrise construction requirements. For the purposes of firefighting with limited site access, these buildings become horizontal highrises. This poses an extreme concern regarding sufficient water supplies to the most remote standpipe connections. Requiring these systems to be hydraulically designed dramatically reduces the possibility of human error when fire service personnel are expected to supply these systems.

#### **907.4.2.5 Protective Covers**

CHANGE TYPE: Modification (Local)

CHANGE SUMMARY: Requires protective covers on manual fire alarm boxes in Use Groups R-1 and R-2.

CHANGE SIGNIFICANCE: Sec 907.4.2.5 allows the fire code official to require these covers. In our city, malicious activations of manual pull boxes account for a significant number of false calls. These covers emit a loud audible alarm locally at that pull box which is proven to deter activation of the actual pull box. This has effectively reduced false calls and the complacency of human reactions to continuous false alarms.

Chapter 11 -

#### **Sec 1103.7.5.1 Group R-1 Hotel and Motel Fire Alarm System**

CHANGE TYPE: Modification (ICC)

CHANGE SUMMARY: The requirements for retrofitting a fire alarm system in existing unsprinklered single-story hotels and motels is added. A fire alarm system shall be installed by January 1, 2028.

CHANGE SIGNIFICANCE: Automatic sprinkler systems were not required in all Group R occupancies until the 2003 edition of the International Fire Code (IFC) and the International Building Code (IBC). Fires in some older multiple-story unsprinklered hotels without fire alarm systems have resulted in multiple fire fatalities and fire injuries. This often occurs when a fire on the first floor renders the means of egress unusable by occupants from floors above.

#### **Sec 1103.7.7 Fire Alarm Maintenance and Repair**

CHANGE TYPE: Addition (Local)

CHANGE SUMMARY: This brings clarity that allows the fire code official the right to require a fire alarm system that is in disrepair to be upgraded to the current code.

CHANGE SIGNIFICANCE: Many fire alarm systems in Urbana are so old that parts are no longer being made. We find many beyond repair to their original installation. Many times we find systems Frankenstein from work that was not permitted.

### **Sec 1103.7.8 Fire Alarm System Monitoring**

CHANGE TYPE: Addition (Local)

CHANGE SUMMARY: Requires all existing fire alarm systems to be monitored by an approved supervising station by January 1, 2028.

CHANGE SIGNIFICANCE: With the current situation explained in Sec 1103.7.7, having these systems monitored will increase the effectiveness of emergency response in a timely manner, decrease the amount of time a system is out of service, and eliminate the confusion of the need for the signage specified in Sec 907.6.7. History has proven that most people are unaware of this signage and do not call 911 in a timely manner. This causes significant delays in emergency response. Today's technology allows for affordable wireless monitoring.

Chapter 33 -

### **Sec 3303.3, 3303.3.1 Daily Fire Safety Inspection**

CHANGE TYPE: Addition (ICC)

CHANGE SUMMARY: New provisions for buildings under construction require daily fire safety inspections by the site safety director.

CHANGE SIGNIFICANCE: The number of fires during building construction has increased in recent years. These fires are typically quite destructive. Combustible framing is not yet protected by sheetrock, and fire spreads quickly. While many of these fires are considered accidental, they are often the result of carelessness and failure to follow basic fire safety practices. The total number of construction fires may represent a relatively small percentage of the overall population of buildings under construction, but the consequences of these fires severely impact nearby buildings and neighborhoods with increasing frequency and increasing levels of damage.