



## Public Input No. 75-NFPA 1-2021 [ Global Input ]

See attached Tentative Interim Amendment No. 21-7 (Log No. 1497) on various NFPA101 extracts. This TIA was issued and approved for incorporation into the document.

### Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
TIA_1_21_7.pdf	NFPA 1 TIA NO. 21-7 (Log No. 1497)	

### Statement of Problem and Substantiation for Public Input

NOTE: This public input originates from Tentative Interim Amendment No. 21-7 (Log No. 1497) issued by the Standard Council on August 11, 2020 and per the NFPA Regs., needs to be reconsidered by the Technical Committee for the next edition of the document.

Substantiation: The current text of NFPA 1 contains extracts from the last published edition of NFPA 101 but not what is most currently available which is the 2021 Edition. This TIA updates the extracted language from NFPA 101 in NFPA 1 and makes other adjustments as necessary for the changes to the updated extract text.

Emergency Nature: The standard contains an error or an omission that was overlooked during the regular revision process. The second draft report was not available during the NFPA 1 2nd draft report. Therefore, to ensure accuracy in the extract updates, the updates were done after the second draft report for the source document was posted. By waiting to update the extracts the final product in NFPA 1 will be more closely aligned to what is in the source document and ensures the most up to date information is contained in NFPA 1.

### Submitter Information Verification

**Submitter Full Name:** TC ON FCC\_OCP

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**Submittal Date:** Mon Feb 15 10:48:16 EST 2021

**Committee:** FCC-FUN

### Committee Statement

**Resolution:** This item has been previously balloted by the technical committee.



Tentative Interim Amendment

# NFPA® 1

## *Fire Code*

### 2021 Edition

**Reference:** Various NFPA 101 Extracts

**TIA 21-7**

(SC 20-8-20 / TIA Log #1497)

**Note:** Text of the TIA was issued and approved for incorporation into the document prior to printing.

*1. Revise the following paragraphs to read as follows:*

See attached

**Issue Date:** August 11, 2020

**Effective Date:** August 31, 2020

**(Note: For further information on NFPA Codes and Standards, please see [www.nfpa.org/docinfo](http://www.nfpa.org/docinfo))**

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## NFPA 1-2018 text updated per revisions to NFPA 101 for 2021 editions

### 2.3.1 ANSI Publications.

ICC/ANSI A117.1, *Accessible and Usable Buildings and Facilities*, 2017.

### 2.3.7 ASTM Publications.

ASTM E3082, Standard Test Methods for Determining the Effectiveness of Fire Retardant Treatments for Natural Christmas Trees, 2017 e1.

### 2.3.18 UL Publications.

UL 10C, Positive Pressure Fire Tests of Door Assemblies, 2016.

UL 1278, Movable and Wall- or Ceiling-Hung Electric Room Heaters, 2014, revised 2018.

UL 1315, Metal Waste Paper Containers, 2017.

## 2.4 References for Extracts in Mandatory Sections.

NFPA 101®, *Life Safety Code*®, 20212018 edition.

### 3.3.30 \*Building.

Any structure used or intended for supporting or sheltering any use or occupancy. [101, 202118]

#### A.3.3.30 Building.

The term *building* is to be understood as if followed by the words *or portions thereof*. (See also A.3.3.271, *Structure*.) [101, 202118]

### 3.3.30.5 \*Existing Building.

A building erected or officially authorized prior to the effective date of the adoption of this edition of the *Code* by the agency or jurisdiction. [101, 202118]

#### A.3.3.30.5 Existing Building.

With respect to judging whether a building should be considered existing, the deciding factor is not when the building was designed or when construction started but, rather, the date plans were approved for construction by the appropriate AHJ. [101, 202118]

### 3.3.30.10 \*Special Amusement Building.

A building or portion thereof that is temporary, permanent, or mobile and contains a device or system device that conveys passengers-patrons where the patrons can be contained or restrained, or provides a walkway along, around, or over a course in any direction as a form of amusement or entertainment, and arranged so that the egress path is not readily apparent due to visual or audio distractions, contains or an intentionally confounded egress path, or is not readily available due to the mode of conveyance through the building or structure. [101, 202118]

#### A.3.3.30.10 Special Amusement Building.

Special amusement buildings include amusements typically found in theme parks such as a roller coaster-type ride within a building, a multilevel play structure within a building, a submarine ride, and

similar amusements where the occupants are not in the open air and might or might not be confined to a ride vehicle and/or unable to self-evacuate. Examples of temporary special amusement buildings include mobile fun houses typically found in carnivals or a gymnasium converted to a haunted house for Halloween. [101, 2021]

Three conditions are essential to the definition of a special amusement building:

First, the area might be either an entire building or a portion of a building. A rollercoaster within a theme park would not be a special amusement building if it is open to the air along its entire length. On the other hand, if portions of the rollercoaster were partially enclosed within buildings that house the show elements, it would then be a special amusement building. [101, 2021]

Second, a special amusement building contains either an amusement ride or device, or a walkway over a course intended to provide amusement or entertainment. A theater with fixed seats and a performance platform or stage would typically not be a special amusement building because there is no amusement ride or device, and there is no walkway that is used to provide amusement or entertainment. [101, 2021]

Third, a special amusement building is intended to either divert the patron's attention away from the egress path, either through audio or visual distractions or by intentionally confounding the patron, or it contains or restrains the patron such that the patron is unable to self-evacuate when the amusement ride has ceased motion. A carousel or small train inside a shopping mall might not be considered to be a special amusement building if, once ride motion has ceased, the patron can step out of the vehicle without assistance and is aware of the egress path. [101, 2021]

Other occupancies might also fall into the classification of special amusement building if the conditions described in the definition apply. Escape rooms are an example of where such conditions might exist. It is incumbent on the authority having jurisdiction to inquire if the conditions in the escape room meet the definition of a special amusement building. Where such conditions exist, escape rooms should be classified as special amusement buildings. Where such conditions do not exist, escape rooms might be classified as another occupancy type, such as business. [101, 2021]

It is important for the authority having jurisdiction to recognize that the Code requires an occupancy to be classified as a special amusement building if the conditions in the space meet the definition of *special amusement building*, regardless of the occupant load of the space. No minimum occupant load threshold must be met for a space to be classified as a special amusement building. A space could be classified as a special amusement building even where the occupant load is significantly fewer than the 50 occupants required for classification of other assembly occupancies. [101, 2021]

The requirements for special amusement buildings are not intended to apply to the design of the actual amusement ride or device, but rather that of the facility that houses the ride or device. The design of an amusement ride or device, including all platforms and stairs that are attached to the ride structure, is governed by other standards, such as ASTM F2291, *Standard Practice for Design of Amusement Rides or Devices*. The design of facilities elements around the ride, including stairs and platforms that are not

part of the ride structure, should be in accordance with the applicable requirements of this Code. [101, 2021]

~~Special amusement buildings include amusements such as a haunted house, a roller coaster-type ride within a building, a multilevel play structure within a building, a submarine ride, and similar amusements where the occupants are not in the open air.~~ [101, 2018]

### **3.3.61 Combustible (Material).**

A material that, in the form in which it is used and under the conditions anticipated, will ignite and burn; a material that does not meet the definition of noncombustible or limited-combustible. [101, 202118]

### **3.3.70 \*Common Path of Travel.**

The portion of exit access that must be traversed before two separate and distinct paths of travel to two exits are available. [101, 202118]

### **A.3.3.70 Common Path of Travel.**

Common path of travel is measured in the same manner as travel distance but terminates at that point where two separate and distinct routes become available. Paths that merge are common paths of travel. [101, 202118]

### **3.3.71.1 \*Fire Compartment.**

A space within a building that is enclosed by fire barriers on all sides, including the top and bottom. [101, 202118]

### **A.3.3.71.1 Fire Compartment.**

Additional fire compartment information is contained in 8.2.2 of NFPA 101. [101, 202118]

In the provisions for fire compartments utilizing the outside walls of a building, it is not intended that the outside wall be specifically fire resistance rated, unless required by other standards. Likewise, it is not intended that outside windows or doors be protected, unless specifically required for exposure protection by another section of this Code, by NFPA 101, or by other standards. [101, 202118]

### **3.3.71.2 \*Smoke Compartment.**

A space within a building enclosed by smoke barriers on all sides, including the top and bottom. [101, 202118]

### **A.3.3.71.2 Smoke Compartment.**

Where smoke compartments using the outside walls or the roof of a building are provided, it is not intended that outside walls or roofs, or any openings therein, be capable of resisting the passage of smoke. Application of smoke compartment criteria where required elsewhere in NFPA 101, should be in accordance with Section 8.5 of NFPA 101. [101, 202118]

### **3.3.108 \*Existing.**

That which is already in existence on the date this edition of the Code goes into effect. [101, 202118]

### **A.3.3.108 Existing.**

See A.3.3.30.5, Existing Building. [101, 202118]

### **3.3.110 \*Exit.**

That portion of a means of egress that is separated from all other spaces of the building or structure by construction, location, or equipment as required to provide a protected way of travel to the exit discharge. [101, 202118]

### **A.3.3.110 Exit.**

Exits include exterior exit doors, exit passageways, horizontal exits, exit stairs, and exit ramps. In the case of a stairway, the exit includes the stair enclosure, the door to the stair enclosure, the stairs and landings inside the enclosure, the door from the stair enclosure to the outside or to the level of exit discharge, and any exit passageway and its associated doors, if such are provided, so as to discharge the stair directly to the outside. In the case of a door leading directly from the street floor to the street or open air, the exit comprises only the door. [101, 202118]

Doors of small individual rooms, as in hotels, while constituting exit access from the room, are not referred to as exits, except where they lead directly to the outside of the building from the street floor. [101, 202118]

### **3.3.110.1 \*Horizontal Exit.**

A way of passage from one building to an area of refuge in another building on approximately the same level, or a way of passage through or around a fire barrier to an area of refuge on approximately the same level in the same building that affords safety from fire and smoke originating from the area of incidence and areas communicating therewith. [101, 202118]

### **A.3.3.110.1 Horizontal Exit.**

Horizontal exits should not be confused with egress through doors in smoke barriers. Doors in smoke barriers are designed only for temporary protection against smoke, whereas horizontal exits provide protection against serious fire for a relatively long period of time in addition to providing immediate protection from smoke. (See 7.2.4 of NFPA 101.) [101, 202118]

### **3.3.111 Exit Access.**

That portion of a means of egress that leads to an exit. [101, 202118]

### **3.3.112 Exit Discharge.**

That portion of a means of egress between the termination of an exit and a public way. [101, 202118]

### **3.3.119\* Festival Seating.**

A form of audience/spectator accommodation in which no seating, other than a floor or finished ground level, is provided for the audience/spectators gathered to observe a performance. [101, 202118]

### **A.3.3.119 Festival Seating.**

Festival seating describes situations in assembly occupancies where live entertainment events are held that are expected to result in overcrowding and high audience density that can compromise public safety. It is not the intent to apply the term *festival seating* to exhibitions; sports events; conventions; and bona fide political, religious, and educational events. Assembly occupancies with 15 ft<sup>2</sup> (1.4 m<sup>2</sup>) or more per person should not be considered festival seating. [101, 2021]

### **3.3.121.1 *Interior Ceiling Finish.***

The interior finish of ceilings. [101, 2021<sup>18</sup>]

### **3.3.121.2 \**Interior Finish.***

The exposed surfaces of walls, ceilings, and floors within buildings. [101, 2021<sup>18</sup>]

### **A.3.3.121.2 *Interior Finish.***

Interior finish is not intended to apply to surfaces within spaces such as those that are concealed or inaccessible. Furnishings that, in some cases, might be secured in place for functional reasons should not be considered as interior finish. [101, 2021<sup>18</sup>]

### **3.3.121.3 \**Interior Floor Finish.***

The interior finish of floors, ramps, stair treads and risers, and other walking surfaces. [101, 2021<sup>18</sup>]

### **A.3.3.121.3 *Interior Floor Finish.***

Interior floor finish includes coverings applied over a normal finished floor or stair treads and risers. [101, 2021; A.3.3.92.3]

### **3.3.121.4 \**Interior Wall Finish.***

The interior finish of columns, fixed or movable walls, and fixed or movable partitions. [101, 2021<sup>18</sup>]

### **A.3.3.121.4 *Interior Wall Finish.***

Such partitions are intended to include washroom water closet partitions. [101, 2021<sup>18</sup>]

### **3.3.136 \**Flame Spread.***

The propagation of flame over a surface. [101, 2021<sup>18</sup>]

### **A.3.3.136 *Flame Spread.***

See Section 10.2 of NFPA 101. [101, 2021<sup>18</sup>]

### **3.3.137 *Flame Spread Index.***

A comparative measure, expressed as a dimensionless number, derived from visual measurements of the spread of flame versus time for a material tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Test for Surface Burning Characteristics of Burning Building Materials*. [101, 2021<sup>18</sup>]

### **A.3.3.136 Flame Spread.**

See Section 10.2 of NFPA 101. [101, 2018]

### **A.3.3.152.2 Low Hazard Contents.**

Chapter 42 of NFPA 101 recognizes storage of noncombustible materials as low hazard. In other occupancies, it is assumed that, even where the actual contents hazard is normally low, there is sufficient likelihood that some combustible materials or hazardous operations will be introduced in connection with building repair or maintenance, or some psychological factor might create conditions conducive to panic, so that the egress facilities cannot safely be reduced below those specified for ordinary hazard contents. [101:A.6.2.2.2, 2018]

### **A.3.3.152.3 Ordinary Hazard Contents.**

Ordinary hazard classification represents the conditions found in most buildings and is the basis for the general requirements of NFPA 101. [101:A.6.2.2.3, 2018]

The fear of poisonous fumes or explosions is necessarily a relative matter to be determined on a judgment basis. All smoke contains some toxic fire gases but, under conditions of ordinary hazard, there should be no unduly dangerous exposure during the period necessary to escape from the fire area, assuming there are proper exits. [101:A.6.2.2.3 101, 2018]

### **3.3.186 \*Means of Egress.**

A continuous and unobstructed way of travel from any point in a building or structure to a public way consisting of three separate and distinct parts: (1) the exit access, (2) the exit, and (3) the exit discharge. [101, 202118]

### **A.3.3.186 Means of Egress.**

A means of egress comprises the vertical and horizontal travel and includes intervening room spaces, doorways, hallways, corridors, passageways, balconies, ramps, stairs, elevators, enclosures, lobbies, escalators, horizontal exits, courts, and yards. [101, 202118]

### **3.3.187 Means of Escape.**

A way out of a building or structure that does not conform to the strict definition of means of egress but does provide an alternate way out. [101, 202118]

### **3.3.188 Mezzanine.**

An intermediate level between the floor and the ceiling of any room or space. [101, 202118]

### **3.3.196.1 \*Ambulatory Health Care Occupancy.**

An occupancy used to provide services or treatment simultaneously to four or more patients that provides, on an outpatient basis, one or more of the following: (1) treatment for patients that renders the patients incapable of taking action for self-preservation under emergency conditions without the

assistance of others; (2) anesthesia that renders the patients incapable of taking action for self-preservation under emergency conditions without the assistance of others; (3) treatment for patients who, due to the nature of their injury or illness, are incapable of taking action for self-preservation under emergency conditions without the assistance of others. [101, 202118]

#### **A.3.3.196.1 Ambulatory Health Care Occupancy.**

It is not the intent that occupants be considered to be incapable of self-preservation just because they are in a wheelchair or use assistive walking devices, such as a cane, a walker, or crutches. Rather it is the intent to address treatment centers that receive patients who have been rendered incapable of self-preservation, such as being rendered unconscious as a result of an accident or being unable to move due to sudden illness. [101, 202118]

It is not the intent that the term *anesthesia* be limited to general anesthesia. [101, 202118]

#### **3.3.196.2 \*Apartment Building.**

A building or portion thereof containing three or more dwelling units with independent cooking and bathroom facilities. [101, 202118]

#### **A.3.3.196.2 Apartment Building.**

The *Code* specifies that, wherever there are three or more living units in a building, the building is considered an apartment building and is required to comply with Chapter 30 or Chapter 31 of NFPA 101, as appropriate. Townhouse units are considered to be apartment buildings if there are three or more units in the building. The type of wall required between units in order to consider them to be separate buildings is normally established by the AHJ. If the units are separated by a wall of sufficient fire resistance and structural integrity to be considered as separate buildings, then the provisions of Chapter 24 of NFPA 101, apply to each townhouse. Condominium status is a form of ownership, not occupancy; for example, there are condominium warehouses, condominium apartments, and condominium offices. [101, 202118]

#### **3.3.196.3 \*Assembly Occupancy.**

An occupancy (1) used for a gathering of 50 or more persons for deliberation, worship, entertainment, eating, drinking, amusement, awaiting transportation, or similar uses; or (2) used as a special amusement building, regardless of occupant load. [101, 202118]

#### **A.3.3.196.3 Assembly Occupancy.**

Assembly occupancies might include the following:

- (1) Armories
- (2) Assembly halls
- (3) Auditoriums
- (4) Bowling lanes
- (5) Club rooms
- (6) College and university classrooms, 50 persons and over
- (7) Conference rooms
- (8) Courtrooms

- (9) Dance halls
- (10) Drinking establishments
- (11) Exhibition halls
- (12) Gymnasiums
- (13) Libraries
- (14) Mortuary chapels
- (15) Motion picture theaters
- (16) Museums
- (17) Passenger stations and terminals of air, surface, underground, and marine public transportation facilities
- (18) Places of religious worship
- (19) Pool rooms
- (20) Recreation piers
- (21) Restaurants
- (22) Skating rinks
- (23) Special amusement buildings, regardless of occupant load
- (24) Theaters

[101, 202118]

Assembly occupancies are characterized by the presence or potential presence of crowds with attendant panic hazard in case of fire or other emergency. They are generally open or occasionally open to the public, and the occupants, who are present voluntarily, are not ordinarily subject to discipline or control. Such buildings are ordinarily occupied by able-bodied persons and are not used for sleeping purposes. Special conference rooms, snack areas, and other areas incidental to, and under the control of, the management of other occupancies, such as offices, fall under the 50-person limitation. [101, 202118]

Restaurants and drinking establishments with an occupant load of fewer than 50 persons should be classified as mercantile occupancies. [101, 202118]

For special amusement buildings, see 12.4.98 and 13.4.98 of NFPA 101. [101, 202118]

#### **3.3.196.4 Bulk Merchandising Retail Building.**

A building in which the sales area includes the storage of combustible materials on pallets, in solid piles, or in racks in excess of 12 ft (3660 mm) in storage height. [101, 202118]

#### **3.3.196.5 \*Business Occupancy.**

An occupancy used for the transaction of business other than mercantile. [101, 202118]

#### **A.3.3.196.5 Business Occupancy.**

Business occupancies include the following:

- (1) Airport traffic control towers (ATCTs)
- (2) City halls
- (3) College and university instructional buildings, classrooms under 50 persons, and instructional laboratories

- (4) Courthouses
- (5) Dentists' offices
- (6) Doctors' offices
- (7) General offices
- (8) Outpatient Clinics-clinics (ambulatory)
- (9) Town halls

[101, 202118]

Doctors' and dentists' offices are included, unless of such character as to be classified as ambulatory health care occupancies. (See 3.3.196.1.) [101, 202118]

Birth centers should be classified as business occupancies if they are occupied by fewer than four patients, not including infants, at any one time; do not provide sleeping facilities for four or more occupants; and do not provide treatment procedures that render four or more patients, not including infants, incapable of self-preservation at any one time. For birth centers occupied by patients not meeting these parameters, see Chapter 18 or Chapter 19 of NFPA 101, as appropriate. [101, 202118].

Service facilities common to city office buildings such as newsstands, lunch counters serving fewer than 50 persons, barber shops, and beauty parlors are included in the business occupancy group. [101, 202118]

City halls, town halls, and courthouses are included in the business occupancy group insofar as their principal function is the transaction of public business and the keeping of books and records. Insofar as they are used for assembly purposes, they are classified as assembly occupancies. [101, 202118]

### **3.3.196.6 \*Day-Care Home.**

A building or portion of a building in which more than 3 but not more than 12 clients receive care, maintenance, and supervision, by other than their relative(s) or legal guardian(s), for less than 24 hours per day. [101, 202118]

#### **A.3.3.196.6 Day-Care Home.**

A day-care home is generally located within a dwelling unit. [101, 202118]

### **3.3.196.7 \*Day-Care Occupancy.**

An occupancy in which four or more clients receive care, maintenance, and supervision, by other than their relatives or legal guardians, for less than 24 hours per day. [101, 202118]

#### **A.3.3.196.7 Day-Care Occupancy.**

Day-care occupancies include the following:

- (1) Adult day-care occupancies, except where part of a health care occupancy
- (2) Child day-care occupancies
- (3) Day-care homes

- (4) Kindergarten classes that are incidental to a child day-care occupancy
- (5) Nursery schools

[101, 202118]

In areas where public schools offer only half-day kindergarten programs, many child day-care occupancies offer state-approved kindergarten classes for children who need full-day care. Because these classes are normally incidental to the day-care occupancy, the requirements of the day-care occupancy should be followed. [101, 202118]

### **3.3.196.8 \*Detention and Correctional Occupancy.**

An occupancy, other than one whose primary intended use is health care, ambulatory health care, or residential board and care, used to house lawfully incarcerate or lawfully detain one or more persons under varied degrees of restraint or security where such occupants are mostly incapable of self-preservation because of security measures not under the occupants' control. [101, 202118]

### **A.3.3.196.8 Detention and Correctional Occupancy.**

Detention and correctional occupancies include the following:

- (1) Adult and juvenile substance abuse centers
- (2) Adult and juvenile work camps
- (3) Adult community residential centers
- (4) Adult correctional institutions
- (5) Adult local detention facilities
- (6) Juvenile community residential centers
- (7) Juvenile detention facilities
- (8) Juvenile training schools

[101, 202118]

Detention and correctional occupancies do not include psychiatric and dementia units in hospitals, emergency rooms in hospitals, ambulatory health care occupancies, nursing homes, and residential board and care occupancies where persons can be lawfully detained. [101, 2021]

See A.22.1.1.1.6 and A.23.1.1.1.6 of NFPA 101. [101, 2021] It is not the intent to classify as detention and correctional occupancies the areas of health care occupancies where doors are locked against patient egress where needed for the clinical needs of the patients. For example, a dementia treatment center can be adequately protected by the health care occupancies requirements of Chapter 19 of NFPA 101. [See 19.1.1.1.7, 19.2.2.2.2, 19.2.2.2.4(1), and 19.2.2.2.6 of NFPA 101.] [101, 2018]

The one-resident threshold requirement of 23.1.1.1.6 of NFPA 101 is not meant to force a residential occupancy, where security is imposed on one or more occupants, to be reclassified as a detention and correctional occupancy. [101, 2018]

#### **3.3.196.8.1.1 Use Condition I — Free Egress.**

A condition under which free movement is allowed from sleeping areas and other spaces where access or occupancy is permitted to the exterior via means of egress that meet the requirements of NFPA 101. [101, 22.1.2.1.1-202118]

### **3.3.196.8.1.2 Use Condition II — Zoned Egress.**

A condition under which free movement is allowed from sleeping areas and any other occupied smoke compartment to one or more other smoke compartments. [101, 22.1.2.1.2-202118]

### **3.3.196.8.1.3 Use Condition III — Zoned Impeded Egress.**

A condition under which free movement is allowed within individual smoke compartments, such as within a residential unit comprised of individual sleeping rooms and a group activity space, with egress impeded by remote-controlled release of means of egress from such a smoke compartment to another smoke compartment. [101, 22.1.2.1.3-202118]

### **3.3.196.8.1.4 Use Condition IV — Impeded Egress.**

A condition under which free movement is restricted from an occupied space, and remote-controlled release is provided to allow movement from all sleeping rooms, activity spaces, and other occupied areas within the smoke compartment to another smoke compartment. [101, 22.1.2.1.4-202118]

### **3.3.196.8.1.5 Use Condition V — Contained.**

A condition under which free movement is restricted from an occupied space, and staff-controlled manual release at each door is provided to allow movement from all sleeping rooms, activity spaces, and other occupied areas within the smoke compartment to another smoke compartment. [101, 22.1.2.1.5-202118]

### **3.3.196.9 \*Dormitory.**

A building or a space in a building in which group sleeping accommodations are provided for more than 16 persons who are not members of the same family in one room, or a series of closely associated rooms under joint occupancy and single management, with or without meals, but without individual cooking facilities. [101, 202118]

### **A.3.3.196.9 Dormitory.**

Rooms within dormitories intended for the use of individuals for combined living and sleeping purposes are guest rooms or guest suites. Examples of dormitories are college dormitories, fraternity and sorority houses, and military barracks. [101, 202118]

### **3.3.196.10 \*Educational Occupancy.**

An occupancy used for educational purposes through the twelfth grade by six or more persons for 4 or more hours per day or more than 12 hours per week. [101, 202118]

### **A.3.3.196.10 Educational Occupancy.**

Educational occupancies include the following:

- (1) Academies
- (2) Kindergartens
- (3) Schools

[101, 2018]

An educational occupancy is distinguished from an assembly occupancy in that the same occupants are regularly present. [101, 202118]

### **3.3.196.11 \*Health Care Occupancy.**

An occupancy used to provide medical or other treatment or care simultaneously to four or more patients on an inpatient basis, where such patients are mostly incapable of self-preservation due to age, physical or mental disability, or because of security measures not under the occupants' control. [101, 202118]

#### **A.3.3.196.11 Health Care Occupancy.**

Health care occupancies include the following:

- (1) Hospitals
- (2) Limited care facilities
- (3) Nursing homes

[101, 2018]

Occupants of health care occupancies typically have physical or mental illness, disease, or infirmity. They also include infants, convalescents, or infirm aged persons. It is not the intent to consider occupants incapable of self-preservation because they are in a wheelchair or use assistive walking devices, such as a cane, a walker, or crutches. [101, 202118]

~~It is not the intent to consider occupants incapable of self-preservation because they are in a wheelchair or use assistive walking devices, such as a cane, a walker, or crutches.~~

[101, 2018]

### **3.3.196.13 Hospital.**

A building or portion thereof used on a 24-hour basis for the medical, psychiatric, obstetrical, or surgical care of four or more inpatients. [101, 202118]

### **3.3.196.14 \*Hotel.**

A building or groups of buildings under the same management in which there are sleeping accommodations for more than 16 persons and primarily used by transients for lodging with or without meals. [101, 202118]

#### **A.3.3.196.14 Hotel.**

So-called apartment hotels should be classified as hotels, because they are potentially subject to the

same transient occupancy as hotels. Transients are those who occupy accommodations for less than 30 days. [101, 202118]

### **3.3.196.15 \*Industrial Occupancy.**

An occupancy in which products are manufactured or in which processing, assembling, mixing, packaging, finishing, decorating, or repair operations are conducted. [101, 202118]

#### **A.3.3.196.15 Industrial Occupancy.**

Industrial occupancies include the following:

- (1) Drycleaning plants
- (2) Factories of all kinds
- (3) Food processing plants
- (4) Gas plants
- (5) Hangars (for servicing/maintenance)
- (6) Laundries
- (7) Power plants
- (8) Pumping stations
- (9) Refineries
- (10) Sawmills
- (11) Telephone exchanges

[101, 202118]

In evaluating the appropriate classification of laboratories, the AHJ should treat each case individually, based on the extent and nature of the associated hazards. Some laboratories are classified as occupancies other than industrial; for example, a physical therapy laboratory or a computer laboratory.

[101, 202118]

~~For laboratories within the scope of NFPA 45, the occupancies are defined in NFPA 45, Section 3.3, as follows:~~

- (1) ~~Noninstructional labs are considered industrial.~~
- (2) ~~Labs within the scope of NFPA 99 are considered health care.~~
- (3) ~~Instructional labs for grades 12 and below are considered educational.~~
- (4) ~~Labs for grades above grade 12 and Class D labs are business occupancies.~~

~~[5000, 2018]~~

### **3.3.196.16 \*Limited Care Facility.**

A building or portion of a building used on a 24-hour basis for the housing of four or more persons who are incapable of self-preservation because of age; physical limitations due to accident or illness; or limitations such as ~~mental retardation~~~~intellectual disability~~/developmental disability, mental illness, or chemical dependency. [101, 202118]

### **A.3.3.196.16 Limited Care Facility.**

Limited care facilities and residential board and care occupancies both provide care to people with physical and mental limitations. However, the goals and programs of the two types of occupancies differ greatly. The requirements in NFPA 101 for limited care facilities are based on the assumption that these are medical facilities, that they provide medical care and treatment, and that the patients are not trained to respond to the fire alarm; that is, the patients do not participate in fire drills but, rather, await rescue. (See Section 18.7 of NFPA 101.) [101, 202118]

The requirements for residential board and care occupancies are based on the assumption that the residents are provided with personal care and activities that foster continued independence, that the residents are encouraged and taught to overcome their limitations, and that most residents, including all residents in prompt and slow homes, are trained to respond to fire drills to the extent they are able. Residents are required to participate in fire drills. (See Section 32.7 of NFPA 101.) [101, 202118]

Persons with Alzheimer's and related illnesses might be located in a nursing home, limited care facility, or board and care facility. For such persons, it is the level of care provided, not the medical diagnosis, that matters for the purposes of determining whether the facility should meet the requirements for limited care. Where personal care is provided but medical or custodial care is not, the limited care definition does not typically apply. It is the intent of this definition that it not apply to persons not receiving medical or custodial care, provided they are able to assist in their own evacuation, regardless of their medical diagnosis. [101, 202118]

### **3.3.196.17 Lodging or Rooming House.**

A building or portion thereof that does not qualify as a one- or two-family dwelling, that provides sleeping accommodations for a total of 16 or fewer people on a transient or permanent basis, without personal care services, with or without meals, but without separate cooking facilities for individual occupants. [101, 202118]

### **3.3.196.19 \*Mercantile Occupancy.**

An occupancy used for the display and sale of merchandise. [101, 202118]

### **A.3.3.196.19 Mercantile Occupancy.**

Mercantile occupancies include the following:

- (1) Auction rooms
- (2) Department stores
- (3) Drugstores
- (4) Restaurants with fewer than 50 persons
- (5) Shopping centers
- (6) Supermarkets

[101, 202118]

Office, storage, and service facilities incidental to the sale of merchandise and located in the same

building should be considered part of the mercantile occupancy classification.

[101, 202118]

### **3.3.196.19.1 Class A Mercantile Occupancy.**

All mercantile occupancies having an aggregate gross area of more than 30,000 ft<sup>2</sup> (2800 m<sup>2</sup>) or occupying more than three stories for sales purposes. [101, 202118]

### **3.3.196.19.2 Class B Mercantile Occupancy.**

All mercantile occupancies of more than 3000 ft<sup>2</sup> (280 m<sup>2</sup>), but not more than 30,000 ft<sup>2</sup> (2800 m<sup>2</sup>), aggregate gross area and occupying not more than three stories for sales purposes. Class B also includes all mercantile occupancies of not more than 3000 ft<sup>2</sup> (280 m<sup>2</sup>) gross area and occupying two or three stories for sales purposes. [101, 202118]

### **3.3.196.19.3 Class C Mercantile Occupancy.**

All mercantile occupancies of not more than 3000 ft<sup>2</sup> (280 m<sup>2</sup>) gross area and used for sales purposes occupying one story only, excluding mezzanines. [101, 202118]

### **3.3.196.20 Mixed Occupancy.**

A multiple occupancy where the occupancies are intermingled. [101, 202118]

### **3.3.196.23 Multiple Occupancy.**

A building or structure in which two or more classes of occupancy exist. [101, 202118]

### **3.3.196.24 Nursing Home.**

A building or portion of a building used on a 24-hour basis for the housing and nursing care of four or more persons who, because of mental or physical incapacity, might be unable to provide for their own needs and safety without the assistance of another person. [101, 202118]

### **3.3.196.25.1 One- and Two-Family Dwelling Unit.**

A building that contains not more than two dwelling units, each dwelling unit occupied by members of a single family with not more than three outsiders, if any, accommodated in rented rooms, with independent cooking and bathroom facilities. [101, 202118]

### **3.3.196.28 \*Residential Board and Care Occupancy.**

An occupancy used for lodging and boarding of four or more residents, not related by blood or marriage to the owners or operators, for the purpose of providing personal care services. [101, 202118]

### **A.3.3.196.28 Residential Board and Care Occupancy.**

The following are examples of facilities that are classified as residential board and care occupancies:

- (1) Group housing arrangement for physically or mentally handicapped persons who normally attend school in the community, attend worship in the community, or otherwise use community facilities
- (2) Group housing arrangement for physically or mentally handicapped persons who are undergoing training in preparation for independent living, for paid employment, or for other normal community activities
- (3) Group housing arrangement for the elderly that provides personal care services but that does not provide nursing care
- (4) Facilities for social rehabilitation, alcoholism, drug abuse, or mental health problems that contain a group housing arrangement and that provide personal care services but do not provide acute care
- (5) Assisted living facilities
- (6) Other group housing arrangements that provide personal care services but not nursing care

[101, 202118]

### **3.3.196.29 \*Residential Occupancy.**

An occupancy that provides sleeping accommodations for purposes other than health care or detention and correctional. [101, 202118]

#### **A.3.3.196.29 Residential Occupancy.**

Residential occupancies are treated as separate occupancies in this *Code* as follows:

- (1) One- and two-family dwellings (Chapter 24 of NFPA 101)
- (2) Lodging or rooming houses (Chapter 26 of NFPA 101)
- (3) Hotels, motels, and dormitories (Chapters 28 and 29 of NFPA 101)
- (4) Apartment buildings (Chapters 30 and 31 of NFPA 101)

[101, 202118]

### **3.3.196.30 Separated Occupancy.**

A multiple occupancy where the occupancies are separated by fire resistance-rated assemblies. [101, 202118]

### **3.3.196.31 \*Storage Occupancy.**

An occupancy used primarily for the storage or sheltering of goods, merchandise, products, or vehicles. [101, 202118]

#### **A.3.3.196.31 Storage Occupancy.**

Storage occupancies include the following:

- (1) Barns
- (2) Bulk oil storage
- (3) Cold storage
- (4) Freight terminals
- (5) Grain elevators

- (6) Hangars (for storage only)
- (7) Parking structures
- (8) Truck and marine terminals
- (9) Warehouses

[101, 202118]

Storage occupancies are characterized by the presence of relatively small numbers of persons in proportion to the area.

[101, 202118]

### **3.3.197 Occupant Load.**

The total number of persons that might occupy a building or portion thereof at any one time. [101, 202118]

### **3.3.213 \*Personal Care.**

The care of residents who do not require chronic or convalescent medical or continuous skilled nursing care. [101, 202118]

### **A.3.3.213 Personal Care.**

Personal care involves responsibility for the safety of the resident while inside the building. Personal care might include daily awareness by management of the resident's functioning and whereabouts, making and reminding a resident of appointments, the ability and readiness for intervention in the event of a resident experiencing a crisis, supervision in the areas of nutrition and medication, and actual provision of transient medical care, including limited periodic skilled nursing care. [101, 202118]

### **3.3.224 Public Way.**

A street, alley, or other similar parcel of land essentially open to the outside air deeded, dedicated, or otherwise permanently appropriated to the public for public use and having a clear width and height of not less than 10 ft (3050 mm). [101, 202118]

### **3.3.230 \*Ramp.**

A walking surface that has a slope steeper than 1 in 20. [101, 202118]

### **A.3.3.230 Ramp.**

See 7.2.5 of NFPA 101. [101, 202118]

### **3.3.244 Self-Closing.**

Equipped with an approved device that ensures closing after opening. [101, 202118]

### **3.3.252 \*Smoke Partition.**

A continuous membrane that is designed to form a barrier to limit the transfer of smoke. [101, 202118]

### **A.3.3.252 Smoke Partition.**

A smoke partition is not required to have a fire resistance rating. [101, 202118]

### **3.3.267.1 Occupiable Story.**

A story occupied by people on a regular basis. [101, 202118]

### **3.3.268 Street.**

A public thoroughfare that has been dedicated for vehicular use by the public and can be used for access by fire department vehicles. [101, 202118]

### **3.3.269 \*Street Floor.**

A story or floor level accessible from the street or from outside the building at the finished ground level, with the floor level at the main entrance located not more than three risers above or below the finished ground level, and arranged and utilized to qualify as the main floor. [101, 202118]

### **A.3.3.269 Street Floor.**

Where, due to differences in street levels, ~~there are~~ two or more stories are accessible from the street, each is a street floor. Where there is no floor level within the specified limits for a street floor above or below ground level, the building has no street floor. [101, 2021]

### **3.3.271 \*Structure.**

That which is built or constructed. [101, 202118]

### **A.3.3.271 Structure.**

The term *structure* is to be understood as if followed by the words *or portion thereof*. (See also 3.3.30, *Building*.) [101, 202118]

#### **3.3.271.1\* Open Structure.**

A structure that supports equipment and operations not enclosed within building walls. [101, 2021]

#### **A.3.3.271.1 Open Structure.**

Open structures are often found in oil refining, chemical processing, or power plants. Roofs or canopies without enclosing walls are not considered an enclosure. [101, 2021]

### **3.4.1 Alternative Calculation Procedure.**

A calculation procedure that differs from the procedure originally employed by the design team but that provides predictions for the same variables of interest. [101, 202118]

### **3.4.3 Data Conversion.**

The process of developing the input data set for the assessment method of choice. [101, 202118]

### **3.4.6 Design Team.**

A group of stakeholders including, but not limited to, representatives of the architect, client, and any pertinent engineers and other designers. [101, 202118]

### **3.4.7 \*Exposure Fire.**

A fire that starts at a location that is remote from the area being protected and grows to expose that which is being protected. [101, 202118]

#### **A.3.4.7 Exposure Fire.**

An exposure fire usually refers to a fire that starts outside a building, such as a wildlands fire or vehicle fire, and that, consequently, exposes the building to a fire. [101, 202118]

### **3.4.8 \*Fire Model.**

Mathematical prediction of fire growth, environmental conditions, and potential effects on structures, systems, or components based on the conservation equations or empirical data. [805, 202015]

#### **A.3.4.8 Fire Model.**

Due to the complex nature of the principles involved, models are often packaged as computer software. Any relevant input data, assumptions, and limitations needed to properly implement the model will be attached to the fire models. [101, 202118]

### **3.4.9 \*Fire Scenario.**

A set of conditions that defines the development of fire, the spread of combustion products throughout a building or portion of a building, the reactions of people to fire, and the effects of combustion products. [101, 202118]

#### **A.3.4.9 Fire Scenario.**

A fire scenario defines the conditions under which a proposed design is expected to meet the fire safety goals. Factors typically include fuel characteristics, ignition sources, ventilation, building characteristics, and occupant locations and characteristics. The term *fire scenario* includes more than the characteristics of the fire itself but excludes design specifications and any characteristics that do not vary from one fire to another; the latter are called assumptions. The term *fire scenario* is used here to mean only those specifications required to calculate the fire's development and effects, but, in other contexts, the term might be used to mean both the initial specifications and the subsequent development and effects (i.e., a complete description of fire from conditions prior to ignition to conditions following extinguishment). [101, 202118]

##### **3.4.9.1 Design Fire Scenario.**

A fire scenario selected for evaluation of a proposed design. [101, 202118]

### **3.4.11 Incapacitation.**

A condition under which humans do not function adequately and become unable to escape untenable

conditions. [101, 202118]

### **3.4.12 Input Data Specification.**

Information required by the verification method. [101, 202118]

### **3.4.13 Occupant Characteristics.**

The abilities or behaviors of people before and during a fire. [101, 201821]

### **3.4.14 \*Performance Criteria.**

Threshold values on measurement scales that are based on quantified performance objectives. [101, 201821]

### **A.3.4.14 Performance Criteria.**

Performance criteria are stated in engineering terms. Engineering terms include temperatures, radiant heat flux, and levels of exposure to fire products. Performance criteria provide threshold values used to evaluate a proposed design. [101, 201821]

### **3.4.15 \*Proposed Design.**

A design developed by a design team and submitted to the AHJ for approval. [101, 201821]

### **A.3.4.15 Proposed Design.**

The design team might develop a number of trial designs that will be evaluated to determine whether they meet the performance criteria. One of the trial designs will be selected from those that meet the performance criteria for submission to the AHJ as the proposed design. [101, 201821]

The proposed design is not necessarily limited to fire protection systems and building features. It also includes any component of the proposed design that is installed, established, or maintained for the purpose of life safety, without which the proposed design could fail to achieve specified performance criteria. Therefore, the proposed design often includes emergency procedures and organizational structures that are needed to meet the performance criteria specified for the proposed design. [101, 201821]

### **3.4.16 Safe Location.**

A location remote or separated from the effects of a fire so that such effects no longer pose a threat. [101, 201821]

### **3.4.17 Safety Factor.**

A factor applied to a predicted value to ensure that a sufficient safety margin is maintained. [101, 201821]

### **3.4.18 Safety Margin.**

The difference between a predicted value and the actual value where a fault condition is expected. [101, 201821]

### **3.4.20 Stakeholder.**

An individual, or representative of same, having an interest in the successful completion of a project. [101, 201821]

### **3.4.22 Verification Method.**

A procedure or process used to demonstrate or confirm that the proposed design meets the specified criteria. [101, 201821]

### **A.4.5.8.3**

Examples of such features include automatic sprinklers, fire alarm systems, standpipes, and portable fire extinguishers. The presence of a life safety feature, such as sprinklers or fire alarm devices, creates a reasonable expectation by the public that these safety features are functional. When systems are inoperable or taken out of service but the devices remain, they present a false sense of safety. Also, before taking any life safety features out of service, extreme care needs to be exercised to ensure that the feature is not required, was not originally provided as an alternative or equivalent, or is no longer required due to other new requirements in the current *Code*. It is not intended that the entire system or protection feature be removed. Instead, components such as sprinklers, initiating devices, notification appliances, standpipe hose, and exit systems should be removed to reduce the likelihood of relying on inoperable systems or features. Conversely, equipment, such as fire or smoke dampers, that is not obvious to the public should be able to be taken out of service if no longer required by this *Code*. Where a door that is not required to be fire protection-rated is equipped with a fire protection listing label, it is not the intent of 4.5.8.3 to require such door to be self- or automatic-closing due merely to the presence of the label. [101:A.4.6.12.3]

### **4.5.8.6**

Any device, equipment, system, condition, arrangement, level of protection, fire-resistive construction, or any other feature requiring periodic testing, inspection, or operation to ensure its maintenance shall be tested, inspected, or operated as specified elsewhere in this *Code* or as directed by the AHJ.

[101:4.6.12.54]

### **4.5.8.7**

Maintenance, inspection, and testing shall be performed under the supervision of a responsible person who shall ensure that testing, inspection, and maintenance are made at specified intervals in accordance with applicable NFPA standards or as directed by the AHJ. [101:4.6.12.65]

### **A.6.1.2.1**

**Assembly Occupancy.** Assembly occupancies might include the following:

- (1) Armories
- (2) Assembly halls
- (3) Auditoriums

- (4) Bowling lanes
- (5) Club rooms
- (6) College and university classrooms, 50 persons and over
- (7) Conference rooms
- (8) Courtrooms
- (9) Dance halls
- (10) Drinking establishments
- (11) Exhibition halls
- (12) Gymnasiums
- (13) Libraries
- (14) Mortuary chapels
- (15) Motion picture theaters
- (16) Museums
- (17) Passenger stations and terminals of air, surface, underground, and marine public transportation facilities
- (18) Places of religious worship
- (19) Pool rooms
- (20) Recreation piers
- (21) Restaurants
- (22) Skating rinks
- (23) Special amusement buildings, regardless of occupant load
- (24) Theaters

[101:A.6.1.2.1]

Assembly occupancies are characterized by the presence or potential presence of crowds with attendant panic hazard in case of fire or other emergency. They are generally or occasionally open to the public, and the occupants, who are present voluntarily, are not ordinarily subject to discipline or control. Such buildings are ordinarily not used for sleeping purposes. Special conference rooms, snack areas, and other areas incidental to, and under the control of, the management of other occupancies, such as offices, fall under the 50-person limitation. [101:A.6.1.2.1]

Restaurants and drinking establishments with an occupant load of fewer than 50 persons should be classified as mercantile occupancies. [101:A.6.1.2.1]

Occupancy of any room or space for assembly purposes by fewer than 50 persons in another occupancy, and incidental to such other occupancy, should be classified as part of the other occupancy and should be subject to the provisions applicable thereto. [101:A.6.1.2.1]

For special amusement buildings, see 12.4.97 and 13.4.97 of NFPA 101. [101:A.6.1.2.1]

#### **6.1.4.1 \*Definition — Day-Care Occupancy.**

An occupancy in which four or more clients receive care, maintenance, and supervision, by other than their relatives or legal guardians, for less than 24 hours per day. [101:6.1.4.1]

#### **A.6.1.4.1**

**Day-care Occupancy.** Day-care occupancies include the following:

- (1) Adult day-care occupancies, except where part of a health care occupancy
- (2) Child day-care occupancies
- (3) Day-care homes
- (4) Kindergarten classes that are incidental to a child day-care occupancy
- (5) Nursery schools

**[101:A.6.1.4.1]**

In areas where public schools offer only half-day kindergarten programs, many child day-care occupancies offer state-approved kindergarten classes for children who need full-day care. Because these classes are normally incidental to the day-care occupancy, the requirements of the day-care occupancy should be followed. **[101:A.6.1.4.1]**

#### **6.1.7.1 \*Definition — Detention and Correctional Occupancy.**

An occupancy, other than one whose primary intended use is health care, ambulatory health care, or residential board and care, used to lawfully incarcerate or lawfully detain one or more persons under varied degrees of restraint or security where such occupants are mostly incapable of self-preservation because of security measures not under the occupants' control. An occupancy used to house one or more persons under varied degrees of restraint or security where such occupants are mostly incapable of self-preservation because of security measures not under the occupants' control. **[101:6.1.7.1]**

#### **A.6.1.7.1**

**Detention and Correctional Occupancy.** Detention and correctional occupancies include the following:

- (1) Adult and juvenile substance abuse centers
- (2) Adult and juvenile work camps
- (3) Adult community residential centers
- (4) Adult correctional institutions
- (5) Adult local detention facilities
- (6) Juvenile community residential centers
- (7) Juvenile detention facilities
- (8) Juvenile training schools

**[101:A.6.1.7.1]**

Detention and correctional occupancies do not include psychiatric and dementia units in hospitals, emergency rooms in hospitals, ambulatory health care occupancies, nursing homes, and residential board and care occupancies where persons can be lawfully detained. **[101:A.6.1.7.1]**

See A.22.1.1.1.6 and A.23.1.1.1.6 of NFPA 101. **[101:A.6.1.7.1]**

#### **6.1.7.2 \*Nonresidential Uses.**

Within detention and correctional facilities, uses other than residential housing shall be in accordance

with the appropriate chapter of this *Code* and NFPA 101. (See 22.1.32.3 and 23.1.32.3 of NFPA 101.) [101:6.1.7.2]

#### **A.6.1.11.1**

**Business Occupancy.** Business occupancies include the following:

- (1) Airport traffic control towers (ATCTs)
- (2) City halls
- (3) College and university instructional buildings, classrooms under 50 persons, and instructional laboratories
- (4) Courthouses
- (5) Dentists' offices
- (6) Doctors' offices
- (7) General offices
- (8) Outpatient clinics (ambulatory)
- (9) Town halls

[101:A.6.1.11.1]

Doctors' and dentists' offices are included, unless of such character as to be classified as ambulatory health care occupancies. (See 3.3.1988.1 of NFPA 101.) [101:A.6.1.11.1]

Birth centers should be classified as business occupancies if they are occupied by fewer than four patients, not including infants, at any one time; do not provide sleeping facilities for four or more occupants; and do not provide treatment procedures that render four or more patients, not including infants, incapable of self-preservation at any one time. For birth centers occupied by patients not meeting these parameters, see Chapter 18 or Chapter 19 of NFPA 101, as appropriate. [101:A.6.1.11.1]

Service facilities common to city office buildings, such as newsstands, lunch counters serving fewer than 50 persons, barber shops, and beauty parlors are included in the business occupancy group.

[101:A.6.1.11.1]

City halls, town halls, and courthouses are included in this occupancy group, insofar as their principal function is the transaction of public business and the keeping of books and records. Insofar as they are used for assembly purposes, they are classified as assembly occupancies. [101:A.6.1.11.1]

#### **6.1.14.1.1\***

Multiple occupancies shall comply with the requirements of 6.1.14.1 and one of the following:

- (1) Mixed occupancies — 6.1.14.3
- (2) Separated occupancies — 6.1.14.4

[101:6.1.14.1.1]

#### **A.6.1.14.1.1**

Where a building is subdivided for occupancy by multiple tenants, the presence of rated fire barriers

between occupancies and independent exit access for each occupancy does not mandate the use of the separated occupancy provisions of 6.1.14.4. [101:A.6.1.14.1.1]

### **6.1.14.3.2\***

The building shall comply with the most restrictive requirements of the occupancies involved, unless separate safeguards are approved. [101:6.1.14.3.2]

### **A.6.1.14.3.2**

For example, a common path of travel that occurs wholly in a business tenant space, in a multiple occupancy building containing assembly and business occupancies, should not have to meet the assembly occupancy common path of travel limitation. [101:A.6.1.14.3.2]

### **6.1.14.4.1**

Where separated occupancies are provided, each part of the building comprising a distinct occupancy, as described in this chapter, shall be completely separated from other occupancies by fire-barriers, as specified in 6.1.14.4.2, 6.1.14.4.3, and Table 6.1.14.4.1(a) and Table 6.1.14.4.1(b), unless separation is provided by approved existing separations or as otherwise permitted by 6.1.14.4.6. [101:6.1.14.4.1]

**1Table 6.1.14.4.1(a) Required Separation of Occupancies (hours),\*‡ Part 1**

Occupancy	Assembly ≤300	Assembly >300 to ≤1000	Assembly >1000	Educational	Day-Care >12 Clients	Day-Care Home	Health Care	Ambulatory Health Care	Detention & Correctional	One- & Two-Family Dwellings	Lodging or Rooming Houses	Hotels & Dormitories
Assembly ≤300	—	0	0	2	2	1	2 <sup>†</sup> ‡	2	2 <sup>‡‡</sup>	2	2	2
Assembly >300 to ≤1000	0	—	0	2	2	2	2 <sup>‡</sup> ‡	2	2 <sup>‡‡</sup>	2	2	2
Assembly >1000	0	0	—	2	2	2	2 <sup>‡</sup> ‡	2	2 <sup>‡‡</sup>	2	2	2
Educational	2	2	2	—	2	2	2 <sup>‡</sup> ‡	2	2 <sup>‡‡</sup>	2	2	2
Day-Care	2	2	2	2	—	1	2 <sup>‡</sup> ‡	2	2 <sup>‡‡</sup>	2	2	2

<b>&gt;12 Clients</b>												
<b>Day-Care Homes</b>	1	2	2	2	1	—	2 <sup>#</sup> +	2	2 <sup>#</sup>	2	2	2
<b>Health Care</b>	2 <sup>#</sup>	—	2 <sup>#</sup>									
<b>Ambulatory Health Care</b>	2	2	2	2	2	2	2 <sup>#</sup> +	—	2 <sup>#</sup>	2	2	2
<b>Detention &amp; Correctional</b>	2 <sup>#</sup>	2 <sup>#</sup> +	2 <sup>#</sup>	—	2 <sup>#</sup>	2 <sup>#</sup>	2 <sup>#</sup>					
<b>One- &amp; Two-Family Dwellings</b>	2	2	2	2	2	2	2 <sup>#</sup> +	2	2 <sup>#</sup>	—	1	1
<b>Lodging or Rooming Houses</b>	2	2	2	2	2	2	2 <sup>#</sup> +	2	2 <sup>#</sup>	1	—	1
<b>Hotels &amp; Dormitories</b>	2	2	2	2	2	2	2 <sup>#</sup> +	2	2 <sup>#</sup>	1	1	—
<b>Apartment Buildings</b>	2	2	2	2	2	2	2 <sup>#</sup> +	2	2 <sup>#</sup>	1	1	1
<b>Board &amp; Care, Small</b>	2	2	2	2	2	2	2 <sup>#</sup> +	2	2 <sup>#</sup>	1	2	2
<b>Board &amp; Care, Large</b>	2	2	2	2	2	2	2 <sup>#</sup> +	2	2 <sup>#</sup>	2	2	2
<b>Merca ntile</b>	2	2	2	2	2	2	2 <sup>#</sup> +	2	2 <sup>#</sup>	2	2	2

<b>Merca ntile, Mall</b>	2	2	2	2	2	2	2 <sup>#</sup> +	2	2 <sup>#</sup> +	2	2	2
<b>Merca ntile, Bulk Retail</b>	3	3	3	3	3	3	2 <sup>#</sup> +	2 <sup>#</sup> +	2 <sup>#</sup> +	3	3	3
<b>Busin ess</b>	1	2	2	2	2	2	2 <sup>#</sup> +	1	2 <sup>#</sup> +	2	2	2
<b>Indust rial, Gener al Purpo se</b>	2	2	3	3	3	3	2 <sup>#</sup> +	2	2 <sup>#</sup> +	2	2	2
<b>Indust rial, Specia l- Purpo se</b>	2	2	2	3	3	3	2 <sup>#</sup> +	2	2 <sup>#</sup> +	2	2	2
<b>Indust rial, High Hazar d</b>	3	3	3	3	3	3	2 <sup>#</sup> +	2 <sup>#</sup> +	NP	3	3	3
<b>Storag e, Low &amp; Ordin ary Hazar d</b>	2	2	3	3	3	2	2 <sup>#</sup> +	2	2 <sup>#</sup> +	2	2	2
<b>Storag e, High Hazar d</b>	3	3	3	3	3	3	2 <sup>#</sup> +	2‡	NP	3	3	3

NP: Not permitted.

<sup>#</sup>\* *Minimum Fire Resistance Rating.* The fire resistance rating is permitted to be reduced by 1 hour, but in no case to less than 1 hour, where the building is protected throughout by an approved automatic sprinkler system in accordance with NFPA 13 and supervised in accordance with 13.3.1.8.

<sup>‡</sup># The 1-hour reduction due to the presence of sprinklers in accordance with the ~~single-dagger asterisk~~ footnote is not permitted.

[101:Table 6.1.14.4.1(a)]

2Table 6.1.14.4.1(b) Required Separation of Occupancies (hours)\*‡, Part 2

Occupancy	Apart ment Buildi ngs	Bo ard & Bo ard & Car e, Sm all	Bo ard & Bo ard & Car e, Lar ge	Merc antile	Merca ntile, Mall	Merca ntile, Bulk Retail	Busi ness	Indus trial, Gene ral Purp ose	Indus trial, Speci al-Pur pose	Indus trial, High Hazar d	Stor age, Low & Ordi nary Haza rd	Stor age, High Haz ard
Assem bly ≤ 300	2	2	2	2	2	3	1	2	2	3	2	3
Assem bly >300 to ≤1000	2	2	2	2	2	3	2	2	2	3	2	3
Assem bly >1000	2	2	2	2	2	3	2	3	2	3	3	3
Educa tional	2	2	2	2	2	3	2	3	3	3	3	3
Day- Care >12 Cli ents	2	2	2	2	2	3	2	3	3	3	3	3
Day- Care Homes	2	2	2	2	2	3	2	3	3	3	2	3
Health Care	2‡‡	2‡ ‡	2‡ ‡	2‡‡	2‡‡	2‡‡	2‡‡	2‡‡	2‡‡	2‡‡	2‡‡	2‡‡
Ambul atory Health Care	2	2	2	2	2	2‡‡	1	2	2	2‡‡	2	2‡‡
Detent ion & Correc tional	2‡‡	2‡ ‡	2‡ ‡	2‡‡	2‡‡	2‡‡	2‡‡	2‡‡	NP	2‡‡	NP	
One- & Two- Family Dwell ings	1	1	2	2	2	3	2	2	2	3	2	3

<b>Lodging or Rooming Houses</b>	1	2	2	2	2	3	2	2	2	3	2	3
<b>Hotels &amp; Dormitories</b>	1	2	2	2	2	3	2	2	2	3	2	3
<b>Apart ment Buildings</b>	—	2	2	2	2	3	2	2	2	3	2	3
<b>Board &amp; Care, Small</b>	2	—	1	2	2	3	2	3	3	3	3	3
<b>Board &amp; Care, Large</b>	2	1	—	2	2	3	2	3	3	3	3	3
<b>Merca ntile</b>	2	2	2	—	0	3	2	2	2	3	2	3
<b>Merca ntile, Mall</b>	2	2	2	0	—	3	2	3	3	3	2	3
<b>Merca ntile, Bulk Retail</b>	3	3	3	3	3	—	2	2	2	3	2	2
<b>Business</b>	2	2	2	2	2	2	—	2	2	2	2	2
<b>Industrial, General Purpose</b>	2	3	3	2	3	2	2	—	1	1	1	1
<b>Industrial, Special - Purpose</b>	2	3	3	2	3	2	2	1	—	1	1	1
<b>Industrial,</b>	3	3	3	3	3	3	2	1	1	—	1	1

High Hazard											
<b>Storage, Low &amp; Ordinary Hazard</b>	2	3	3	2	2	2	2	1	1	1	—
<b>Storage, High Hazard</b>	3	3	3	3	3	2	2	1	1	1	—

NP: Not permitted.

*\*‡Minimum Fire Resistance Rating.* The fire resistance rating is permitted to be reduced by 1 hour, but in no case to less than 1 hour, where the building is protected throughout by an approved automatic sprinkler system in accordance with NFPA 13 and supervised in accordance with 13.3.1.8.

*†‡The 1-hour reduction due to the presence of sprinklers in accordance with the single-dagger asterisk footnote is not permitted.*

[101:Table 6.1.14.4.1(b)]

#### 6.1.14.4.2

Occupancy separation fire barriers shall be classified as 3-hour ~~fire-fire~~-resistance-rated, 2-hour ~~fire~~ ~~fire~~-resistance-rated, or 1-hour ~~fire-fire~~-resistance-rated and shall meet the requirements of Chapter 8 of NFPA 101. [101:6.1.14.4.2]

#### 6.1.14.4.3

The fire barrier minimum fire resistance rating specified in Table 6.1.14.4.1(a) and Table 6.1.14.4.1(b) shall be permitted to be reduced by 1 hour, but in no case shall it be reduced to less than 1 hour, where the building is protected throughout by an approved automatic sprinkler system in accordance with NFPA 13 and supervised in accordance with 13.3.1.8, unless prohibited by the double-dagger footnote entries in the tables. [101:6.1.14.4.3]

#### A.6.1.14.4.5

Where the *Code* text states that the provision has applicability to the building, rather than just to the occupancy, the provision applies to the entire building, regardless of whether the separated occupancies form of protection is used. For example, the provision of 18.3.5.1 of NFPA 101 requires that the entire building housing a health care occupancy be sprinklered. Contrast that with the requirement of 20.3.4.1 of NFPA 101, which requires an ambulatory health care facility, and not the entire building, to be provided with a fire alarm system. [101:A.6.1.14.4.5]

#### 10.5.2 \*Drill Frequency.

Emergency egress and relocation drills, where required by Chapter 20 of this *Code* or Chapters 11 through 432 of NFPA 101, or the AHJ, shall be held with sufficient frequency to familiarize occupants

with the drill procedure and to establish conduct of the drill as a matter of routine. Drills shall include suitable procedures to ensure that all persons subject to the drill participate. [101:4.7.2]

### **A.10.5.2**

If an emergency egress and relocation drill is considered merely as a routine exercise from which some persons are allowed to be excused, there is a grave danger that, in an actual emergency, the evacuation and relocation will not be successful. However, there might be circumstances under which all occupants do not participate in an emergency egress and relocation drill, for example, infirm or bedridden patients in a health care occupancy. [101:A.4.7.2]

### **A.10.8.2.1(3)**

It is assumed that a majority of buildings will use a total evacuation strategy during a fire. It should be noted that evacuation from a building could occur for reasons other than a fire, but such other reasons are not the primary focus of the *Code*. As used herein, total evacuation is defined as the process in which all, or substantially all, occupants leave a building or facility in either an unmanaged or managed sequence or order. An alternative to total evacuation, is partial evacuation, which can be defined as the process in which a select portion of a building or facility is cleared or emptied of its occupants while occupants in other portions mostly carry on normal activity. In either case, the evacuation process can be ordered or managed in accordance with an established priority in which some or all occupants of a building or facility clear their area and utilize means of egress routes. This is typically done so that the more endangered occupants are removed before occupants in less endangered areas. Alternative terms describing this sequencing or ordering of evacuation are *staged evacuation* and *phased evacuation*.

[101:A.4.8.2.1(3)]

Table A.10.8.2.1(3) illustrates options for extent of management and extent of evacuation. Some of the options shown might not be appropriate. As noted in Table A.10.8.2.1(3), either total or partial evacuation can include staged (zoned) evacuation or phased evacuation, which is referred to as managed or controlled evacuation. It should also be noted that the evacuation process might not include relocation to the outside of the building but might instead include relocation to an area of refuge or might defend the occupants in place to minimize the need for evacuation. [101:A.4.8.2.1(3)]

**Table A.10.8.2.1(3) Occupant Evacuation Strategies**

<b>Extent of Evacuation</b>	<b>Extent of Management</b>	
	<b>Managed Sequence</b>	<b>Unmanaged Sequence</b>
Shelter in place	No movement — shelter in place upon direction	No movement — shelter in place per prior instruction
Relocation or partial evacuation	Managed or controlled partial evacuation <ul style="list-style-type: none"><li>• In-building relocation on same floor</li><li>• In-building relocation to different floors</li><li>• Occupants of some floors leave building</li></ul>	Unmanaged movement

Total evacuation	Managed or controlled total evacuation	Unmanaged or uncontrolled total evacuation
------------------	--	--

[101:-Table A.4.8.2.1(3)]

The different methods of evacuation are also used in several contexts throughout NFPA 101. Though most of the methods of evacuation are not specifically defined or do not have established criteria, various sections of NFPA 101 promulgate them as alternatives to total evacuation. The following sections of NFPA 101 discuss these alternatives in more detail:

- (1) Section 4.7 — Provides requirements for fire and relocation drills
- (2) 7.2.12 — Provides requirements for area of refuge
- (3) 7.2.4 — Provides requirements for horizontal exits
- (4) 9.6.3.76 — Provides the alarm signal requirements for different methods of evacuation
- (5) 9.6.3.109 — Permits automatically transmitted or live voice evacuation or relocation instructions to occupants and requires them in accordance with *NFPA 72*
- (6) 14.3.4.2.3 (also Chapter 15) — Describes alternative protection systems in educational occupancies
- (7) 18.1.1.2/18.1.1.3/Section 18.7 (also Chapter 19) — Provide methods of evacuation for health care occupancies
- (8) Chapters 22 and 23 — Provide methods of evacuation for detention and correctional occupancies, including the five groups of resident user categories
- (9) Chapters 32 and 33 — Provide methods of evacuation for residential board and care occupancies
- (10) 32.1.5/33.1.5 — For residential board and care occupancies, state that “no means of escape or means of egress shall be considered as complying with the minimum criteria for acceptance, unless emergency evacuation drills are regularly conducted”
- (11) 40.2.5.2.2 — For industrial occupancies, states that “ancillary facilities in special-purpose industrial occupancies where delayed evacuation is anticipated shall have not less than a 2-hour ~~fire~~fire-resistance-rated separation from the predominant industrial occupancy and shall have one means of egress that is separated from the predominant industrial occupancy by 2-hour ~~fire~~fire-resistance-rated construction”

[101:A.4.8.2.1(3)]

The method of evacuation should be accomplished in the context of the physical facilities, the type of activities undertaken, and the provisions for the capabilities of occupants (and staff, if available). Therefore, in addition to meeting the requirements of the *Code*, or when establishing an equivalency or a performance-based design, the following recommendations and general guidance information should be taken into account when designing, selecting, executing, and maintaining a method of evacuation:

- (1) When choosing a method of evacuation, the available safe egress time (ASET) must always be greater than the required safe egress time (RSET).
- (2) The occupants' characteristics will drive the method of evacuation. For example, occupants might be incapable of evacuating themselves because of age, physical or mental disabilities, physical restraint, or a combination thereof. However, some buildings might be staffed with people who could assist in evacuating. Therefore, the method of evacuation is dependent on

the ability of occupants to move as a group, with or without assistance. For more information, see the definitions under the term *Evacuation Capability* in Chapter 3 of NFPA 101.

- (3) An alternative method of evacuation might or might not have a faster evacuation time than a total evacuation. However, the priority of evacuation should be such that the occupants in the most danger are given a higher priority. This prioritization will ensure that occupants more intimate with the fire will have a faster evacuation time.
- (4) Design, construction, and compartmentation are also variables in choosing a method of evacuation. The design, construction, and compartmentation should limit the development and spread of a fire and smoke and reduce the need for occupant evacuation. The fire should be limited to the room or compartment of fire origin. Therefore, the following factors need to be considered:
  - (a) Overall fire resistance rating of the building
  - (b) Fire-rated compartmentation provided with the building
  - (c) Number and arrangement of the means of egress
- (5) Fire safety systems should be installed that complement the method of evacuation and should include consideration of the following:
  - (a) Detection of fire
  - (b) Control of fire development
  - (c) Confinement of the effects of fire
  - (d) Extinguishment of fire
  - (e) Provision of refuge or evacuation facilities, or both
- (6) One of the most important fire safety systems is the fire alarm and communications system, particularly the notification system. The fire alarm system should be in accordance with NFPA 72 and should take into account the following:
  - (a) Initial notification of only the occupants in the affected zone(s) (e.g., zone of fire origin and adjacent zones)
  - (b) Provisions to notify occupants in other unaffected zones to allow orderly evacuation of the entire building
  - (c) Need for live voice communication
  - (d) Reliability of the fire alarm and communications system
- (7) The capabilities of the staff assisting in the evacuation process should be considered in determining the method of evacuation.
- (8) The ability of the fire department to interact with the evacuation should be analyzed. It is important to determine if the fire department can assist in the evacuation or if fire department operations hinder the evacuation efforts.
- (9) Evacuation scenarios for hazards that are normally outside of the scope of the *Code* should be considered to the extent practicable. (See 4.3.1 of NFPA 101.)
- (10) Consideration should be given to the desire of the occupants to self-evacuate, especially if the nature of the building or the fire warrants evacuation in the minds of the occupants. Self-evacuation might also be initiated by communication between the occupants themselves through face-to-face contact, mobile phones, and so forth.
- (11) An investigation period, a delay in the notification of occupants after the first activation of the fire alarm, could help to reduce the number of false alarms and unnecessary evacuations. However, a limit to such a delay should be established before a general alarm is sounded, such as positive alarm sequence as defined in NFPA 72.

- (12) Consideration should be given to the need for an evacuation that might be necessary for a scenario other than a fire (e.g., bomb threat, earthquake).
- (13) Contingency plans should be established in the event the fire alarm and communication system fail, which might facilitate the need for total evacuation.
- (14) The means of egress systems should be properly maintained to ensure the dependability of the method of evacuation.
- (15) Fire prevention policies or procedures, or both, should be implemented that reduce the chance of a fire (e.g., limiting smoking or providing fire-safe trash cans).
- (16) The method of evacuation should be properly documented, and written forms of communication should be provided to all of the occupants, which might include sign postings throughout the building. Consideration should be given to the development of documentation for an operation and maintenance manual or a fire emergency plan, or both.
- (17) Emergency egress drills should be performed on a regular basis. For more information, see Section 4.7 of NFPA 101.
- (18) The AHJ should also be consulted when developing the method of evacuation.

**[101:A.4.8.2.1(3)]**

Measures should be in place and be employed to sequence or control the order of a total evacuation, so that such evacuations proceed in a reasonably safe, efficient manner. Such measures include special attention to the evacuation capabilities and needs of occupants with disabilities, either permanent or temporary. For comprehensive guidance on facilitating life safety for such populations, go to [www.nfpa.org](http://www.nfpa.org). For specific guidance on stair travel devices, see ANSI/RESNA ED-1, *Emergency Stair Travel Devices Used by Individuals with Disabilities*. **[101:A.4.8.2.1(3)]**

In larger buildings, especially high-rise buildings, it is recommended that all evacuations — whether partial or total — be managed to sequence or control the order in which certain occupants are evacuated from their origin areas and to make use of available means of egress. In high-rise buildings, the exit stairs, at any level, are designed to accommodate the egress flow of only a very small portion of the occupants — from only one or a few stories, and within a relatively short time period — on the order of a few minutes. In case of a fire, only the immediately affected floor(s) should be given priority use of the means of egress serving that floor(s). Other floors should then be given priority use of the means of egress, depending on the anticipated spread of the fire and its combustion products, and for the purpose of clearing certain floors to facilitate eventual fire service operations. Typically, this means that the one or two floors above and below a fire floor will have secondary priority immediately after the fire floor. Depending on where combustion products move, for example, upward through a building with cool-weather stack effect, the next priority floors will be the uppermost occupied floors in the building. **[101:A.4.8.2.1(3)]**

Generally, in order to minimize evacuation time for most or all of a relatively tall building to be evacuated, occupants from upper floors should have priority use of exit stairs. For people descending many stories of stairs, this priority will maximize their opportunity to take rest stops without unduly extending their overall time to evacuate a building. Thus, the precedence behavior of evacuees should be that people already in an exit stair should normally not defer to people attempting to enter the exit stair from lower floors, except for those lower floors most directly impacted by a fire or other imminent

danger. Notably, this is contrary to the often observed behavior of evacuees in high-rise building evacuations where lower floor precedence behavior occurs. (Similarly, in the most commonly observed behavior of people normally disembarking a passenger airliner, people within the aisle defer to people entering the aisle, so that the areas closest to the exit typically clear first.) Changing, and generally managing, the sequence or order within which egress occurs will require effectively informing building occupants and evaluating resulting performance in a program of education, training, and drills.

[101:A.4.8.2.1(3)]

When designing the method of evacuation for a complex building, all forms of egress should be considered. For example, consideration could be given to an elevator evacuation system. An elevator evacuation system involves an elevator design that provides protection from fire effects so that elevators can be used safely for egress. See 7.2.13 and A.7.2.12.2.4 of NFPA 101 for more information.

[101:A.4.8.2.1(3)]

For further guidance, see the following publications:

- (1) *SFPE Engineering Guide to Human Behavior in Fire*, which provides information on occupant characteristics, response to fire cues, decision making in fire situations, and methods for predicting evacuation time
- (2) *NFPA Fire Protection Handbook*, 20th edition, Section 1, Chapter 9, which provides good methodology for managing exposures and determining the method of evacuation
- (3) *NFPA Fire Protection Handbook*, 20th edition, Section 20, which provides further commentary on methods of evacuation for different occupancies
- (4) *SFPE Handbook of Fire Protection Engineering*, Volume II, Chapters 58–61, which provide an overview of some of the research on methods of evacuation and methods for predicting evacuation times

[101:A.4.8.2.1(3)]

### **10.8.2.3\***

Emergency action plans shall be reviewed and updated as required by the AHJ. [101:4.8.2.3]

#### **A.10.8.2.3**

Emergency action plans are a critical component of assuringensuring life safety in buildings. Life safety is the result of an interaction of technical and social systems within the building and in the community. Gathering information to evaluate the performance and effectiveness of emergency action plans is important for verifying system performance and as a basis for improvement. Such reports should be retained by building management and used to inform the process for revision of the building emergency action plan. [101:A.4.8.2.3]

Following any drill or actual emergency or reported emergency occurring in the building, an after action report should be prepared by the building owner or designated representative to document the function of the building's life safety hardware, procedures, and occupant emergency organization. [101:A.4.8.2.3]

For ordinary drills and reported emergencies, areas of success and areas for improvement should be

identified. [101:A.4.8.2.3]

For actual emergencies in the building, where there is major occupant movement, damage, or casualties, additional information should be collected. This includes questions concerning the event, as well as performance of life safety systems. It also identifies improvements in areas such as training, maintenance, interaction with local emergency response organizations, or occupant management. The reports from these significant events should be shared with the local emergency response organization. [101:A.4.8.2.3]

### **A.10.11.3**

Figure A.10.11.3 shows an example of a stairway marking sign. [101:A.7.2.2.5.4]

#### **Figure A.10.11.3 Example of a Stairway Marking Sign. [101:Figure A.7.2.2.5.4]**

\*\*\*\*INSERT FIGURE\*\*\*\*

#### **10.11.3.1.7**

The bottom of the signage shall be located a minimum of 48 in. (1220 mm) above the floor landing, and the top of the signage shall be located a maximum of 84 in. (2135 mm) above the floor landing. [101:7.2.2.5.4.1(G)]

#### **10.11.3.1.10**

The floor level designation shall also be tactile in accordance with ICC/ANSI A117.1, *Accessible and Usable Buildings and Facilities*. [101:7.2.2.5.4.1(J)]

#### **10.11.3.1.16**

Previously approved, existing signage shall not be required to comply with 10.11.3.1.12 through 10.11.3.1.15. [101:7.2.2.5.4.1(P)]

### **A.10.11.3.3**

Where environmental conditions (such as illumination levels and directionality or a complex visual field that draws a person's attention away from stair treads) lead to a hazardous reduction in one's ability to perceive stair treads, they should be made of a material that allows ready discrimination of the number and position of treads. In all cases, the leading edges of all treads should be readily visible during both ascent and descent. A major factor in injury-producing stair accidents, and in the ability to use stairs efficiently in conditions such as egress, is the clarity of the stair treads as separate stepping surfaces. [101:A.7.2.2.5.4.3]

For stair nosing marking, surface-applied material, such as adhesive-backed tape and magnetic strips, should not be used, as it is not durable under the scuffing from users' feet and, in coming loose, it creates a tripping hazard. While a carefully applied and consistently maintained coating is acceptable, contrasting color or photoluminescent material integral with the nosings is preferable because of its permanence. It is also the intent of 10.11.3.3 to require the contrasting stairway tread marking to be a

material integral with the stair tread and not a material integral with a stair nosing product that is installed on the stair tread. See also 7.1.6.4 and 7.2.2.3.6 of NFPA 101 for slip resistance uniformity requirements, as well as prohibition of projections on the treads. [101:A.7.2.2.5.4.3]

Guidance on the use of photoluminescent marking is provided by ASTM E2030, *Standard Guide for Recommended Uses of Photoluminescent (Phosphorescent) Safety Markings*. Additional marking, for example, at the side boundaries of the stair, should be applied in accordance with the guidance provided therein. [101:A.7.2.2.5.4.3]

#### **10.11.3.4 \***

Where new contrast marking is provided for stairway handrails, it shall be applied to, or be part of, at least the upper surface of the handrail; have a minimum width of  $1/2$  in. (13 mm); and extend the full length of each handrail. After marking, the handrail shall comply with 7.2.2.4.54 of NFPA 101. Where handrails or handrail extensions bend or turn corners, the stripe shall be permitted to have a gap of not more than 4 in. (100 mm).[101:7.2.2.5.4.4]

### **10.13 Combustible Vegetation**

#### **10.13.1 Interior Vegetation.**

Interior vegetation shall comply with 12.6.9.

#### **10.13.10-2 Exterior Vegetation.**

##### **10.13.102.1**

Cut or uncut weeds, grass, vines, and other vegetation shall be removed when determined by the AHJ to be a fire hazard.

##### **10.13.102.2**

When the AHJ determines that total removal of growth is impractical due to size or environmental factors, approved fuel breaks shall be established.

##### **10.13.102.3**

Designated areas shall be cleared of combustible vegetation to establish the fuel breaks.

#### **10.14.3.1 \*General.**

Where a life safety evaluation is required by other provisions of the *Code*, it shall comply with all of the following:

- (1) The life safety evaluation shall be performed by persons acceptable to the AHJ.
- (2) The life safety evaluation shall include a written assessment of safety measures for conditions listed in 10.14.3.2 and of the building systems and facility management in accordance with 10.14.3.3.

- (3) The life safety evaluation shall be approved annually and shall be updated for special or unusual conditions in accordance with the provisions of 13.4.[24](#) of NFPA 101 for existing assembly occupancies.

[101:12.4.[24](#).1]

#### **A.10.14.3.1**

Life safety evaluations are examples of performance-based approaches to life safety. In this respect, significant guidance in the form and process of life safety evaluations is provided by Chapter 5 of NFPA 101, keeping in mind the fire safety emphasis in Chapter 5 of NFPA 101. Performance criteria, scenarios, evaluation, safety factors, documentation, maintenance, and periodic assessment (including a warrant of fitness) all apply to the broader considerations in a life safety evaluation. A life safety evaluation deals not only with fire but also with storms, collapse, crowd behavior, and other related safety considerations for which a checklist is provided in A.10.14.3.3. Chapter 5 of NFPA 101 provides guidance, based on fire safety requirements, for establishing a documented case showing that products of combustion in all conceivable fire scenarios will not significantly endanger occupants using means of egress in the facility (for example, due to fire detection, automatic suppression, smoke control, large-volume space, or management procedures). Moreover, means of egress facilities plus facility management capabilities should be adequate to cope with scenarios where certain egress routes are blocked for some reason. [101:A.12.4.[24](#).1]

In addition to making realistic assumptions about the capabilities of persons in the facility (e.g., an assembled crowd including many disabled persons or persons unfamiliar with the facility), the life safety evaluation should include a factor of safety of not less than 2.0 in all calculations relating to hazard development time and required egress time (the combination of flow time and other time needed to detect and assess an emergency condition, initiate egress, and move along the egress routes). The factor of safety takes into account the possibility that half of the egress routes might not be used (or be usable) in certain situations. [101:A.12.4.[24](#).1]

Regarding crowd behavior, the potential hazards created by larger masses of people and greater crowd densities (which can be problematic during ingress, occupancy, and egress) demand that technology be used by designers, managers, and authorities responsible for buildings to compensate for the relaxed egress capacity provisions of Table 12.4.[32](#).3 of NFPA 101. In very large buildings for assembly use, the hazard of crowd crushes can exceed that of fire or structural failure. Therefore, the building designers, managers, event planners, security personnel, police authorities, and fire authorities, as well as the building construction authorities, should understand the potential problems and solutions, including coordination of their activities. For crowd behavior, this understanding includes factors of space, energy, time, and information, as well as specific crowd management techniques, such as metering. Published guidance on these factors and techniques is found in the *SFPE Handbook of Fire Protection Engineering*, Chapter 56, Egress Concepts and Design Approaches; Chapter 58, Human Behavior in Fire; and Chapter 59, Employing the Hydraulic Model in Assessing Emergency Movement; the SFPE Guide to Human Behavior in Fire; Section 3, Chapter 13, pp. 3-342–3-366 (Proulx, G., “Movement of People”), and the publications referenced therein. [101:A.12.4.[24](#).1]

Table 12.2.3.2 and Table 12.4.[32](#).3 of NFPA 101 are based on a linear relationship between number of

seats and nominal flow time, with not less than 200 seconds (3.3 minutes) for 2000 seats plus 1 second for every additional 50 seats up to 25,000. Beyond 25,000 total seats, the nominal flow time is limited to 660 seconds (11 minutes). Nominal flow time refers to the flow time for the most able group of patrons; some groups less familiar with the premises or less able groups might take longer to pass a point in the egress system. Although three or more digits are noted in the tables, the resulting calculations should be assumed to provide only two significant figures of precision. [101:A.12.4.24.1]

#### **10.14.3.2 \*Conditions to Be Assessed.**

Life safety evaluations shall include an assessment of all of the following conditions and related appropriate safety measures:

- (1) Nature of the events and the participants and attendees
- (2) Access and egress movement, including crowd density problems
- (3) Medical emergencies
- (4) Fire hazards
- (5) Permanent and temporary structural systems
- (6) Severe weather conditions
- (7) Earthquakes
- (8) Civil or other disturbances
- (9) Hazardous materials incidents within and near the facility
- (10) Relationships among facility management, event participants, emergency response agencies, and others having a role in the events accommodated in the facility

[101:12.4.24.2]

#### **A.10.14.3.2**

*The SFPE Engineering Guide to Fire Risk Assessment provides a methodology for evaluating the fire risks associated with the conditions outlined in 10.14.3.2.*

#### **10.14.3.3 \*Building Systems and Facility Management Assessments.**

Life safety evaluations shall include assessments of both building systems and facility management upon which reliance is placed for the safety of facility occupants, and such assessments shall consider scenarios appropriate to the facility. [101:12.4.24.3]

#### **A.10.14.3.3**

Factors to be considered in a life safety evaluation include the following:

- (1) Nature of the events being accommodated, including the following:
  - (a) Ingress, intra-event movement, and egress patterns
  - (b) Ticketing and seating policies/practices
  - (c) Event purpose (e.g., sports contest, religious meeting)
  - (d) Emotional qualities (e.g., competitiveness) of event
  - (e) Time of day when event is held
  - (f) Time duration of single event
  - (g) Time duration of attendees' occupancy of the building
- (2) Occupant characteristics and behavior, including the following:

- (a) Homogeneity
  - (b) Cohesiveness
  - (c) Familiarity with building
  - (d) Familiarity with similar events
  - (e) Capability (as influenced by factors such as age, physical abilities)
  - (f) Socioeconomic factors
  - (g) Small minority involved with recreational violence
  - (h) Emotional involvement with the event and other occupants
  - (i) Use of alcohol or drugs
  - (j) Food consumption
  - (k) Washroom utilization
- (3) Management, including the following:
- (a) Clear, contractual arrangements for facility operation/use as follows:
    - i. Between facility owner and operator
    - ii. Between facility operator and event promoter
    - iii. Between event promoter and performer
    - iv. Between event promoter and attendee
    - v. With police forces
    - vi. With private security services
    - vi. With ushering services
  - (b) Experience with the building
  - (c) Experience with similar events and attendees
  - (d) Thorough, up-to-date operations manual
  - (e) Training of personnel
  - (f) Supervision of personnel
  - (g) Communications systems and utilization
  - (h) Ratios of management and other personnel to attendees
  - (i) Location/distribution of personnel
  - (j) Central command location
  - (k) Rapport between personnel and attendees
  - (l) Personnel support of attendee goals
  - (m) Respect of attendees for personnel due to the following:
    - i. Dress (uniform) standards
    - ii. Age and perceived experience
    - iii. Personnel behavior, including interaction
    - iv. Distinction between crowd management and control
    - v. Management concern for facility quality (e.g., cleanliness)
    - vi. Management concern for entire event experience of attendees (i.e., not just during the occupancy of the building)
- (4) Emergency management preparedness, including the following:
- (a) Complete range of emergencies addressed in operations manual
  - (b) Power loss
  - (c) Fire
  - (d) Severe weather
  - (e) Earthquake
  - (f) Crowd incident
  - (g) Terrorism
  - (h) Hazardous materials

- (i) Transportation accident (e.g., road, rail, air)
  - (j) Communications systems available
  - (k) Personnel and emergency forces ready to respond
  - (l) Attendees clearly informed of situation and proper behavior
- (5) Building systems, including the following:
- (a) Structural soundness
  - (b) Normal static loads
  - (c) Abnormal static loads (e.g., crowds, precipitation)
  - (d) Dynamic loads (e.g., crowd sway, impact, explosion, wind, earthquake)
  - (e) Stability of nonstructural components (e.g., lighting)
  - (f) Stability of movable (e.g., telescoping) structures
  - (g) Fire protection
  - (h) Fire prevention (e.g., maintenance, contents, housekeeping)
  - (i) Compartmentation
  - (j) Automatic detection and suppression of fire
  - (k) Smoke control
  - (l) Alarm and communications systems
  - (m) Fire department access routes and response capability
  - (n) Structural integrity
  - (o) Weather protection
  - (p) Wind
  - (q) Precipitation (attendees rush for shelter or hold up egress of others)
  - (r) Lightning protection
  - (s) Circulation systems
  - (t) Flowline or network analysis
  - (u) Waywinding and orientation
  - (v) Merging of paths (e.g., precedence behavior)
  - (w) Decision/branching points
  - (x) Route redundancies
  - (y) Counterflow, crossflow, and queuing situations
  - (z) Control possibilities, including metering
  - (aa) Flow capacity adequacy
  - (ab) System balance
  - (ac) Movement time performance
  - (ad) Flow times
  - (ae) Travel times
  - (af) Queuing times
  - (ag) Route quality
  - (ah) Walking surfaces (e.g., traction, discontinuities)
  - (ai) Appropriate widths and boundary conditions
  - (aj) Handrails, guardrails, and other rails
  - (ak) Ramp slopes
  - (al) Step geometries
  - (am) Perceptual aspects (e.g., orientation, signage, marking, lighting, glare, distractions)
  - (an) Route choices, especially for vertical travel
  - (ao) Resting/waiting areas
  - (ap) Levels of service (overall crowd movement quality)
  - (aq) Services

- (ar) Washroom provision and distribution
- (as) Concessions
- (at) First aid and EMS facilities
- (au) General attendee services

[101:A.12.4.21.3]

A scenario-based approach to performance-based fire safety is addressed in Chapter 5 of NFPA 101. In addition to using such scenarios and, more generally, the attention to performance criteria, evaluation, safety factors, documentation, maintenance, and periodic assessment required when the Chapter 5 of NFPA 101 option is used, life safety evaluations should consider scenarios based on characteristics important in assembly occupancies. These characteristics include the following:

- (1) Whether there is a local or mass awareness of an incident, event, or condition that might provoke egress
- (2) Whether the incident, event, or condition stays localized or spreads
- (3) Whether or not egress is desired by facility occupants
- (4) Whether there is a localized start to any egress or mass start to egress
- (5) Whether exits are available or not available

[101:A.12.4.21.3]

Examples of scenarios and sets of characteristics that might occur in a facility follow. [101:A.12.4.21.3]

*Scenario 1.* Characteristics: mass start, egress desired (by management and attendees), exits not available, local awareness. [101:A.12.4.21.3]

Normal egress at the end of an event occurs just as a severe weather condition induces evacuees at the exterior doors to retard or stop their egress. The backup that occurs in the egress system is not known to most evacuees, who continue to press forward, potentially resulting in a crowd crush.

[101:A.12.4.21.3]

*Scenario 2.* Characteristics: mass start, egress not desired (by management), exits possibly not available, mass awareness. [101:A.12.4.21.3]

An earthquake occurs during an event. The attendees are relatively safe in the seating area. The means of egress outside the seating areas are relatively unsafe and vulnerable to aftershock damage. Facility management discourages mass egress until the means of egress can be checked and cleared for use.

[101:A.12.4.21.3]

*Scenario 3.* Characteristics: local start, incident stays local, egress desired (by attendees and management), exits available, mass awareness. [101:A.12.4.21.3]

A localized civil disturbance (e.g., firearms violence) provokes localized egress, which is seen by attendees, generally, who then decide to leave also. [101:A.12.4.21.3]

*Scenario 4. Characteristics: mass start, egress desired (by attendees), incident spreads, exits not available, mass awareness. [101:A.12.4.24.3]*

In an open-air facility unprotected from wind, precipitation, and lightning, sudden severe weather prompts egress to shelter, but not from the facility. The means of egress congest and block quickly as people in front stop once they are under shelter while people behind them continue to press forward, potentially resulting in a crowd crush. [101:A.12.4.24.3]

These scenarios illustrate some of the broader factors to be taken into account when assessing the capability of both building systems and management features on which reliance is placed in a range of situations, not just fire emergencies. Some scenarios also illustrate the conflicting motivations of management and attendees, based on differing perceptions of danger and differing knowledge of hazards, countermeasures, and capabilities. Mass egress might not be the most appropriate life safety strategy in some scenarios, such as Scenario 2. [101:A.12.4.24.3]

Table A.10.14.3.3 summarizes the characteristics in the scenarios and provides a framework for developing other characteristics and scenarios that might be important for a particular facility, hazard, occupant type, event, or management. [101:A.12.4.24.3]

**Table A.10.14.3.3 Life Safety Evaluation Scenario Characteristics Matrix**

Scenario	Local Awareness	Mass Awareness	Incident Localized	Incident Spreads	Management		Occupants		Local Start	Mass Start	Exits Available	Exits Not Available	Other
					Egress Desired	Egress Not Desired	Egress Desired	Egress Not Desired					
1	X	—	—	—	X	—	X	—	—	X	—	X	—
2	—	X	—	—	—	X	—	—	—	X	—	X	—
3	—	X	X	—	X	—	X	—	X	—	X	—	—
4	—	X	—	X	—	—	X	—	—	X	—	X	—

[101:Table A.12.4.24.3]

### **10.14.3.3.1 Building Systems.**

Prior to issuance of the building permit, the design team shall provide the AHJ with building systems documentation in accordance with 10.14.3.4. [101:12.4.24.3.1]

### **10.14.3.3.2 Facility Management.**

Prior to issuance of the certificate of occupancy, the facility management shall provide the AHJ with facility management documentation in accordance with 10.14.3.5. [101:12.4.24.3.2]

### **10.14.3.3.3 Life Safety Evaluation.**

### **10.14.3.3.1**

Prior to issuance of the building permit, the persons performing the life safety evaluation shall confirm that the building systems provide safety measures. [101:12.4.24.3.3.1]

### **10.14.3.3.2**

Prior to issuance of the certificate of occupancy, the owner shall confirm that the facility management and operational plans provide appropriate safety measures. [101:12.4.24.3.3.2]

### **10.14.3.3.3**

The life safety evaluation shall be performed by persons acceptable to the ~~authority having jurisdictionAHJ~~. [101:12.4.24.3.3.3]

## **10.14.3.4 Life Safety Building Systems Document.**

The AHJ shall be provided with a life safety building systems document providing the information required in 10.14.3.4.2 through 10.14.3.4.4. [101:12.4.24.4.4]

### **10.14.3.4.1 Document Distribution.**

The persons performing the life safety evaluation, the AHJ, the A/E design team, and the building owner shall receive a copy of the life safety building systems document prior to issuance of the building permit. [101:12.4.24.4.1]

### **10.14.3.4.2 Life Safety Narrative.**

A life safety narrative shall be provided describing the following, as applicable:

- (1) Building occupancy, construction type, and intended uses and events
- (2) Building area and population capacity of the proposed facility
- (3) Principal fire and life safety features/strategies for the building, including the following, as applicable:
  - (a) Egress
  - (b) Access control
  - (c) Fire barriers, smoke barriers, and smoke partitions
  - (d) Fire suppression systems
  - (e) Smoke control/protection
  - (f) Fire detection and alarm
  - (g) PA system
  - (h) Emergency elevator operation
  - (i) Emergency power and lighting
  - (j) Provisions for patrons with disabilities
  - (k) Fire department access
  - (l) Fire/emergency command center
- (4) Exterior construction design parameters used/applied

[101:12.4.24.4.2]

#### **10.14.3.4.3 Life Safety Floor Plans.**

Life safety floor plans of each level shall be provided, as applicable, with the following:

- (1) Occupant load, exit location, egress capacity, main entrance/exit, horizontal exits, travel distance and exit discharge
- (2) Fire barriers, smoke barriers, and smoke partitions
- (3) Areas of ~~smoke-smoke~~-protected assembly occupancy
- (4) Separate ~~smoke-smoke~~-protected areas or zones
- (5) Areas of other occupancy type and separations
- (6) Unprotected vertical openings
- (7) Event plans for each anticipated type of event depicting the following:
  - (a) Seating configuration
  - (b) Exhibit booth layout
  - (c) Stage location
  - (d) Occupant load, egress capacity required, exits provided, and travel distance
  - (e) Any floor or stage use restrictions
  - (f) Plan and/or section drawing indicating where sprinkler protection is omitted
  - (g) Areas of refuge — interior and exterior

[101:12.4.24.4.3]

#### **10.14.3.4.4 Engineering Analysis and Calculations.**

Where active or passive smoke control is used, an engineering analysis shall be provided and shall include the following:

- (1) Smoke protection analysis to substitute the use of smoke-protected assembly seating as follows:
  - (a1) Performance-based design methods approved by the AHJ
  - (b2) Smoke control air requirements per NFPA 92
  - (c3) Smoke control assumptions, such as fire scenario description, fire size quantification, and smoke development/smoke movement analysis
  - (d4) Proposed testing protocol for smoke control system and pass/fail criteria
  - (e5) Timed egress analysis assumed flow rates and travel speeds
  - (f6) Assumed flow rates and travel speeds
- (2) Sprinkler protection calculations, including an engineering analysis substantiating locations in accordance with 12.3.5.313.3.2.7.313.3.2.6.3 where sprinkler protection would be ineffective due to height and combustible loading
- (3) Load diagram of rigging/load capacity of gridiron, fly loft, or long-span roof structure used for hanging overhead objects

[101:12.4.24.4.4]

### **10.14.3.5 Life Safety Management Document.**

The AHJ shall be provided with a life safety management document providing the information required in 10.14.3.5.2 through 10.14.3.5.7. [101:12.4.21.5]

#### **10.14.3.5.1 Document Distribution.**

The persons performing the life safety evaluation, the AHJ, the A/E design team and the building owner shall receive a copy of the life safety management document prior to issuance of the certificate of occupancy. [101:12.4.21.5.1]

#### **10.14.3.5.2 Facility Management and Operational Plans.**

Facility management and operational plans shall address the following, as applicable:

- (1) Best practices adopted or recognized
- (2) Emergency plans
- (3) Evacuation plans
- (4) Shelter-in-place plans, including capacities and protection considerations
- (5) Crowd management training plan
- (6) Safety plans, which include the following:
  - (a) Training plans
  - (b) Safety equipment plans
- (7) Fire alarm, smoke control system protocol, and testing plans
- (8) First aid or medical treatment plans, which include the following:
  - (a) Defined levels of service
  - (b) Standing orders adopted
  - (c) Supply and equipment plan
- (9) Housekeeping plans — biological, medical, hazardous materials cleaning
- (10) Emergency communication plans, which include the following:
  - (a) Chain of authority and incident command system employed
  - (b) Contact information for the following:
    - i. Venue personnel
    - ii. Emergency management and response organizations (such as fire, police, medical, utility, transportation, and key stakeholders)
  - (c) Communication systems
  - (d) Standard announcement for incidents or emergency situations
- (11) Risk and threat assessment for venue and surrounding area for the following:
  - (a) Severe weather
  - (b) Hazardous materials
  - (c) Terrorism
  - (d) Hostile intruder
- (12) Operating procedures and protocols for risks, such as the following:
  - (a) Severe weather preparedness and monitoring plans
  - (b) Hazardous materials incidence response plans
  - (c) Terrorism response plans
  - (d) Hostile intruder response plans
- (13) First responder response/arrival routes plans
- (14) Alcohol management plans
- (15) Food safety plans

- (16) Rigging and temporary performance structure, which includes the following:
  - (a) Design and safety review plans
  - (b) Emergency action plans
- (17) Chemical and hazardous materials information and data
- (18) Barrier and wall protection plans for motor sports or similar events

[101:12.4.24.5.2]

#### **10.14.3.5.3 Records.**

Records of the facility management plans, including procedures and location, shall be maintained, for the following:

- (1) Crowd management training
- (2) Safety training
- (3) Fire alarm, smoke control system maintenance, and test records
- (4) First aid or medical treatment and regulation compliance

[101:12.4.24.5.3]

#### **10.14.3.5.4 Building Systems Reference Guide.**

A building systems reference guide shall be provided in accordance with 10.14.3.5.4.1 through 10.14.3.5.4.3. [101:12.4.24.5.4]

##### **10.14.3.5.4.1**

A basic life safety building systems reference guide shall be developed and maintained.

[101:12.4.24.5.4.1]

##### **10.14.3.5.4.2**

The life safety building systems reference guide shall contain the important and key information for the venue management's use when planning events/activities for the safety of patrons, performers/participants, employees and vendors. [101:12.4.24.5.4.2]

##### **10.14.3.5.4.3**

The life safety building systems document in accordance with 10.14.3.4 shall be permitted to be used, and additionally the life safety building systems reference guide shall include the following, as applicable:

- (1) Occupant capacity of every space/room
- (2) Egress flow diagrams, including assumed flow rates, and capacities of all aisles and hallways, including public and nonpublic areas
- (3) Capacities of all exterior doors and/or choke points in immediate perimeter areas
- (4) Limitations or assumptions for ingress control that could be in place during an emergency egress/evacuation, including control gates, queuing barriers, and turnstiles
- (5) Capacities of immediate perimeter exterior walkways, including assumed flow rates for exterior areas
- (6) Assumed egress paths for normal conditions — transportation modes

- (7) Management-level sequencing charts for alarm and emergency communication systems, the manual, or override options/instructions that include the following:
  - (a) List of codes or alarm signals
  - (b) Location of manual overrides
  - (c) Description of sequence of operations during an alarm, such as exhaust fans operate or doors open
- (8) Principal fire and life safety features/strategies, such as sprinklers, smoke control, fire alarm notifications, PA system, emergency power, and fire department access
- (9) Assumptions when developing occupancy plans for venue floor, open areas, and nonevent spaces, such as the following:
  - (a) Event floor plans/setup diagrams for each typical event/activity
  - (b) Fire sprinkler and smoke protection capabilities
- (10) Severe weather shelter areas, locations, structure considerations (limitations), capacities (occupancy and density factor)
- (11) Command center, which includes the following:
  - (a) Location (formal or informal)
  - (b) Structural integrity considerations
  - (c) Redundant locations and/or capabilities
  - (d) Jurisdictional rights — assumed and/or applied
- (12) Locations and capacities of wheelchair and mobility-impaired seating
- (13) Locations and capacities of areas of refuge and other safe areas
- (14) Rigging or structural load capacities of grids, truss structure, fly lofts, ceilings, floors, ramps, and staging
- (15) List of locations of emergency equipment such as fire extinguishers, fire hose cabinets, fire hydrants, and AEDs.
- (16) Sequencing of electrical service, such as the following:
  - (a) Emergency generators and charts of all areas illuminated during power outages
  - (b) Multiple electrical feed capabilities
- (17) List of mechanical, movable equipment in the facility
- (18) Potential hazards in the surrounding neighborhood, including train tracks and propane stations
- (19) Assumptions or accommodations considered and used in design

[101:12.4.24.5.4.3]

#### **10.14.3.5.5**

The facility management plans shall be maintained and adjusted as necessary for changes to the venue structure, operating purposes and style, and event occupancy. [101:12.4.24.5.5]

#### **10.14.3.5.6**

Facility management and operational plans shall be submitted to the AHJ annually. [101:12.4.24.5.6]

#### **10.14.3.5.7**

For events and activities at the venue that are outside the normal operating conditions or vary from the normal facility management plans, the following shall apply:

- (1) Facility management shall perform an event/activity-specific facility management plan for the AHJ to review.

(2) Approval of the AHJ for the specific facility management plan shall occur prior to such event.

[101:12.4.21.5.7]

### **11.2.2 Ventilating or Heat-Producing Equipment.**

Ventilating or heat-producing equipment shall be in accordance with NFPA 91, NFPA 211, NFPA 31, NFPA 54, or NFPA 70, NFPA 91, or NFPA 211, as applicable, unless such installations are approved existing installations, which shall be permitted to be continued in service. [101:9.2.2]

## **A.12.5**

The requirements pertaining to interior finish are intended to restrict the spread of fire over the continuous surface forming the interior portions of a building. [101:A.10.2]

The requirements are based on fire testing to NFPA 286 (with the criteria of 12.5.4.2), which apply to all interior finish materials. Many interior finish materials are permitted to be tested based on other fire tests, such as ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, UL 723, *Test for Surface Burning Characteristics of Building Materials*, or NFPA 265 as provided in the relevant subsection of Section 10-212.5. [101:A.10.2]

### **A.12.5.2**

The requirements pertaining to interior finish are intended to restrict the spread of fire over the continuous surface forming the interior portions of a building. The presence of multiple paint layers has the potential for paint delamination and bubbling or blistering of paint. Testing (NFPA *Fire Technology*, August 1974, "Fire Tests of Building Interior Covering Systems," David Waksman and John Ferguson, Institute for Applied Technology, National Bureau of Standards) has shown that adding up to two layers of paint with a dry film thickness of about 0.007 in. (0.18 mm) will not change the fire properties of surface-covering systems. Testing has shown that the fire properties of the surface-covering systems are highly substrate dependent and that thin coatings generally take on the characteristics of the substrate. When exposed to fire, the delamination, bubbling, and blistering of paint can result in an accelerated rate of flame spread. [101:A.10.2.1]

#### **12.5.2.1**

Classification of interior finish materials shall be in accordance with tests made under conditions simulating actual installations, provided that the authority having jurisdiction AHJ is permitted to establish the classification of any material for which classification by a standard test is not available. [101:10.2.1.1]

### **A.12.5.3**

Table A.12.5.3 provides a compilation of the interior finish requirements of 7.1.4 of NFPA 101 and the occupancy chapters (Chapters 12 through 42) of NFPA 101. [101:A.10.2.2]

**5Table A.12.5.3 Interior Finish Classification Limitations**

<u>Occupancy</u>	<u>Exits</u>	<u>Exit Access Corridors</u>	<u>Other Spaces</u>
<u>Assembly — new</u>			
<u>&gt;300 occupant load</u>	<u>A</u> <u>I or II</u>	<u>A or B</u> <u>I or II</u>	<u>A or B</u> <u>NA</u>
<u>≤300 occupant load</u>	<u>A</u> <u>I or II</u>	<u>A or B</u> <u>I or II</u>	<u>A, B, or C</u> <u>NA</u>
<u>Assembly — existing</u>			
<u>&gt;300 occupant load</u>	<u>A</u>	<u>A or B</u>	<u>A or B</u>
<u>≤300 occupant load</u>	<u>A</u>	<u>A or B</u>	<u>A, B, or C</u>
<u>Educational — new</u>	<u>A</u> <u>I or II</u>	<u>A or B</u> <u>I or II</u>	<u>A or B; C on low</u> <u>partitions*</u> <u>NA</u>
<u>Educational — existing</u>	<u>A</u>	<u>A or B</u>	<u>A, B, or C</u>
<u>Day-care centers — new</u>	<u>A</u> <u>I or II</u>	<u>A</u> <u>I or II</u>	<u>A or B</u> <u>NA</u>
<u>Day-care centers — existing</u>	<u>A or B</u>	<u>A or B</u>	<u>A or B</u>
<u>Day-care homes — new</u>	<u>A or B</u> <u>I or II</u>	<u>A or B</u>	<u>A, B, or C</u> <u>NA</u>
<u>Day-care homes — existing</u>	<u>A or B</u>	<u>A, B, or C</u>	<u>A, B, or C</u>
<u>Health care — new</u>	<u>A</u>	<u>A</u>	<u>A</u>
	<u>NA</u>	<u>B on lower portion of</u> <u>corridor wall*</u>	<u>B in small individual</u> <u>rooms*</u>
	<u>I or II</u>	<u>I or II</u>	<u>NA</u>
<u>Health care — existing</u>	<u>A or B</u>	<u>A or B</u>	<u>A or B</u>
<u>Detention and correctional — new</u> (sprinklers mandatory)	<u>A or B</u> <u>I or II</u>	<u>A or B</u> <u>I or II</u>	<u>A, B, or C</u> <u>NA</u>
<u>Detention and correctional — existing</u>	<u>A or B</u> <u>I or II</u>	<u>A or B</u> <u>I or II</u>	<u>A, B, or C</u> <u>NA</u>
<u>One- and two-family dwellings and</u> <u>lodging or rooming houses</u>	<u>A, B,</u> <u>or C</u>	<u>A, B, or C</u>	<u>A, B, or C</u>
<u>Hotels and dormitories — new</u>	<u>A</u> <u>I or II</u>	<u>A or B</u> <u>I or II</u>	<u>A, B, or C</u> <u>NA</u>
<u>Hotels and dormitories — existing</u>	<u>A or B</u> <u>I or II*</u>	<u>A or B</u> <u>I or II*</u>	<u>A, B, or C</u> <u>NA</u>
<u>Apartment buildings — new</u>	<u>A</u> <u>I or II</u>	<u>A or B</u> <u>I or II</u>	<u>A, B, or C</u> <u>NA</u>
<u>Apartment buildings — existing</u>	<u>A or B</u> <u>I or II*</u>	<u>A or B</u> <u>I or II*</u>	<u>A, B, or C</u> <u>NA</u>
<u>Residential board and care — (See</u> <u>Chapters 32 and 33.)</u>			
<u>Mercantile — new</u>	<u>A or B</u> <u>I or II</u>	<u>A or B</u>	<u>A or B</u> <u>NA</u>
<u>Mercantile — existing</u>			
<u>Class A or class B stores</u>	<u>A or B</u>	<u>A or B</u>	<u>Ceilings — A or B; walls</u> <u>— A, B, or C</u>

<u>Class C stores</u>	<u>A, B, or C</u>	<u>A, B, or C</u>	<u>A, B, or C</u>
<u>Business and ambulatory health care — new</u>	<u>A or B I or II</u>	<u>A or B</u>	<u>A, B, or C NA</u>
<u>Business and ambulatory health care — existing</u>	<u>A or B</u>	<u>A or B</u>	<u>A, B, or C</u>
<u>Industrial</u>	<u>A or B I or II</u>	<u>A, B, or C I or II</u>	<u>A, B, or C NA</u>
<u>Storage</u>	<u>A or B I or II</u>	<u>A, B, or C</u>	<u>A, B, or C NA</u>

\*See corresponding chapters for details.

NA: Not applicable.

Notes:

(1) Class A interior wall and ceiling finish — flame spread index, 0–25 (new applications); smoke developed index, 0–450.

(2) Class B interior wall and ceiling finish — flame spread index, 26–75 (new applications); smoke developed index, 0–450.

(3) Class C interior wall and ceiling finish — flame spread index, 76–200 (new applications); smoke developed index, 0–450.

(4) Class I interior floor finish — critical radiant flux, not less than 0.45 W/cm<sup>2</sup>.

(5) Class II interior floor finish — critical radiant flux, not more than 0.22 W/cm<sup>2</sup>, but less than 0.45 W/cm<sup>2</sup>.

(6) Automatic sprinklers — where a complete standard system of automatic sprinklers is installed, interior wall and ceiling finish with a flame spread rating not exceeding Class C is permitted to be used in any location where Class B is required, and Class B interior wall and ceiling finish is permitted to be used in any location where Class A is required; similarly, Class II interior floor finish is permitted to be used in any location where Class I is required, and no interior floor finish classification is required where Class II is required. These provisions do not apply to new detention and correctional occupancies.

(7) Exposed portions of structural members complying with the requirements for heavy timber construction are permitted.

**[101:Table A.10.2.2]**

**Table A.12.5.3 Interior Finish Classification Limitations**

<b>Occupancy</b>	<b>Exits</b>	<b>Exit Access Corridors</b>	<b>Other Spaces</b>
<u>Assembly — new</u>			
<u>occupant load</u>	<u>A</u>	<u>A or B</u>	<u>A or B</u>
<u>≤300 occupant load</u>	<u>I or II</u>	<u>I or II</u>	<u>NA</u>
	<u>A</u>	<u>A or B</u>	<u>A, B, or C</u>
	<u>I or II</u>	<u>I or II</u>	<u>NA</u>

Assembly — existing			
occupant load	A	A or B	A or B
≤300 occupant load	A	A or B	A, B, or C
Educational — new	A	A or B	A or B; C on low partitions*
	I or II	I or II	NA
Educational — existing	A	A or B	A, B, or C
Day care centers — new	A	A	A or B
	I or II	I or II	NA
Day care centers — existing	A or B	A or B	A or B
Day care homes — new	A or B	A or B	A, B, or C
		I or II	NA
Day care homes — existing	A or B	A, B, or C	A, B, or C
Health care — new	A	A	A
	NA	B on lower portion of corridor wall*	B in small individual rooms*
	I or II	I or II	NA
Health care — existing	A or B	A or B	A or B
Detention and correctional — new (sprinklers mandatory)	A or B	A or B	A, B, or C
	I or II	I or II	NA
Detention and correctional — existing	A or B	A or B	A, B, or C
	I or II	I or II	NA
One- and two-family dwellings and lodging or rooming houses	A, B, or C	A, B, or C	A, B, or C
Hotels and dormitories — new	A	A or B	A, B, or C
	I or II	I or II	NA
Hotels and dormitories — existing	A or B	A or B	A, B, or C
	I or II*	I or II*	NA
Apartment buildings — new	A	A or B	A, B, or C
	I or II	I or II	NA
Apartment buildings — existing	A or B	A or B	A, B, or C
	I or II*	I or II*	NA
Residential board and care — (See Chapters 32 and 33.)			
Mercantile — new	A or B	A or B	A or B
		I or II	NA
Mercantile — existing			
Class A or class B stores	A or B	A or B	Ceilings — A or B; walls — A, B, or C
Class C stores	A, B, or C	A, B, or C	A, B, or C
Business and ambulatory health care — new	A or B	A or B	A, B, or C
		I or II	NA
Business and ambulatory health care — existing	A or B	A or B	A, B, or C
Industrial	A or B	A, B, or C	A, B, or C

	I or II	I or II	NA
Storage	A or B	A, B, or C	A, B, or C
		I or II	NA

\*See corresponding chapters for details.

NA: Not applicable.

Notes:

- (1) Class A interior wall and ceiling finish — flame spread index, 0–25 (new applications); smoke developed index, 0–450.
- (2) Class B interior wall and ceiling finish — flame spread index, 26–75 (new applications); smoke developed index, 0–450.
- (3) Class C interior wall and ceiling finish — flame spread index, 76–200 (new applications); smoke developed index, 0–450.
- (4) Class I interior floor finish — critical radiant flux, not less than 0.45 W/cm<sup>2</sup>.
- (5) Class II interior floor finish — critical radiant flux, not more than 0.22 W/cm<sup>2</sup>, but less than 0.45 W/cm<sup>2</sup>.
- (6) Automatic sprinklers — where a complete standard system of automatic sprinklers is installed, interior wall and ceiling finish with a flame spread rating not exceeding Class C is permitted to be used in any location where Class B is required, and Class B interior wall and ceiling finish is permitted to be used in any location where Class A is required; similarly, Class II interior floor finish is permitted to be used in any location where Class I is required, and no interior floor finish classification is required where Class II is required. These provisions do not apply to new detention and correctional occupancies.
- (7) Exposed portions of structural members complying with the requirements for heavy timber construction are permitted.

#### A.12.5.4

ASTM E84, *Standard Test Method of Surface Burning Characteristics of Building Materials*, and UL 723, *Test for Surface Burning Characteristics of Building Materials*, are considered nationally recognized consensus standard test methods for determining the flame spread index and smoke developed index of building materials and are likely to yield equivalent test results. (See also A.12.5.5.4.1.) [101:A.10.2.3]

##### **12.5.4.1.2 \***

Materials tested in accordance with 12.5.4.1.1 and complying with 12.5.4.2 shall be considered also to comply with the requirements of a Class A, Class B, or Class C in accordance with 12.5.4.3.

[101:10.2.3.1.2]

##### **A.12.5.4.1.2**

Materials tested per NFPA 286 and meeting the criteria of 12.5.4.2 are considered Class A materials. However, not all materials that meet the requirements for Class A based on testing per ASTM E84 or UL 723 will meet the requirements of this Code for testing in accordance with NFPA 286.

[101:A.10.2.3.1.2]

### **12.5.4.3 \*Interior Wall and Ceiling Finish Materials Tested in Accordance with ASTM E84 or UL 723.**

Interior wall and ceiling finish materials shall be classified in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Standard Test Method for Surface Burning Characteristics of Building Materials*, except as indicated in 12.5.4.4 and 12.5.4.5, and shall be grouped in the following classes in accordance with their flame spread and smoke developed indexes:

- (1) Class A: Flame spread index 0–25; smoke developed index 0–450.
- (2) Class B: Flame spread index 26–75; smoke developed index 0–450.
- (3) Class C: Flame spread index 76–200; smoke developed index 0–450.

[101:10.2.3.3]

### **A.12.5.4.3**

It has been shown that the method of mounting interior finish materials usually affects actual performance. The use of standard mounting methods will be helpful in determining appropriate fire test results. Where materials are tested in intimate contact with a substrate to determine a classification, such materials should be installed in intimate contact with a similar substrate. Such details are especially important for “thermally thin” materials. For further information, see ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*. [101:A.10.2.3.3]

Some interior wall and ceiling finish materials, such as fabrics not applied to a solid backing, do not lend themselves to a test made in accordance with ASTM E84. In such cases, the large-scale test outlined in NFPA 701 is permitted to be used. In 1989 the NFPA Technical Committee on Fire Tests eliminated the so-called “small-scale test” from NFPA 701 because the results had been shown not to represent a fire performance that corresponded to what happened in real scale. Since then, NFPA 701 no longer contains a “small-scale test” but it now contains two tests (Test 1 and Test 2), which apply to materials as a function of their areal density. Thus NFPA 701 Test 1 applies to fabrics (other than vinyl-coated fabric blackout linings) having an areal density less than or equal to 21 oz/yd<sup>2</sup> (700 g/m<sup>2</sup>), while NFPA 701 Test 2 applies to fabrics with an areal density greater than 21 oz/yd<sup>2</sup> (700 g/m<sup>2</sup>), vinyl-coated fabric blackout linings, decorative objects, and films. Representations that materials or products have been tested to the small-scale test in NFPA 701 normally refer to the pre-1989 small-scale test, which no longer exists and which does not represent acceptable fire performance. [101:A.10.2.3.3]

Prior to 1978, the test report described by ASTM E84 included an evaluation of the fuel contribution as well as the flame spread index and the smoke developed index. However, it is now recognized that the measurement on which the fuel contribution is based does not provide a valid measure. Therefore, although the data are recorded during the test, the information is no longer normally reported. Classification of interior wall and ceiling finish thus relies only on the flame spread index and smoke developed index. [101:A.10.2.3.3]

The 450 smoke developed index limit is based solely on obscuration. (See A.10.2.4.4 of NFPA 101.)  
[101:A.10.2.3.3]

## A.12.5.5

Surface nonmetallic raceway products, as permitted by NFPA 70, are not interior finishes and are not subject to the provisions of Chapter 10 of NFPA 101. [101:A.10.2.4]

### 12.5.5.1 Thickness Exemption.

The provisions of 12.5.4 shall not apply to materials having a total thickness of less than  $1/28$  in. (0.9 mm) that are applied directly to the surface of walls and ceilings where bothall of the following conditions are met:

- (1) The wall or ceiling surface is a noncombustible or limited combustible material.
- (2) The materials applied meets the requirements of Class A interior wall or ceiling finish when tested in accordance with 12.5.4.3, using fiber cement board as the substrate material.
- (3) The material applied is not one of the following:
  - (a) A textile wall or ceiling covering
  - (b) An expanded vinyl wall or ceiling covering

[101:10.2.4.1]

### 12.5.5.3.3.1

One of the following fire tests shall be used for assessing the combustibility of cellular or foamed plastic materials as interior finish:

- (1) NFPA 286, Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth, with the acceptance criteria of 12.5.4.2
- (2) UL 1715, *Fire Test of Interior Finish Material* (including smoke measurements, with total smoke release not to exceed 1000 m<sup>2</sup>)
- (3) UL 1040, *Fire Test of Insulated Wall Construction*
- (4) ANSI/FM Approval 4880 American National Standard for Evaluating the Fire Performance of Insulated Building Panel Assemblies and Interior Finish Materials, Approval Standard for Class 1 Rating of Insulated Wall or Wall and Roof/Ceiling Panels, Interior Finish Materials or Coatings, and Exterior Wall Systems

[101:10.2.4.3.3.1]

### A.12.5.5.3.3.2

Both NFPA 286 and UL 1715, *Fire Test of Interior Finish Material*, contain smoke obscuration criteria. UL 1040, *Fire Test of Insulated Wall Construction*, and ANSI/FM 4880, American National Standard for Evaluating the Fire Performance of Insulated Building Panel Assemblies and Interior Finish Materials, Approval Standard for Class 1 Insulated Wall or Wall and Roof/Ceiling Panels; Plastic Interior Finish Materials; Plastic Exterior Building Panels; Wall/Ceiling Coating Systems; Interior or Exterior Finish Systems, do not. Smoke obscuration is an important component of the fire performance of cellular or foamed plastic materials. [101:A.10.2.4.3.3.2]

### **12.5.5.3.3.3**

Cellular or foamed plastic materials tested in accordance with UL 1040, *Fire Test of Insulated Wall Construction*, or ANSI/FM 4880, *American National Standard for Evaluating the Fire Performance of Insulated Building Panel Assemblies and Interior Finish Materials*, shall also be tested for smoke release using NFPA 286 with the acceptance criteria of 12.5.4.2 . [101:10.2.4.3.3.]

### **12.5.5.4 \*Textile Wall Coverings.**

Where used as interior wall finish materials, textile materials shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of either 12.5.4.1, 12.5.5.4.1, or 12.5.5.4.3. [101:10.2.4.4]

### **12.5.5.4.3**

Textile materials meeting the requirements of Class A when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Standard Test Method for Surface Burning Characteristics of Building Materials*, using the specimen preparation and mounting method of ASTM E2404, *Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) and Wood Wall or Ceiling Coverings, Facings and Veneers, to Assess Surface Burning Characteristics*, shall be permitted as follows:

- (1) On the walls of rooms or areas protected by an approved automatic sprinkler system.
- (2) On partitions that do not exceed three-quarters of the floor-to-ceiling height or do not exceed 8 ft (2440 mm) in height, whichever is less.
- (3) On the lower 48 in. (1220 mm) above the finished floor on ceiling-height walls and ceiling-height partitions.
- (4) Previously approved existing installations of textile material meeting the requirements of Class A when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials* or UL 723, *Standard Test Method for Surface Burning Characteristics of Building Materials*, shall be permitted to be continued to be used.

[101:10.2.4.4.3]

### **12.5.5.5 \*Expanded Vinyl Wall Coverings.**

Where used as interior wall finish materials, expanded vinyl wall coverings shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of either 12.5.4.1, 12.5.5.4.1, or 12.5.5.4.3. [101:10.2.4.5]

### **12.5.5.6 Textile Ceiling Coverings.**

Where used as interior ceiling finish materials, textile materials shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall meet one of the following:

- (1) Comply with the requirements of 12.5.4.1
- (2) Meet the requirements of Class A when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Standard Test Method for Surface Burning Characteristics of Building Materials*

*Method for Surface Burning Characteristics of Building Materials*, using the specimen preparation and mounting method of ASTM E2404, *Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) and Wood Wall or Ceiling Coverings, Facings and Veneers, to Assess Surface Burning Characteristics*, and used on the ceilings of rooms or areas protected by an approved automatic sprinkler system

[101:10.2.4.6]

#### **12.5.5.7 Expanded Vinyl Ceiling Coverings.**

Where used as interior ceiling finish materials, expanded vinyl materials shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall meet one of the following:

- (1) Comply with the requirements of 12.5.4.1
- (2) Meet the requirements of Class A when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Standard Test Method for Surface Burning Characteristics of Building Materials*, using the specimen preparation and mounting method of ASTM E2404, *Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) and Wood Wall or Ceiling Coverings, Facings and Veneers, to Assess Surface Burning Characteristics*, and used on the ceilings of rooms or areas protected by an approved automatic sprinkler system

[101:10.2.4.7]

#### **12.5.5.11.2**

If the materials are tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Test for Surface Burning Characteristics of Building Materials*, specimen preparation and mounting shall be in accordance with ASTM E2599, *Standard Practice for Specimen Preparation and Mounting of Reflective Insulation, Radiant Barrier, and Vinyl Stretch Ceiling Materials for Building Applications to Assess Surface Burning Characteristics*.

[101:10.2.4.11.2]

#### **12.5.5.12.1**

Listed factory finished metal ceiling and wall panels meeting the requirements of Class A, in accordance with 12.5.4, shall be permitted to be finished with one additional application of paint. [101:10.2.4.12.1]

#### **12.5.5.14.2**

If the materials are tested in accordance with NFPA 286 they shall use the product-mounting system, including adhesive, described in *Section 5.8.9* of NFPA 286. [101:10.2.4.14.2]

#### **12.5.5.15.1**

Light-transmitting plastics ~~shall be permitted to be~~ used as interior wall and ceiling finish shall be permitted based on large-scale fire tests per 12.5.5.3.3.1, which substantiate the combustibility characteristics of the plastics for the use intended under actual fire conditions. [101:10.2.4.15.1]

### **12.5.5.15.2**

The tests shall be performed on a light-transmitting plastic assembly related to the actual end-use configuration and on the maximum thickness intended for use. [101:10.2.4.15.2]

### **A.12.5.5.15**

Light-transmitting plastics are used for a variety of purposes, including light diffusers, exterior wall panels, skylights, canopies, glazing, and the like. Previous editions of the Code have not addressed the use of light-transmitting plastics. Light-transmitting plastics will not normally be used in applications representative of interior finishes. Accordingly, ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Test for Surface Burning Characteristics of Building Materials*, can produce test results that might or might not apply. [101:A.10.2.4.15]

Light-transmitting plastics are regulated by model building codes such as *NFPA 5000*. Model building codes provide adequate regulation for most applications of light-transmitting plastics. Where an AHJ determines that a use is contemplated that differs from uses regulated by model building codes, light-transmitting plastics in such applications can be substantiated by fire tests that demonstrate the combustibility characteristics of the light-transmitting plastics for the use intended under actual fire conditions. [101:A.10.2.4.15]

For additional information on light transmitting plastics, see Section 48.7 of *NFPA 5000*.

[101:A.10.2.4.15]

### **12.5.6.3.2**

The provision of 12.5.6.3.1 shall not apply to artwork and teaching materials in sprinklered educational or day-care occupancies in accordance with 20.2.4.4.3(3), 20.2.4.4.3(4) and 20.3.4.2.3.5.3(3), and 20.3.4.2.3.5.3(4). [101:10.2.5.3.2]

### **A.12.5.7.1**

It is the intent of NFPA 101 to mandate interior wall and ceiling finish materials that obtain their fire performance and smoke developed characteristics in their original form. However, in renovations, particularly those involving historic buildings, and in changes of occupancy, the required fire performance or smoke developed characteristics of existing surfaces of walls, partitions, columns, and ceilings might have to be secured by applying approved fire-retardant coatings to surfaces having higher flame spread ratings than permitted. Such treatments should comply with the requirements of NFPA 703. When fire-retardant coatings are used, they need to be applied to surfaces properly prepared for the material, and application needs to be consistent with the product listing. Deterioration of coatings applied to interior finishes can occur due to repeated cleaning of the surface or painting over applied coatings, but permanency must be assured in some appropriate fashion. Fire-retardant coatings must possess the desired degree of permanency and be maintained so as to retain the effectiveness of the treatment under the service conditions encountered in actual use. [101:A.10.2.6.1]

### **A.12.5.8.1**

Compliance with 16 CFR 1630, "Standard for the Surface Flammability of Carpets and Rugs" (FFI-70), is considered equivalent to compliance with ASTM D2859, *Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials*. [101:A.10.2.7.1]

## **12.6 Contents and Furnishings.**

### **12.6.1 \* Draperies, Curtains, and Other Hanging or Suspended Furnishings and Decorations.**

Where required by the applicable provisions of this *Code*, draperies, curtains, and other similar loosely hanging or suspended furnishings and decorations shall meet the flame propagation performance criteria contained in Test Method 1 or Test Method 2, as appropriate, of NFPA 701. [101:10.3.1]

### **A.12.6.1**

Testing per NFPA 701 applies to textiles and films used in a hanging configuration. If the textiles are to be applied to surfaces of buildings or backing materials as interior finishes for use in buildings, they should be treated as interior wall and ceiling finishes in accordance with Section 12.5.2 of this *Code*, and they should then be tested for flame spread index and smoke developed index values in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Test for Surface Burning Characteristics of Building Materials*, or for flame spread and flashover in accordance with NFPA 265. Films and other materials used as interior finish applied to surfaces of buildings should be tested for flame spread index and smoke developed index values in accordance with ASTM E84 or UL 723 or for heat and smoke release and flashover in accordance with NFPA 286.

[101:A.10.3.1]

The test results from NFPA 701 are suitable for classification purposes but should not be used as input into fire models, because they are not generated in units suitable for engineering calculations.

[101:A.10.3.1]

### **12.6.2 Smoldering Ignition of Upholstered Furniture and Mattresses.**

#### **12.6.2.1 \* Smoldering Ignition of Upholstered Furniture.**

Newly introduced upholstered furniture, except as otherwise permitted by Chapters 11 through 43 of *NFPA 101*, shall be resistant to a cigarette ignition (i.e., smoldering) in accordance with one of the following:

- (1) The components of the upholstered furniture shall meet the requirements for Class I when tested in accordance with NFPA 260.
- (2) Mocked-up composites of the upholstered furniture shall have a char length not exceeding  $1\frac{1}{2}$  in. (38 mm) when tested in accordance with NFPA 261.

[101:10.3.2.1]

### **A.12.6.2.1**

The Class I requirement associated with testing in accordance with NFPA 260 and the char length of not more than 1 $\frac{1}{2}$  in. (38 mm) required with testing in accordance with NFPA 261 are indicators that the furniture item or mattress is resistant to a cigarette ignition. A fire that smolders for an excessive period of time without flaming can reduce the tenability within the room or area of fire origin without developing the temperatures necessary to operate automatic sprinklers. [101:A.10.3.2.1]

The test results from NFPA 260 and from NFPA 261 are suitable for classification purposes but should not be used as input into fire models because they are not generated in units suitable for engineering calculations. [101:A.10.3.2.1]

Until recentlyTraditionally, NFPA 260 was equivalent to ASTM E1353, *Standard Test Methods for Cigarette Ignition Resistance of Components of Upholstered Furniture*, and NFPA 261 was equivalent to ASTM E1352, *Standard Test Method for Cigarette Ignition Resistance of Mock-Up Upholstered Furniture Assemblies*. However, that changed when NFPA 260 and NFPA 261 adopted the new NIST standard reference material (SRM 1196) as the igniting cigarette and ASTM E1352 and ASTM E1353 did not, meaning that ASTM E1352 and ASTM E1353 ~~use~~were using commercial cigarettes that are low-ignition propensity and have a low likelihood of properly assessing smoldering potential. The 2016 editions of ASTM E1352 and ASTM E1353 adopted the NIST SRM 1196 cigarette as the igniting cigarette, making them, once more, equivalent to NFPA 261 and NFPA 260, respectively. [101:A.10.3.2.1]

### **12.6.2.2\* Rate of Heat Release Testing of Upholstered Furniture.**

#### **A.12.6.3.1A.12.6.2.2**

The intent of the provisions of 12.6.3.112.6.2.2 is as follows:

- (1) The peak heat release rate of not more than 80 kW by a single upholstered furniture item was chosen based on maintaining a tenable environment within the room of fire origin, and the sprinkler exception was developed because the sprinkler system helps to maintain tenable conditions, even if the single upholstered furniture item were to have a peak rate of heat release in excess of 80 kW.
- (2) The total heat release of not more than 25 MJ by the single upholstered furniture item during the first 10 minutes of the test was established as an additional safeguard to protect against the adverse conditions that would be created by an upholstered furniture item that released its heat in other than the usual measured scenario, and the following should also be noted:
  - (a) During the test for measurement of rate of heat release, the instantaneous heat release value usually peaks quickly and then quickly falls off, so as to create a triangle-shaped curve.
  - (b) In the atypical case, if the heat release were to peak and remain steady at that elevated level, as opposed to quickly falling off, the 80 kW limit would not ensure safety.
  - (c) Only a sprinkler exception is permitted in lieu of the test because of the ability of the sprinkler system to control the fire.

Actual test results for heat, smoke, and combustion product release from ASTM E1537, *Standard Test Method for Fire Testing of Upholstered Furniture*, might be suitable for use as input into fire models for

performance-based design. Furthermore, California Technical Bulletin 133, "Flammability Test Procedure for Seating Furniture for Use in Public Occupancies," includes pass/fail criteria for a single upholstered furniture item of 80 kW peak heat release rate and 25 MJ total heat release over the first 10 minutes of the test.

[101:A.10.3.2.23]

#### **12.6.3.1**

Where required by the applicable provisions of this *Code*, upholstered furniture and other seating furniture, unless the furniture is located in a building protected throughout by an approved automatic sprinkler system, shall have limited rates of heat release when tested in accordance with ASTM E1537, *Standard Test Method for Fire Testing of Upholstered Furniture*, as follows:

- (1) The peak rate of heat release for the single furniture item shall not exceed 80 kW.
- (2) The total heat released by the single furniture item during the first 10 minutes of the test shall not exceed 25 MJ.

[101:10.3.2.3.1]

#### **12.6.2.2**

When tests are conducted in accordance with 12.6.2.2, the formation of flaming droplets during the test shall be reported.

### **12.6.3 Mattresses.**

#### **12.6.2.2 \*12.6.3.1\* Smoldering Ignition of Mattresses.**

Newly introduced mattresses, except as otherwise permitted by Chapters 11 through 43 of *NFPA 101*, shall have a char length not exceeding 2 in. (51 mm) when tested in accordance with 16 CFR 1632, "Standard for the Flammability of Mattresses and Mattress Pads" (FF 4-72). [101:10.3.3.12.2]

#### **A.12.6.2.2A.12.6.3.1**

The char length of not more than 2 in. (51 mm) required in 16 CFR 1632, "Standard for the Flammability of Mattresses and Mattress Pads" (FF 4-72), is an indicator that the mattress is resistant to a cigarette ignition. United States federal regulations require mattresses in this country to comply with 16 CFR 1632. [101:A.10.3.2.23.1]

#### **12.6.3 \*Rate of Heat Release Testing of Upholstered Furniture and Mattresses.**

#### **12.6.3.2 \* Rate of Heat Release and Mass Loss Testing of Mattresses.**

Where required by the applicable provisions of this *Code*, mattresses shall comply with 12.6.3.2.1 or 12.6.3.2.2, unless the mattress is located in a building protected throughout by an approved automatic sprinkler system. [101:10.3.3.2]

### **12.6.3.2.1**

The mattress shall have limited rates of heat release when tested in accordance with ASTM E1590, *Standard Test Method for Fire Testing of Mattresses*, as follows:

- (1) The peak rate of heat release for the single mattress shall not exceed 100 kW.
- (2) The total heat released by the mattress during the first 10 minutes of the test shall not exceed 25 MJ.

[101:10.3.3.2.1]

### **12.6.3.2.2**

The mattress shall have a mass loss not exceeding 15 percent when tested in accordance with the fire test in Appendix A3 of ASTM F1085, *Standard Specification for Mattress and Box Springs for Use in Berths and in Marine Vessels*. [101:10.3.3.2.2]

### **12.6.3.2.3**

When tests are conducted in accordance with 12.6.3.2, the formation of flaming droplets during the test shall be reported. [101:10.3.3.2.3]

### **12.6.4 \* Explosive or Highly Flammable Furnishings or Decorations.**

Furnishings or decorations of an explosive or highly flammable character shall not be used. [101:10.3.4]

### **A.12.6.4**

Natural cut Christmas trees that are not effectively treated to improve fire performance, ordinary crepe paper decorations, and pyroxylin plastic decorations might be classified as highly flammable. See 12.6.9 for requirements for combustible artificial decorative vegetation. See Section 12.6.9, for provisions for natural cut Christmas trees. Christmas trees that are not effectively flame retardant treated, ordinary crepe paper decorations, and pyroxylin plastic decorations might be classified as highly flammable.

[101:A.10.3.4]

### **12.6.5 Fire-Retardant Coatings.**

Fire-retardant coatings shall be maintained to retain the effectiveness of the treatment under service conditions encountered in actual use. [101:10.3.5]

### **12.6.6 \* Foamed Plastics.**

Where required by the applicable provisions of this *Code*, furnishings and contents made with foamed plastic materials that are unprotected from ignition shall have a heat release rate not exceeding 100 kW when tested in accordance with UL 1975, *Fire Tests for Foamed Plastics Used for Decorative Purposes*, or when tested in accordance with NFPA 289 using the 20 kW ignition source. [101:10.3.6]

### **12.6.7 Lockers.**

Lockers shall be considered interior finish and shall comply with the requirements of 12.5.5.8.

[101:10.3.7]

### **12.6.7.1 Combustible Lockers.**

Where lockers constructed of combustible materials other than wood are used, the lockers shall be considered interior finish and shall comply with Section 12.5, except as permitted by 12.6.7.2. [101:10.3.7.1]

### **12.6.7.2 Wood Lockers.**

Lockers constructed entirely of wood and of noncombustible materials shall be permitted to be used in any location where interior finish materials are required to meet a Class C classification in accordance with 12.5.3. [101:10.3.7.2]

## **12.6.8 Containers for Waste, or Linen.**

### **12.6.8.2**

Where required by Chapters 11 through 43 of NFPA 101, newly introduced metal wastebaskets and other metal waste, or linen containers with a capacity of 20 gal (75.7 L) or more shall be listed in accordance with UL 1315, *Safety for Metal Waste Paper Containers*, and shall be provided with a noncombustible lid. [101:10.3.8.2]

### **10.13.112.6.9 Combustible Vegetation.**

#### **10.13.112.6.9.1**

Combustible vegetation, including natural cut Christmas trees, shall be in accordance with Section [10.13.112.6.9](#).

#### **10.13.1.112.6.9.1.1**

Christmas tree placement within buildings shall comply with Table [10.13.1.112.6.9.1.1](#).

Table [10.13.1.112.6.9.1.1](#) Provisions for Christmas Trees by Occupancy

Occupancy	No Trees Permitted	Cut Tree Permitted With Automatic Sprinkler Systems	Cut Tree Permitted Without Automatic Sprinkler Systems	Balled Tree Permitted
Ambulatory health care				X
Apartment buildings		Within unit	Within unit	X
Assembly	X			
Board and care	X			

Occupancy	No Trees Permitted	Cut Tree Permitted With Automatic Sprinkler Systems	Cut Tree Permitted Without Automatic Sprinkler Systems	Balled Tree Permitted
Business		X		X
Day-care		X		X
Detention and correctional	X			
Dormitories	X			
Educational	X			
Health care				X
Hotels	X			
Industrial		X	X	X
Lodging and rooming				X
Mercantile		X		X
One and two family		X	X	X
Storage		X	X	X

#### **10.13.212.6.9.2**

In any occupancy, limited quantities of combustible vegetation shall be permitted where the AHJ determines that adequate safeguards are provided based on the quantity and nature of the combustible vegetation.

#### **10.13.4-12.6.9.3**

Vegetation and Christmas trees shall not obstruct corridors, exit ways, or other means of egress.

#### **10.13.812.6.9.4**

Combustible vegetation and natural cut Christmas trees shall not be located near heating vents or other fixed or portable heating devices that could cause it to dry out prematurely or to be ignited.

#### **10.13.312.6.9.5\* Provisions for Fire Retardance for Flammability of Combustible Artificial Vegetation.**

#### **10.13.3.112.6.9.5.1**

Combustible Artificial decorative vegetation and artificial Christmas trees shall meet one of the following:

- (1) The flame propagation performance criteria of Test Method 1 or Test Method 2, as appropriate, of NFPA 701
  - (2) Tested in accordance with NFPA 289, using the 20 kW ignition source
  - (3) Tested in accordance with UL 1975, Fire Tests for Foamed Plastics Used for Decorative Purposes, and shall have a maximum heat release rate of 100 kW
  - (4) Tested in accordance with UL 2358, Outline of Investigation for Fire Tests of Pre-Lit Artificial Seasonal Use Trees and Other Seasonal Decorative Items
  - (5) Made of noncombustible materials
- (2) A maximum heat release rate of 100 kW when tested to NFPA 289, using the 20 kW ignition source

[101:10.3.9.1]

#### **10.13.3.2-12.6.9.5.2**

Each individual artificial decorative vegetation item shall be labeled to demonstrate compliance with 10.13.3.1-12.6.9.5.1 in an approved manner.

#### **10.13.9-12.6.9.6 Provisions for Natural Cut Trees.**

##### **10.13.9.1-12.6.9.6.1**

Where a natural cut tree is permitted, the bottom end of the trunk shall be cut off with a straight fresh cut at least 1/2 in. (13 mm) above the end prior to placing the tree in a stand to allow the tree to absorb water.

##### **10.13.9.2-12.6.9.6.2**

The tree shall be placed in a suitable stand with water.

##### **10.13.9.3-12.6.9.6.3**

The water level shall be maintained above the fresh cut and checked at least once daily.

##### **10.13.9.4-12.6.9.6.4\***

The tree shall be removed from the building immediately upon evidence of dryness.

#### **12.6.9.6.5 Fire-Retardant Treatments for Natural Cut Christmas Trees.**

Where fire-retardant treatments are applied to natural cut Christmas trees, the fire-retardant treatment shall comply with both Test Method 1 and Test Method 2 of ASTM E3082, Standard Test Methods for Determining the Effectiveness of Fire Retardant Treatments for Natural Christmas Trees. [101:10.3.9.2]

#### **12.6.9.7 Electrical Equipment.**

### **10.13.5 12.6.9.7.1**

Electrical wiring and Only listed electrical lights-luminaires and wiring shall be used on natural or artificial combustible artificial decorative vegetation, natural or artificial Christmas trees, and other similar decorations shall be listed for that application. [101:10.3.9.3.1]

### **12.6.9.7.2**

Electrical wiring and luminaires used on natural vegetation shall be listed for that application.

### **10.13.6 12.6.9.7.3**

Electrical lights shall be prohibited on metal artificial trees.

### **10.13.7 12.6.9.8- Open Flames.**

#### **12.6.9.8.1**

Candles and Open flames such as from candles, lanterns, kerosene heaters, and gas-fired heaters shall not be located used on or near combustible artificial decorative vegetation, Christmas trees, or other similar combustible materials. [101:10.3.9.4]

#### **12.6.9.8.2**

Candles and open flames shall not be used on or near natural vegetation.

### **12.7.3**

Walls used as fire barriers shall comply with Chapter 7 the requirements of NFPA 221. The NFPA 221 limitation on percentage width of openings shall not apply applicable to fire barrier walls. [101:8.3.1.3]

#### **12.7.5.1.1 \***

Fire resistance-rated glazing tested in accordance with ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials, or UL 263, Fire Tests of Building Construction and Materials, shall be permitted. [101:8.3.2.1.1]

#### **A.12.7.5.1.1**

Fire Fire-resistance-rated glazing complying with 12.7.5, where not installed in a door, is considered a wall, not an opening protective. [101:A.8.3.2.1.1]

### **12.7.5.3**

Interior walls and partitions of nonsymmetrical construction shall be evaluated from both directions and assigned a fire resistance rating based on the shorter duration obtained in accordance with ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials, or UL 263, Fire Tests of Building Construction and Materials. When the wall is tested with the least fire-resistive side exposed to the furnace, the wall shall not be required to be subjected to tests from the opposite side. [101:8.3.2.3]

### 12.7.6.2.1

Fire protection ratings for products required to comply with 12.7.6 shall be as determined and reported by a nationally recognized testing agency in accordance with NFPA 252; [NFPA 257](#); UL 10B, *Fire Tests of Door Assemblies*; ~~or~~ UL 10C, *Positive Pressure Fire Tests of Door Assemblies*; [NFPA 257](#); or UL 9, *Fire Tests of Window Assemblies*. [\[101:8.3.3.2.1\]](#)

### 12.7.6.2.2 \*

The minimum fire rating for opening protectives in fire barriers, fire-rated smoke barriers, and fire-rated smoke partitions shall be in accordance with Table 12.7.6.2.2, except as otherwise permitted in 12.7.6.2.3 or 12.7.6.2.4. [\[101:8.3.3.2.2\]](#)

**Table 12.7.6.2.2 Minimum Fire Protection Ratings for Opening Protectives in Fire-Resistance-Rated Assemblies and Fire-Rated Glazing Markings**

Component	Walls and Partitions (hr)	Fire Door Assemblies (hr)	Door Visi on Panel Max imum Size (in. <sup>2</sup> )	Fire - Rated Glazing Marking	Minimum Side Light/Transom Assembly Rating (hr)		Fire-Rated Glazing Marking Side Light/Transom Panel		Minimum Fire-Rated Windows Rating <sup>a,b</sup> (hr)		Fire Window Marking	
					Door Visi on Panel	Fire Protection	Fire Resistance	Fire Protection	Fire Resistance	Fire Protection	Fire Resistance	
Elevator hoist ways	2	1 <sup>1/2</sup>	155 in. <sup>2</sup> <sup>ce</sup>	D-H-90 or D-H-W-90	NP	2	NP	D-H-W-120	NP	2	NP	W-120
	1	1	155 in. <sup>2</sup> <sup>ce</sup>	D-H-60 or D-H-W-60	NP	1	NP	D-H-W-60	NP	1	NP	W-60

	$1/2$	$1/3$	85 in. <sup>2d</sup>	D-20 or D-W-20	$1/3$	$1/3$	D-H-20	D-W-20	$1/3$	$1/3$	OH-20	W-30
Elevat or lobby (per 7.2.1 3.4 of NFPA 101)	1	1	100 in. <sup>2a</sup>	$\leq 10$ 0 in. <sup>2</sup> , D-H-T-60 or D-H-W-60 <sup>a</sup>	NP	1	NP	D-H-W-60			NP	W-60
				$> 10$ 0 in. <sup>2</sup> , D-H-W-60								
Vertical shafts, <u>including</u> stairways, exits, and refuse chutes	2	$1\frac{1}{2}$	Max imum size tested	D-H-90 or D-H-W-90	NP	2	NP	D-H-W-120	NP	2	NP	W-120
	1	1	Max imum size tested	D-H-60 or D-H-W-60	NP	1	NP	D-H-W-60	NP	1	NP	W-60
Replacement panels in existing	$1/2$	$1/3$	Max imum size tested	D-20 or D-W-20	$1/3$	$1/3$	D-H-20	D-W-20	$1/3$	$1/3$	OH-20	W-30

vertical shafts													
Fire barriers	3	3	100 in. <sup>2a</sup>	$\leq 10$ 0 in. <sup>2</sup> , D-H-180 or D-H-W-180	NP	3	NP	D-H-W-180	NP	3	NP	W-180	
				$> 10$ 0 in. <sup>2</sup> , D-H-W-180									
	2	$1\frac{1}{2}$	Maximum size tested	D-H-90 or D-H-W-90	NP	2	NP	D-H-W-120	NP	2	NP	W-120	
	1	$\frac{3}{4}$	Maximum size tested <sup>e</sup>	D-H-45 or D-H-W-45	$\frac{3}{4}$ e	$\frac{3}{4}$ e	D-H-45	D-H-W-45	$\frac{3}{4}$	$\frac{3}{4}$	OH-45	W-60	
	$\frac{1}{2}$	$\frac{1}{3}$	Maximum size tested	D-20 or D-W-20	$\frac{1}{3}$	$\frac{1}{3}$	D-H-20	D-W-20	$\frac{1}{3}$	$\frac{1}{3}$	OH-20	W-30	
	2	$1\frac{1}{2}$	Maximum size	D-H-90 or	NP	2	NP	D-H-W-120	NP	2	NP	W-120	

			tested	D-H-W-90										
Horizontal exits served by bridges between buildings	2	$\frac{3}{4}$	Maximum size tested <sup>e</sup>	D-H-45 or D-H-W-45	$\frac{3}{4}$ e	$\frac{3}{4}$ e	D-H-45	D-H-W-45	$\frac{3}{4}$	$\frac{3}{4}$	OH-45	W-120		
Exit access corridors <sup>f</sup>	1	$\frac{1}{3}$	Maximum size tested	D-20 or D-W-20	$\frac{3}{4}$	$\frac{3}{4}$	D-H-45	D-H-W-20	$\frac{3}{4}$	$\frac{3}{4}$	OH-45	W-60		
	$\frac{1}{2}$	$\frac{1}{3}$	Maximum size tested	D-20 or D-W-20	$\frac{1}{3}$	$\frac{1}{3}$	D-H-20	D-H-W-20	$\frac{1}{3}$	$\frac{1}{3}$	OH-20	W-30		
Smoke barriers <sup>f</sup>	1	$\frac{1}{3}$	Maximum size tested	D-20 or D-W-20	$\frac{3}{4}$	$\frac{3}{4}$	D-H-45	D-H-W-20	$\frac{3}{4}$	$\frac{3}{4}$	OH-45	W-60		
Smoke partitions <sup>f,g</sup>	$\frac{1}{2}$	$\frac{1}{3}$	Maximum size tested	D-20 or D-W-20	$\frac{1}{3}$	$\frac{1}{3}$	D-H-20	D-H-W-20	$\frac{1}{3}$	$\frac{1}{3}$	OH-20	W-30		

For SI units, 1 in.<sup>2</sup> = 0.00064516 m<sup>2</sup>.

NP: Not permitted.

<sup>a</sup>Fire resistance-rated glazing tested to ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, or UL 263, *Fire Tests of Building Construction and Materials*, shall be permitted in the maximum size tested. (See 12.7.6.6.8.)

<sup>b</sup>Fire-rated glazing in exterior windows shall be marked in accordance with Table 12.7.6.6.3.

<sup>c</sup>See ASME A17.1/CSA B44, *Safety Code for Elevators and Escalators*, for additional information.

<sup>d</sup>See ASME A17.3, *Safety Code for Existing Elevators and Escalators*, for additional information.

<sup>e</sup>Maximum area of individual exposed lights shall be 1296 in.<sup>2</sup> (0.84 m<sup>2</sup>) with no dimension exceeding 54 in. (1.37 m) unless otherwise tested. [80:Table 4.4.5, Note b,<sup>7</sup> and 80:4.4.5.1]

<sup>f</sup>Fire doors are not required to have a hose stream test per UL 10B, *Fire Tests of Door Assemblies*,<sup>2</sup> or UL 10C, *Positive Pressure Fire Tests of Door Assemblies*.

<sup>g</sup>For residential board and care, see 32.2.3.1 and 33.2.3.1 of NFPA 101.

[101:Table 8.3.3.2.2]

#### A.12.7.6.2.2

Longer ratings might be required where opening protectives are provided for property protection as well as life safety. NFPA 80 should be consulted for standard practice in the selection and installation of fire door assemblies and fire window assemblies. [101:A.8.3.3.2.2]

A vision panel in a fire door is not a fire window, and, thus, it is not the intent of the “NP” notations in the “Fire Window Assemblies” column of Table 12.7.6.2.2 to prohibit vision panels in fire doors.

[101:A.8.3.3.2.2]

Table 12.7.6.2.2 with regard to glazing is intended for new construction and could have limited application to existing glazing installations. For example, existing vision panels of 100 in.<sup>2</sup> (0.065 m<sup>2</sup>) of wired glass in 60-minute and 90-minute doors and existing vision panels of 1296 in.<sup>2</sup> (0.84 m<sup>2</sup>) wired glass in doors 45 minutes or less have been accepted. [101:A.8.3.3.2.2]

Historically, installations of wired glass did not require marking. There could be existing installations of other glazing products used as opening protectives (e.g., vision panels, side lights, or transom panels) that also might not have markings. It is the building owner's responsibility to provide documentation acceptable to the AHJ regarding the product used and its compliance with the applicable provisions of this Code. [101:A.8.3.3.2.2]

Existing fire windows, where permitted, were traditionally allowed to have up to 1296 in.<sup>2</sup> (0.84 m<sup>2</sup>) of wired glass per panel. [101:A.8.3.3.2.2]

#### 12.7.6.2.4

Where a 20-minute ~~fire~~~~fire~~-protection-rated door is required in existing buildings, an existing 1<sup>3/4</sup> in. (44 mm) solid-bonded wood-core door, an existing steel-clad (tin-clad) wood door, or an existing solid-core steel door ~~with positive latch and closer~~ shall be permitted, unless otherwise specified by Chapters 11 through 43 of NFPA 101. [101:8.3.3.2.4]

#### 12.7.6.2.5

Existing doors permitted by 12.7.6.2.4 shall have a positive latch and a closer. [101:8.3.3.2.5]

### **12.7.6.2.65**

Openings required to have a fire protection rating by Table 12.7.6.2.2 shall be protected by approved, listed, and labeled fire door assemblies and fire window assemblies and their accompanying hardware, including all frames, closing devices, anchorage, and sills in accordance with the requirements of NFPA 80, except as otherwise specified in NFPA 101. [101:8.3.3.2.65]

### **A.12.7.6.3**

Some door assemblies have been tested to meet the conditions of acceptance of ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, or UL 263, *Fire Tests of Building Construction and Materials*. Where such assemblies are used, the provisions of 12.7.5 should be applied instead of those of 12.7.6.3. [101:A.8.3.3.3]

In existing installations, steel door frames that are well set in the wall might be judged as acceptable even if the frame label is not legible. [101:A.8.3.3.3]

### **12.7.6.3.1\***

Fire-Required fire door assemblies shall be installed, inspected, tested, and maintained in accordance with NFPA 80. [101:8.3.3.3.1]

### **A.12.7.6.3.1**

Where a door or door frame is not required to be fire protection rated and is equipped with a fire protection listing label, the door and the door frame are not required to comply with NFPA 80.  
[101:8.3.3.3.1]

### **12.7.6.3.5**

Unless otherwise specified, fire doors shall be self-closing or automatic-closing ~~in accordance with 14.5.4~~. [101:8.3.3.3.6]

### **12.7.6.4 Floor Fire Door Assemblies.**

#### **12.7.6.4.1**

Floor fire door assemblies used to protect openings in ~~fire fire~~-resistance-rated floors shall be tested in accordance with NFPA 288 and shall achieve a fire resistance rating not less than the assembly being penetrated. [101:8.3.3.4.1]

### **12.7.6.6.3**

New fire protection-rated glazing shall be marked in accordance with Table 12.7.6.6.3 and Table 12.7.6.2.2, and such marking shall be permanently affixed. [101:8.3.3.6.3]

#### **7Table 12.7.6.6.3 Marking Fire-Rated Glazing Assemblies**

Fire Test Standard	Marking	Definition of Marking
ASTM E119 or UL 263	W	Meets wall assembly criteria

NFPA 257 <u>or</u> UL 9	OH	Meets fire window assembly criteria, including the hose stream test
NFPA 252, <u>UL 10B, or</u> <u>UL 10C</u>	D	Meets fire door assembly criteria
	H	Meets fire door assembly hose stream test
	T	Meets 450°F (232°C) temperature rise criteria for 30 minutes
	XXX	The time, in minutes, of fire resistance or fire protection rating of the glazing assembly

#### 12.7.6.6.4

New fire resistance-rated glazing shall be marked in accordance with Table 12.7.6.6.3 and Table 12.7.6.2.2, and such marking shall be permanently affixed. [101:8.3.3.6.4]

#### 12.7.6.6.5

Fire protection-rated glazing shall be permitted in fire barriers having a required fire resistance rating of 1 hour or less and shall be of an approved type with the appropriate fire protection rating for the location in which the barriers are installed. [101:8.3.3.6.5]

#### 12.7.6.6.7

Fire protection-rated glazing in fire door assemblies, other than in existing fire-rated door assemblies, shall be of a design that has been tested to meet the conditions of acceptance of NFPA 252, UL 10B, *Fire Tests of Door Assemblies*, or UL 10C, *Positive Pressure Fire Tests of Door Assemblies*. [101:8.3.3.6.7]

#### 12.7.6.6.8

Fire resistance-rated glazing tested in accordance with ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, or UL 263, *Fire Tests of Building Construction and Materials*, shall be permitted in fire doors and fire window assemblies in accordance with their listings. [101:8.3.3.6.8]

#### 12.7.6.6.9

Nonsymmetrical fire protection-rated glazing systems shall be tested with each face exposed to the furnace, and the assigned fire protection rating shall be that of the shortest duration obtained from the two tests conducted in compliance with NFPA 257; or UL 9, *Fire Tests of Window Assemblies*.

[101:8.3.3.6.9]

#### 12.7.6.6.10

The total combined area of glazing in fire protection-rated glazing in fire window assemblies and fire-rated door assemblies used in fire barriers shall not exceed 25 percent of the area of the fire barrier that is common with any room, unless the installation meets one of the following criteria:

- (1) The installation is an existing fire window installation of wired glass and or other fire protection-rated glazing materials in approved frames. [101:8.3.3.10]
- (2) The fire protection-rated glazing material is installed in approved existing frames.

[101:8.3.3.10]

### **12.7.6.6.11**

Existing installations of wired glass of  $\frac{1}{4}$  in. (6.3 mm) thickness ~~and labeled previously approved~~ for fire protection purposes shall be permitted to ~~be used in approved opening protectives, provided that the maximum size specified by the listing is not exceeded.~~ remain in use. [101:8.3.3.6.11]

### **12.7.8.1.1**

The provisions of 12.7.8 shall govern the materials and methods of construction used to protect through-penetrations and membrane penetrations in fire walls, fire barrier walls, and ~~fire-fire-~~ resistance-rated horizontal assemblies. [101:8.3.4.1.1]

### **12.7.8.1.2**

The provisions of 12.7.8 shall not apply to approved existing materials and methods of construction used to protect existing through-penetrations and existing membrane penetrations in fire walls, fire barrier walls, or ~~fire-fire-~~ resistance-rated horizontal assemblies, unless otherwise required by Chapters 11 through 43 of NFPA 101. [101:8.3.4.1.2]

### **12.7.8.1.3**

Penetrations shall be protected in accordance with a tested system, and installed and maintained in accordance with the manufacturer's instructions. [101:8.3.4.1.3]

### **A.12.7.8.2**

Firestop materials become systems when installed to the listed firestop system design from an accredited testing laboratory. Installation of firestop materials to the listed system should meet all limitations of the system. [101:A.8.3.4.2]

There are ~~management management~~-system-based contractor approval or qualification programs offered by third-party, independent companies that quantifiably qualify a company to install firestop materials that become systems after proper installation. In each program, there is an industry firestop exam that gives the company a basis to appoint a "Designated Responsible Individual." [101:A.8.3.4.2]

Then, the ~~third~~-party firm audits the firestop company's product and systems documentation records in conjunction with the company's management system operational policies and procedures to verify company compliance ~~does as it says it does~~. An audit also takes place on a project site to verify that the management system is working. [101:A.8.3.4.2]

Where the configuration of a penetrating item or group of items is such that a listed system is determined to be nonexistent and reconfiguration of the penetrations or ~~fire-fire-~~resistance-rated assembly is determined to be impractical or impossible, alternative methods for maintaining the integrity of the required fire resistance rating of the assembly should be permitted to be established using an engineering analysis based on a comparison of listed systems prepared by a manufacturer's technical representative of the systems specified, by the laboratory that conducted the original test, or by a professional engineer. [101:A.8.3.4.2]

ASTM E2174, *Standard Practice for On-Site Inspection of Installed Fire Stops*, provides guidance for the inspection of through-penetration firestop systems tested in accordance with ASTM E814, *Standard Test Method for Fire Tests of Through-Penetration Fire Stops*, and UL 1479, *Fire Tests of Through-Penetration Firestops*. [101:A.8.3.4.2]

Independent inspection paid for by the owner is in many specifications and referenced in this appendix annex using ASTM E2174 and ASTM E2393, *Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers*. As a result, there is an accreditation program available for firestop special inspection agencies. [101:A.8.3.4.2]

#### **12.7.8.2.2 Testing.**

The firestop system or device shall be tested in accordance with ASTM E814, *Standard Test Method for Fire Tests of Through-Penetration Fire Stop Systems*, or UL 1479, *Fire Tests of Through-Penetration Firestops*, at a minimum positive pressure differential of 0.01 in. water column (2.5 Pa) between the exposed and the unexposed surface of the test assembly. [101:8.3.4.2.2]

#### **12.7.8.2.3 F Ratings.**

Firestop systems and devices shall have a minimum 1-hour F rating, but and not less than the required fire resistance rating of the fire barrier penetrated. [101:8.3.4.2.3]

#### **12.7.8.2.4.1**

Penetrations in fire-fire-resistance-rated horizontal assemblies shall have a T rating of not less than 1 hour, and not less than the fire resistance rating of the horizontal assembly. [101:8.3.4.2.4.1]

#### **12.7.8.2.5.1**

The requirements of 12.7.8.2 shall not apply where otherwise permitted by any one of the following:

- (1) Where penetrations are tested and installed as part of an assembly tested and rated in accordance with ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, or UL 263, *Fire Tests of Building Construction and Materials*
- (2) Where penetrations through floors are enclosed in a shaft enclosure designed as a fire barrier
- (3) Where concrete, grout, or mortar has been used to fill the annular spaces around cast-iron, copper, or steel piping, conduit, or tubing that penetrates one or more concrete or masonry fire fire-resistance-rated assemblies and all of the following applies:
  - (a) The nominal diameter of each penetrating item does not exceed 6 in. (150 mm),
  - (b) The opening size does not exceed 1 ft<sup>2</sup> (0.09 m<sup>2</sup>).
  - (c) The thickness of the concrete, grout, or mortar is the full thickness of the assembly.
- (4) Where penetration is limited to one floor, the firestopping material is capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste when subjected to the time-temperature fire conditions of ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, or UL 263, *Fire Tests of Building Materials* under a minimum positive pressure differential of 0.01 in. water column (2.5 Pa) at the location of the penetration for the time period equivalent to the required fire resistance rating of the assembly penetrated, and the firestopping materials are used with the following penetrating items:

- (a) Steel, ferrous, or copper cables
- (b) Cable or wire with steel jackets
- (c) Cast-iron, steel, or copper pipes
- (d) Steel conduit or tubing

[101:8.3.4.2.5.1]

### **12.7.8.2.5.2**

The maximum nominal diameter of the penetrating item, as indicated in 12.7.8.2.5.1(4)(a) through 12.7.8.2.5.1(4) (d), shall not be greater than 4 in. (100 mm) and shall not exceed an aggregate 100 in.<sup>2</sup> (64,520 mm<sup>2</sup>) opening in any 100 ft<sup>2</sup> (9.3 m<sup>2</sup>) of floor or wall area. [101:8.3.4.2.5.2]

### **12.7.8.6.1**

Where piping penetrates a ~~fire~~-~~fire~~-resistance-rated wall or floor assembly, combustible piping shall not connect to noncombustible piping ~~within 36 in. (915 mm) of the firestop system or device~~ unless it can be demonstrated that the transition will not reduce the fire resistance rating, except in the case of previously approved installations. [101:8.3.4.6.1]

### **12.7.8.7.2**

The firestop system or device shall be tested in accordance with ASTM E814, *Standard Test Method for Fire Tests of Through-Penetration Fire Stop Systems*, or UL 1479, *Fire Tests of Through-Penetration Firestops*, at a minimum positive pressure differential of 0.01 in. water column (2.5 Pa) between the exposed and the unexposed surface of the test assembly, unless one of the following conditions applies:

- (1) Membrane penetrations of ceilings that are not an integral part of a ~~fire~~-~~fire~~-resistance-rated floor/ceiling or roof/ceiling assembly.
- (2) Membrane penetrations of steel, ferrous, or copper conduits, piping, or tubing, and steel electrical outlet boxes and wires, or combustion vents or exhaust vents where the annular space is protected with an approved material, and the aggregate area of the openings does not exceed 100 in.<sup>2</sup> (64,520 mm<sup>2</sup>) in any 100 ft<sup>2</sup> (9.3 m<sup>2</sup>) of ceiling area.
- (3) Electrical outlet boxes and fittings, provided that such devices are listed for use in ~~fire~~-~~fire~~-resistance-rated assemblies and are installed in accordance with their listing.
- (4) The annular space created by the membrane penetration of a fire sprinkler shall be permitted, provided that the space is covered by a metal escutcheon plate.

[101:8.3.4.7.2]

### **12.7.8.7.3**

Where walls or partitions are required to have a minimum 1-hour fire resistance rating, recessed fixtures shall be installed in the wall or partition in such a manner that the required fire resistance is not reduced, unless one of the following criteria is met:

- (1) Any steel electrical box not exceeding 16 in.<sup>2</sup> (10,300 mm<sup>2</sup>) in area shall be permitted where the aggregate area of the openings provided for the boxes does not exceed 100 in.<sup>2</sup> (64,520 mm<sup>2</sup>) in

- any 100 ft<sup>2</sup> (9.3 m<sup>2</sup>) of wall area, and, where outlet boxes are installed on opposite sides of the wall, the boxes shall be separated by one of the following means:
- (a) Horizontal distance of not less than 24 in. (610 mm)
  - (b) Horizontal distance of not less than the depth of the wall cavity, where the wall cavity is filled with cellulose loose-fill, rock wool, or slag wool insulation
  - (c)\* Solid fireblocking
  - (d) Other listed materials and methods
- (2) Membrane penetrations for any listed electrical outlet box made of any material shall be permitted, provided that such boxes have been tested for use in ~~fire~~-~~fire~~-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.
  - (3) The annular space created by the membrane penetration of a fire sprinkler shall be permitted, provided that the space is covered by a metal escutcheon plate.
  - (4) Membrane penetrations by electrical boxes of any size or type, which have been listed as part of a wall opening protective material system for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing shall be permitted.

[101:8.3.4.7.3]

#### **A.12.7.8.7.3(1)(c)**

Criteria associated with fireblocking can be found in [the building code](#) 8.14.2 of NFPA 5000.

[101:A.8.3.4.7.3(1)(c)]

#### **12.7.8.8 Ducts and Air-Transfer Openings.**

Openings ~~in fire barriers~~ for air-handling ductwork or air movement shall be protected in accordance with 11.2.1. [101:8.3.4.8]

#### **12.7.9.1.1**

The provisions of 12.7.9 shall govern the materials and methods of construction used to protect joints in ~~fire barriers, in~~ between ~~fire barriers~~, and at the perimeter of fire barriers ~~or,~~ where fire barriers meet other fire barriers, the floor or roof deck above, or the outside walls. [101:8.3.5.1.1]

#### **12.7.9.2.1 \***

Joints made within or at the perimeter of fire barriers, between ~~fire~~-~~fire~~-resistance-rated assemblies, or where fire barriers meet other fire barriers, the floor or roof deck above, or the outside walls shall be protected with a joint system that is designed and tested to prevent the spread of fire for a time period equal to that of the assembly in which the joint is located. [101:8.3.5.2.1]

#### **A.12.7.9.2.1**

Materials used to protect joints become systems when installed to the listed joint system design from an accredited testing laboratory. Installation of joint materials to the listed system should meet all limitations of the system. [101:A.8.3.5.2.1]

There are ~~management~~-~~management~~-system-based contractor approval or qualification programs offered by third-party, independent companies that quantifiably qualify a company to install firestop

materials that become systems after proper installation. In each program, there is an industry firestop exam that gives the company a basis to appoint a “Designated Responsible Individual.” [101:A.8.3.5.2.1]

Then, the third-party firm audits the firestop company’s product and systems documentation records in conjunction with the company’s management system operational policies and procedures to verify company compliance. An audit also takes place on a project site to verify that the management system is working. [101:A.8.3.5.2.1]

Where the configuration of a joint is such that a listed system is determined to be nonexistent and reconfiguration of the joint or ~~fire fire~~-resistance-rated assembly is determined to be impractical or impossible, alternative methods for maintaining the integrity of the required fire resistance rating of the assembly should be permitted to be established using an engineering analysis based on a comparison of listed systems prepared by a manufacturer’s technical representative of the systems specified, by the laboratory that conducted the original test, or by a professional engineer. [101:A.8.3.5.2.1]

ASTM E2174, Standard Practice for On-Site Inspection of Installed Fire Stops, provides guidance for the inspection of through-penetration firestop systems tested in accordance with ASTM E814, Standard Test Method for Fire Tests of Through-Penetration Fire Stops, and UL 1479, Fire Tests of Through-Penetration Firestops. On-site inspection of firestopping is important in maintaining the integrity of any vertical or horizontal fire barrier. Two standard practice documents were developed with the ASTM process to allow inspections of through-penetration firestops, joints, and perimeter fire barrier systems. ASTM E2393, Standard Practice for On-Site Inspection of Installed Fire-Resistive Joint Systems and Perimeter Fire Barriers, provides guidance for the inspection of fire-resistive joints and perimeter fire barrier joint systems tested in accordance with the requirements of ASTM E1966, Standard Test Method for Fire-Resistive Joint Systems, or with UL 2079, Tests for Fire Resistance of Building Joint Systems. ASTM E2393 contains a standardized report format, which would lead to greater consistency for inspections.

[101:A.8.3.5.2.1]

Independent inspection paid for by the owner is in many specifications and referenced in this annex using ASTM E2174 and ASTM E2393, Standard Practice for On-Site Inspection of Installed Fire-Resistive Joint Systems and Perimeter Fire Barriers. As a result, there is an accreditation program available for firestop special inspection agencies. Independent inspection paid for by the owner is in many specifications and referenced in this annex using ASTM E2393. As a result, there is an accreditation program available for firestop special inspection agencies. [101:A.8.3.5.2.1]

### 12.7.9.2.6

All joint systems shall be tested at their maximum joint width in accordance with the requirements of ASTM E1966, Standard Test Method for Fire-Resistive Joint Systems, or UL 2079, Tests for Fire Resistance of Building Joint Systems, under a minimum positive pressure differential of 0.01 in. water column (2.5 N/m<sup>2</sup>) for a time period equal to that of the assembly. [101:A.8.3.5.2.6]

### 12.7.9.2.8

Wall assemblies shall be subjected to a hose stream test in accordance with ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials, or UL 263, Fire Tests of Building

Construction and Materials or UL 263. [101:8.3.5.2.8]

### **12.7.9.3**

Joints made between a fire barrier and a non-fire-resistance-rated floor or roof sheathing, slab, or deck above shall be protected by an approved continuity head of wall joint system installed as and tested in accordance with ASTM E2837, *Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies*, and the system shall have an F rating and T rating of not less than the required fire resistance rating of the fire barrier. [101:8.3.5.3]

### **A.12.7.9.4**

The provisions of 12.7.9.4 are intended to restrict the interior vertical passage of flame and hot gases from one floor to another at the location where the floor intersects the exterior wall assembly. The requirements of 12.7.9.4 8.3.5.4 mandate sealing the opening between a floor and an exterior wall assembly to provide the same fire performance as that required for the floor. ASTM E2307, *Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multi-Story Test Apparatus*, is a test method for evaluating the performance of perimeter fire barrier systems. Some laboratories have tested and listed perimeter fire barrier systems essentially in accordance with the ASTM method. The ASTM test method evaluates the performance of perimeter fire barrier systems in terms of heat transfer and fire spread inside a building through the floor/exterior wall intersection. The current test method does not assess the ability of perimeter fire barrier systems to prevent the spread of fire from story to story via the exterior. However, some laboratories have included additional temperature measurement criteria in their evaluation of the exterior wall and evaluation of vision glass breakage as additional pass/fail criteria in an attempt to at least partially address this “leapfrog” effect. [101:A.8.3.5.4]

### **12.7.9.4.1**

Voids created between the fire fire-resistance-rated floor assembly and the exterior curtain wall shall be protected with a perimeter joint system that is designed and tested in accordance with ASTM E2307, *Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Apparatus*. [101:8.3.5.4.1]

### **A.12.8.1**

The provision for terminating the smoke partition at the ceiling is not intended to prevent the wall from extending above the ceiling.

Although a smoke partition is intended to limit the free movement of smoke, it is not intended to provide an area that would be free of smoke. [101:A.8.4.1]

### **A.12.8.2(2)**

The provision for terminating the smoke partition at the ceiling is not intended to prevent the wall from extending above the ceiling. [101:A.8.4.2(2)]

An architectural, exposed, suspended-grid acoustical tile ceiling with penetrations for sprinklers, ducted

HVAC supply and return-air diffusers, speakers, and recessed light fixtures is capable of limiting the transfer of smoke. [101:A.8.4.2(2)]

### **12.8.3.1**

Doors in smoke partitions shall comply with 12.8.3.2 through 12.8.3.65. [101:8.4.3.1]

### **12.8.3.6**

Shutters that protect openings shall be automatic-closing upon operation of approved smoke detectors installed in accordance with the provisions of NFPA 72. [101:8.4.3.6]

### **12.8.4.2 Vibration Isolation Equipment or Systems.**

Where vibration isolation of equipment or systems is employed, the vibration restraint(s) shall be located outside of the partition, wall, or floor assembly through for which the equipment or systems pass through. [101:8.4.4.2]

### **A.12.8.6.2**

An air-transfer opening, as defined in NFPA 90A, is an opening designed to allow the movement of environmental air between two contiguous spaces. [101:A.8.4.6.2]

### **12.9.1 \*General.**

Where required by Chapters 11 through 43 of NFPA 101, smoke barriers shall be provided to subdivide building spaces for the purpose of restricting the movement of smoke. [101:8.5.1]

### **A.12.9.2**

To ensure that a smoke barrier is continuous, it is necessary to seal completely all openings where the smoke barrier abuts other smoke barriers, fire barriers, exterior walls, the floor below, and the floor or ceiling above. It is not the intent to prohibit a smoke barrier from stopping at a fire barrier if the fire barrier meets the requirements of a smoke barrier (that is, the fire barrier is a combination smoke barrier/fire barrier). [101:A.8.5.2]

### **12.9.4.2**

Where required by Chapters 11 through 43 of NFPA 101, doors in smoke barriers that are required to be smoke-smoke-leakage-rated shall comply with the requirements of 8.2.2.4 of NFPA 101. [101:8.5.4.2]

### **12.9.4.3**

Latching hardware shall be required on doors in smoke barriers, unless specifically exempted by Chapters 11 through 43 of NFPA 101. [101:8.5.4.3]

### **12.9.5.2.1**

Where a smoke barrier is penetrated by a duct or air-transfer opening, a smoke damper designed and tested in accordance with the requirements of UL 555S, Smoke Dampers, shall be installed.

[101:8.5.5.2.1]

### **12.9.5.2.2**

Where a smoke barrier is also constructed as a fire barrier, a combination fire/smoke damper designed and tested in accordance with the requirements of UL 555, *Fire Dampers*, and UL 555S, *Smoke Dampers*, shall be installed. [101:8.5.5.2.2]

### **12.9.5.3 Smoke Damper Exemptions.**

Smoke dampers shall not be required under any of the following conditions:

- (1) Where specifically exempted by provisions in Chapters 11 through 43 of NFPA 101
- (2) Where ducts or air-transfer openings are part of an engineered smoke control system and the smoke damper will interfere with the operation of a smoke control system
- (3) Where the air in ducts continues to move and the air-handling system installed is arranged to prevent recirculation of exhaust or return air under fire emergency conditions
- (4) Where the air inlet or outlet openings in ducts are limited to a single smoke compartment
- (5) Where ducts penetrate floors that serve as smoke barriers
- (6) Where ducts penetrate smoke barriers forming a communicating space separation in accordance with 8.6.6(4)(a) of NFPA 101

[101:8.5.5.3]

### **12.9.5.4.2**

Smoke dampers and combination fire and smoke dampers required by this ~~code~~*Code* shall be inspected, tested, and maintained in accordance with NFPA 105. [101:8.5.5.4.2]

### **12.9.5.5.2**

Smoke and combination fire and smoke dampers in new construction shall be provided with an approved means of access, as follows:

- (1) The means of access shall be large enough to allow inspection and maintenance of the damper and its operating parts.
- (2) The access shall not affect the integrity of ~~fire~~*fire*-resistance-rated assemblies or smoke barrier continuity.
- (3) The access openings shall not reduce the fire resistance rating of the assembly.
- (4) Access doors in ducts shall be tight-fitting and suitable for the required duct construction.
- (5) Access and maintenance shall comply with the requirements of the mechanical code.

[101:8.5.5.5.2]

### **12.9.5.5.3 Identification.**

Access points to fire and smoke dampers in new construction shall be permanently identified by one of the following:

- (1) A label having letters not less than  $1/2$  in. (13 mm) in height and reading as one of the following:
  - (a) FIRE/SMOKE DAMPER
  - (b) SMOKE DAMPER
  - (c) FIRE DAMPER
- (2) Symbols as approved by the AHJ

[101:8.5.5.3]

### **12.9.5.6 Smoke Damper Ratings.**

Smoke damper leakage ratings shall be not less than Class II. Elevated temperature ratings shall be not less than 250°F (140°C). [101:8.5.5.6]

### **12.9.5.7 Smoke Detectors.**

#### **12.9.5.7.1**

Required smoke dampers in ducts penetrating smoke barriers shall close upon detection of smoke by approved smoke detectors in accordance with *NFPA 72*, unless one of the following conditions exists:

- (1) The ducts penetrate smoke barriers above the smoke barrier doors, and the door release detector actuates the damper.
- (2) Approved smoke detector installations are located within the ducts in existing installations.

[101:8.5.5.7.1]

#### **12.9.6.4**

Where sprinklers penetrate a single membrane of a ~~fire~~~~fire~~~~resistance~~~~—~~rated assembly in buildings equipped throughout with an approved automatic fire sprinkler system, noncombustible escutcheon plates shall be permitted, provided that the space around each sprinkler penetration does not exceed  $\frac{1}{2}$  in. (13 mm), measured between the edge of the membrane and the sprinkler. [101:8.5.6.4]

#### **12.9.6.5**

In new construction, through-penetrations shall be protected by an approved through-penetration firestop system installed and tested in accordance with the requirements of UL 1479, *Fire Tests of Penetration Firestops*, for air leakage and shall comply with one of the following:

- (1) A maximum  $5 \text{ ft}^3/\text{min per ft}^2$  (0.025  $\text{m}^3/\text{s per m}^2$ ) of penetration opening for each through-penetration firestop system
- (2) A maximum total cumulative leakage of  $50 \text{ ft}^3/\text{min}$  (0.024  $\text{m}^3/\text{s}$ ) for any  $100 \text{ ft}^2$  (9.3  $\text{m}^2$ ) of wall area or floor area

~~Where the penetrating item uses a sleeve to penetrate the smoke barrier, the sleeve shall be securely set in the smoke barrier, and the space between the item and the sleeve shall be filled with a listed system or with a material capable of restricting the transfer of smoke.~~

[101:8.5.6.5]

#### **12.9.6.6 Vibration Isolation Equipment or Systems.**

Where vibration ~~isolation~~~~isolation~~ of equipment or systems is employed, the vibration restraint(s) shall be located outside of the partition, wall or floor assembly for which the equipment or systems pass through. [101:8.5.6.7]

#### **12.9.7.2**

Joints made within, between, or at the perimeter of smoke barriers shall be protected with a joint system that is tested in accordance with the requirements of UL 2079, *Tests for Fire Resistance of*

Building Joint Systems, for air leakage, and the L rating of the joint system shall not exceed 5 ft<sup>3</sup>/min per ft (0.00775 m<sup>3</sup>/s per m) of the joint. Joints made within or at the perimeter of smoke barriers shall be protected with a joint system that is capable of limiting the transfer of smoke. [101:8.5.7.2]

#### **12.9.7.3**

Joints made within or between smoke barriers shall be protected with a smoke-tight joint system that is capable of limiting the transfer of smoke. [101:8.5.7.3]

#### **12.9.7.34**

Smoke barriers that are also constructed as fire barriers shall be protected with a joint system that is designed and tested to resist the spread of fire for a time period equal to the required fire resistance rating of the assembly and restrict the transfer of smoke in compliance with 12.9.7.2. [101:8.5.7.3]

#### **12.9.7.45**

Testing of the joint system in a smoke barrier that also serves as fire barrier shall be representative of the actual installation. [101:8.5.7.4]

### **13.1.3 \*Integrated Fire Protection and Life Safety System Test.**

#### **13.1.3.1 Basic Testing.**

Where required by Chapters 11 through 43 of NFPA 101, installations involving and where two or more integrated fire protection or life safety systems are integrated, the integrated system shall be tested to verify the proper operation and function of such systems in accordance with NFPA 413.1.3.1.1 and 13.1.3.1.2. [101:9.11.4.1]

#### **A.13.1.3**

NFPA 4 requires that integrated fire protection and life safety systems be periodically retested as specified in the integrated system test plan. In addition, for existing systems, an integrated system test plan must be developed within 5 years of adoption of NFPA 4. [101:A.9.11.4]

#### **13.1.3.1.1**

When a fire protection or life safety system is tested, the response of integrated fire protection and life safety systems shall be verified. [101:A.9.11.4.1.1]

#### **13.1.3.1.2\***

After repair or replacement of equipment, required retesting of integrated systems shall be limited to verifying the response of fire protection or life safety functions initiated by repaired or replaced equipment. [101:A.9.11.4.1.2]

#### **13.1.3.2\* NFPA 4 Testing.**

Where required by 9.3.5 or Chapters 11 through 43 of NFPA 101, the following integrated fire protection and life safety systems shall be tested in accordance with 13.1.3.1 and 13.1.3.2.1 through 13.1.3.2.2:

- (1) Integrated fire protection and life safety systems in high-rise buildings**

(2) Integrated fire protection and life safety systems that include a smoke control system  
[101:9.11.4.2]

#### **A.13.1.3.2**

It is intended that the requirements in 13.1.3.1.2 be applied to retesting of any integrated systems following repair or replacement of equipment in lieu of applying retesting provisions in NFPA 4.  
[101:A.9.11.4.2]

#### **13.1.3.2.1**

For new buildings, integrated testing in accordance with NFPA 4 shall be conducted prior to the issuance of a certificate of occupancy. [101:9.11.4.2.1]

#### **13.1.3.2.2**

For existing buildings, integrated testing in accordance with NFPA 4 shall be conducted at intervals not exceeding 10 years unless otherwise specified by an integrated system test plan prepared in accordance with NFPA 4. [101:9.11.4.2.2]

#### **13.2.1.1**

The design and installation of standpipe systems shall be in accordance with Section 13.2 and NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*.

#### **13.2.1.2**

Where standpipe and hose systems are installed in combination with automatic sprinkler systems, installation shall be in accordance with the appropriate provisions established by NFPA 13 and NFPA 14.  
[101:9.10.2]

#### **13.2.2.3**

High-rise buildings shall be protected throughout by a Class I standpipe system in accordance with 13.2.2. [101:11.8.3.2]

#### **13.2.2.4**

~~In new assembly occupancies, regular stages over 1000 ft<sup>2</sup> (93 m<sup>2</sup>) in area and all legitimate stages shall be equipped with 1<sup>1</sup>/<sub>2</sub> in. (38 mm) hose lines for first aid fire fighting at each side of the stage.~~  
[101:12.4.6.12.1]

#### **13.2.2.4.1**

~~In existing assembly occupancies, stages over 1000 ft<sup>2</sup> (93 m<sup>2</sup>) in area shall be equipped with 1<sup>1</sup>/<sub>2</sub> in. (38 mm) hose lines for first aid fire fighting at each side of the stage.~~ [101:13.4.6.12.1]

#### **13.2.2.4.2**

~~Hose connections shall be in accordance with NFPA 13, unless Class II or Class III standpipes in~~

accordance with NFPA 14 are used. [101:12.4.6.12.2; 101:13.4.6.12.2]

### 13.3.1.5

Sprinkler piping serving hazardous areas as described in 13.3.1.4 shall be provided with an indicating shutoff valve, supervised in accordance with 13.3.1.8 or NFPA 13<sub>u</sub> and ~~in~~-installed in an accessible, visible location between the sprinklers and the connection to the domestic water supply. [101:9.7.1.3]

### 13.3.1.8.1 \*Supervisory Signals.

#### A.13.3.1.8.1

~~NFPA 72 provides details of standard practice in sprinkler supervision. Subject to the approval of the AHJ, sprinkler supervision is also permitted to be provided by direct connection to municipal fire departments or, in the case of very large establishments, to a private headquarters providing similar functions. NFPA 72 covers such matters. System components and parameters that are required to be monitored should include, but should not be limited to, control valves, water tank levels and temperatures, tank pressure, and air pressure on dry pipe valves.~~ [101:A.9.7.2.1]

~~Where municipal fire alarm systems are involved, reference should also be made to NFPA 1221.~~  
[101:A.9.7.2.1]

### 13.3.2.7.2

Any building containing one or more assembly occupancies where the aggregate occupant load of the assembly occupancies exceeds 300 shall be protected by an approved, supervised automatic sprinkler system in accordance with NFPA 13 as follows (see also 12.1.6, 12.2.6, 12.3.2, and 12.3.6 of NFPA 101):

- (1) Throughout the story containing the assembly occupancy
- (2) Throughout all stories below the story containing the assembly occupancy
- (3) In the case of an assembly occupancy located below the level of exit discharge, throughout all stories intervening between that story and the level of exit discharge, including the level of exit discharge

[101:12.3.5.2]

### 13.3.2.7.3

The requirements of 13.3.2.7.2 shall not apply to the following:

- (1)\* Assembly occupancies consisting of a single multipurpose room of less than 12,000 ft<sup>2</sup> (1115 m<sup>2</sup>) that are not used for exhibition or display and are not part of a mixed occupancy
- (2) Gymnasiums, skating rinks, and swimming pools used exclusively for participant sports with no audience facilities for more than 300 persons
- (3)\* Locations in stadia and arenas as follows:
  - (a) Over the floor areas used for contest, performance, or entertainment, provided that the roof construction is more than 50 ft (15 m) above the floor level, and use is restricted to low fire hazard uses
  - (b) Over the seating areas, provided that use is restricted to low fire hazard uses

- (c) Over open-air concourses where an approved engineering analysis substantiates the ineffectiveness of the sprinkler protection due to building height and combustible loading
- (4) Locations in unenclosed stadia and arenas as follows:
  - (a) Press boxes of less than 1000 ft<sup>2</sup> (93 m<sup>2</sup>)
  - (b) Storage facilities of less than 1000 ft<sup>2</sup> (93 m<sup>2</sup>) if enclosed with not less than 1-hour fire-resistance-rated construction
  - (c) Enclosed areas underneath grandstands that comply with 25.3.4

[101:12.3.5.3]

#### **A.13.3.2.7.3(1)**

It is the intent to permit a single multipurpose room of less than 12,000 ft<sup>2</sup> (1115 m<sup>2</sup>) to have certain small rooms as part of the single room. These rooms could be a kitchen, an office, an equipment room, and the like. It is also the intent that an addition could be made to an existing building without requiring that the existing building be sprinklered, where both the new and existing buildings have independent means of egress and a fire-rated separation is provided to isolate one building from the other.

[101:A.12.3.5.3(1)]

A school gymnasium with egress independent of, and separated from, the school would be included in this exception, as would a function hall attached to a church with a similar egress arrangement.

[101:A.12.3.5.3(1)]

#### **A.13.3.2.7.3(3)**

Examples of low fire hazard uses include spectator sporting events, concerts, and performances on platforms. [101:A.12.3.5.3(3)]

The following uses are not low fire hazard uses: concerts and performances on stages; tradeshows; exhibition and display of combustible items; displays of vehicles, boats, or similar items; or events using open flames or pyrotechnic effects. [101:A.12.3.5.3(3)]

### **13.3.2.7.5 Fire Protection.**

Every stage shall be protected by an approved, supervised automatic sprinkler system in compliance with Section 13.3. [101:12.4.76.10]

#### **13.3.2.7.5.1**

Protection shall be provided throughout the stage and in storerooms, workshops, permanent dressing rooms, and other accessory spaces contiguous to stages. [101:12.4.76.10.1]

#### **13.3.2.7.5.2**

Sprinklers shall not be required for stages 1000 ft<sup>2</sup> (93 m<sup>2</sup>) or less in area and 50 ft (15 m) or less in height where the following criteria are met:

- (1) Curtains, scenery, or other combustible hangings are not retractable vertically.

(2) Combustible hangings are limited to borders, legs, a single main curtain, and a single backdrop.

[101:12.4.76.10.2]

### **13.3.2.7.5.3**

Sprinklers shall not be required under stage areas less than 48 in. (1220 mm) in clear height that are used exclusively for chair or table storage and lined on the inside with  $\frac{5}{8}$  in. (16 mm) Type X gypsum wallboard or the approved equivalent. [101:12.4.76.10.3]

### **13.3.2.8.1**

Where the occupant load exceeds 100, the following assembly occupancies shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with [NFPA 1313.3](#):

- (1) Dance halls
- (2) Discotheques
- (3) Nightclubs
- (4) Assembly occupancies with festival seating

[101:13.3.5.1]

### **13.3.2.8.3**

The sprinklers specified by 13.3.2.8.2 shall not be required where otherwise permitted in the following locations:

- (1) Locations in stadia and arenas as follows:
  - (a) Over the floor areas used for contest, performance, or entertainment
  - (b) Over the seating areas
  - (c) Over open-air concourses where an approved engineering analysis substantiates the ineffectiveness of the sprinkler protection due to building height and combustible loading
- (2) Locations in unenclosed stadia and arenas as follows:
  - (a) Press boxes of less than 1000 ft<sup>2</sup> (93 m<sup>2</sup>)
  - (b) Storage facilities of less than 1000 ft<sup>2</sup> (93 m<sup>2</sup>) if enclosed with not less than 1-hour-hour-fire-fire-resistance-rated construction
  - (c) Enclosed areas underneath grandstands that comply with 25.3.4

[101:13.3.5.3]

### **13.3.2.8.5 Fire Protection.**

Every stage shall be protected by an approved automatic sprinkler system in compliance with Section 13.3. [101:13.4.76.10]

### **13.3.2.8.5.1**

Protection shall be provided throughout the stage and in storerooms, workshops, permanent dressing rooms, and other accessory spaces contiguous to such stages. [101:13.4.76.10.1]

### **13.3.2.8.5.2**

Sprinklers shall not be required for stages 1000 ft<sup>2</sup> (93 m<sup>2</sup>) or less in area where the following criteria are met:

- (1) Curtains, scenery, or other combustible hangings are not retractable vertically.
- (2) Combustible hangings are limited to borders, legs, a single main curtain, and a single backdrop.

[101:13.4.76.10.2]

### **13.3.2.8.5.3**

Sprinklers shall not be required under stage areas less than 48 in. (1220 mm) in clear height that are used exclusively for chair or table storage and lined on the inside with  $\frac{5}{8}$  in. (16 mm) Type X gypsum wallboard or the approved equivalent. [101:13.4.76.10.3]

### **13.3.2.9.1**

Educational occupancy buildings shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3 except as otherwise permitted by 13.3.2.9.2.

[101:14.3.5.1]

### **13.3.2.10.5**

Where another provision of Chapter 15 of NFPA 101 requires an automatic sprinkler system, the sprinkler system shall be installed in accordance with [NFPA 13](#)13.3. [101:15.3.5.5]

### **13.3.2.11.3**

In Type I and Type II construction, alternative protection measures shall be permitted to be substituted for sprinkler protection, without causing a building to be classified as nonsprinklered, in specified areas where the AHJ has prohibited sprinklers. [101:18.3.5.5]

### **13.3.2.11.5 \***

Sprinklers shall not be required in clothes closets of patient sleeping rooms in hospitals where the area of the closet does not exceed 6 ft<sup>2</sup> (0.55 m<sup>2</sup>), provided that the distance from the sprinkler in the patient sleeping room to the back wall of the closet does not exceed the maximum distance permitted by NFPA 13. [101:18.3.5.10]

### **A.13.3.2.11.5**

This exception is limited to hospitals, as nursing homes and many limited care facilities might have more combustibles within the closets. The limited amount of clothing found in the small clothes closets in hospital patient rooms is typically far less than the amount of combustibles in casework cabinets that do not require sprinkler protection, such as nurse servers. In many hospitals, especially new hospitals, it is difficult to make a distinction between clothes closets and cabinet work. The exception is far more restrictive than similar exceptions for hotels and apartment buildings. NFPA 13 already permits the omission of sprinklers in wardrobes if see 8.1.1(7) of NFPA 13. It is not the intent of 13.3.2.11.5 to affect the wardrobe provisions of NFPA 13. It is the intent that the sprinkler protection in the room covers the

closet as if there were no door on the closet. (See 8.5.3.2.3 of NFPA 13.) [101:A.18.3.5.10]

### **13.3.2.12.2**

All high-rise buildings containing health care occupancies shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with Section 13.3 within 12 years of the adoption of this *Code*, except as otherwise provided in 13.3.2.12.3 or 13.3.2.12.4. [101:19.4.32.1]

### **13.3.2.12.3**

Where a jurisdiction adopts this edition of the *Code* and previously adopted the 201<sup>85</sup> edition, the sprinklering required by 13.3.2.12.2 shall be installed within 9 years of the adoption of this *Code*.  
[101:19.4.32.2]

### **13.3.2.12.4**

Where a jurisdiction adopts this edition of the *Code* and previously adopted the 201<sup>52</sup> edition, the sprinklering required by 13.3.2.12.2 shall be installed within 6 years of the adoption of this *Code*.  
[101:19.4.32.3]

### **13.3.2.12.9 \***

Where this *Code* permits exceptions for fully sprinklered buildings or smoke compartments and specifically references this paragraph, the sprinkler system shall meet all of the following criteria:

- (1) It shall be installed throughout the building or smoke compartment in accordance with Section 13.3.
- (2) It shall be installed in accordance with NFPA 13, unless it is an approved existing system.
- (3) It shall be electrically connected to the fire alarm system.
- (4) It shall be fully supervised.
- (5) It shall be equipped with listed quick-response or listed residential sprinklers throughout all smoke compartments containing patient sleeping rooms.
- (6)\* Standard-response sprinklers shall be permitted to be continued to be used in approved existing sprinkler systems where quick-response and residential sprinklers were not listed for use in such locations at the time of installation.
- (7) Standard-response sprinklers shall be permitted for use in hazardous areas protected in accordance with 19.3.2.1 of NFPA 101.

[101:19.3.5.8]

### **A.13.3.2.12.9**

The provisions of 13.3.2.12.9(6) and 13.3.2.12.9(7) are not intended to supplant NFPA 13, which requires that residential sprinklers with more than a 10°F (5.6°C) difference in temperature rating not be mixed within a room. Currently there are no additional prohibitions in NFPA 13 on the mixing of sprinklers having different thermal response characteristics. Conversely, there are no design parameters to make practical the mixing of residential and other types of sprinklers. [101:A.19.3.5.8]

Residential sprinklers are considered acceptable in patient sleeping rooms of all health care facilities, even through not specifically listed for this purpose in all cases. [101:A.19.3.5.8]

#### **A.13.3.2.12.9(6)**

It is not the intent of the Code to permit standard-response sprinklers to meet the criteria of 13.3.2.12.9 just because the sprinklers were installed before quick-response sprinklers were invented or listed. The intent of 13.3.2.12.9(6) is to permit older quick-response systems to be credited, even though there might be some standard-response sprinklers in existence due to the fact that quick-response sprinklers were unavailable for those specific locations at the time. For example, in the early days of quick-response sprinklers, there were no high-temperature quick-response sprinklers available.

[101:A.19.3.5.8(6)]

#### **A.13.3.2.12.11**

This exception is limited to hospitals, as nursing homes and many limited care facilities might have more combustibles within the closets. The limited amount of clothing found in the small clothes closets in hospital patient rooms is typically far less than the amount of combustibles in casework cabinets that do not require sprinkler protection, such as nurse servers. In many hospitals, especially new hospitals, it is difficult to make a distinction between clothes closets and cabinet work. The exception is far more restrictive than similar exceptions for hotels and apartment buildings. NFPA 13 already permits the omission of sprinklers in wardrobes (see 8.1.1(7) of NFPA 13). It is not the intent of 13.3.2.12.11 to affect the wardrobe provisions of NFPA 13. It is the intent that the sprinkler protection in the room covers the closet as if there were no door on the closet. (See 8.5.3.2.3 of NFPA 13.) [101:A.19.3.5.10]

#### **A.13.3.2.14.1**

Where the openings in ceilings or partitions are  $\frac{1}{4}$  in. (6.3 mm) or larger in the smallest dimension, where the thickness or depth of the material does not exceed the smallest dimension of the openings, and where such openings constitute not less than 70 percent of the area of the ceiling or partition material, the disruption of sprinkler spray patterns is permitted to be disregarded. [101:A.23.3.5.2]

#### **13.3.2.15.2**

Where an automatic sprinkler system is installed, either for total or partial building coverage, the system shall be in accordance with Section 13.3, as modified by 13.3.2.15.3. In hotel or dormitory occupancies up to and including four stories in height, that are located in buildings not exceeding 60 ft (18.3 m) in height above grade plane, systems in accordance with NFPA 13R shall be permitted. [101:28.3.5.3]

#### **13.3.2.15.2.1**

Where located in a building of Type III, Type IV, or Type V construction designed in accordance with 4.6.3(5) of NFPA 101<sub>7</sub> and where the roof assembly is located more than 55 ft (17 m) above the lowest level of required fire department vehicle access, attics shall comply with 13.3.2.15.2.1.1, 13.3.2.15.1.2, and one of the following:

- (1) Attics shall be provided with sprinkler protection.
- (2) Attics shall be constructed with noncombustible materials.
- (3) Attics shall be constructed with fire-retardant-treated wood.

(4) Attics shall be filled with noncombustible insulation.  
[101:28.3.5.3.1]

#### **13.3.2.15.4**

~~Listed quick-response or listed residential sprinklers shall be used throughout guest rooms and guest room suites.~~ [101:28.3.5.6]

#### **13.3.2.15.5-4**

Open parking structures that comply with NFPA 88A and are contiguous with hotels or dormitories shall be exempt from the sprinkler requirements of 13.3.2.15.1. [101:28.3.5.67]

#### **13.3.2.17.1**

All buildings shall be protected throughout by an approved, supervised automatic sprinkler system installed in accordance with [13.3.2.17.2](#)[13.3.2.17.1](#) through [13.3.2.17.6](#). [101:30.3.5.1]

#### **13.3.2.17.2[13.3.2.17.1.1](#)**

Where an automatic sprinkler system is installed, ~~either for total or partial building coverage~~, the system shall be in accordance with Section 13.3, as modified by [13.3.2.17.3](#) and [13.3.2.17.5](#)[13.3.2.17.5](#).  
[101:30.3.5.1.1]

#### **13.3.2.17.1.2**

In apartment buildings up to and including four stories in height, that are located in buildings not exceeding 60 ft (18.3 m) in height above grade plane, systems in accordance with NFPA 13R shall be permitted. [101:30.3.5.1.2]

#### **13.3.2.17.2.1[13.3.2.17.2 Attics.](#)**

Where located in a building of Type III, Type IV, or Type V construction designed in accordance with 4.6.3(5) of NFPA 101<sub>7</sub> and where the roof assembly is located more than 55 ft (17 m) above the lowest level of required fire department vehicle access, attics shall comply with [13.3.2.17.2.1.1](#)[13.3.2.17.2.1](#), [13.3.2.17.2.1.2](#)[13.3.2.17.2.2](#), and one of the following:

- (1) Attics shall be provided with sprinkler protection.
- (2) Attics shall be constructed with noncombustible materials.
- (3) Attics shall be constructed with fire-retardant-treated wood.
- (4) Attics shall be filled with noncombustible insulation.

[101:30.3.5.2.4]

#### **13.3.2.17.2.1.1[13.3.2.17.2.1](#)**

The height of the roof assembly shall be determined by measuring the distance from the lowest level of required fire department vehicle access adjacent to the building to the eave of the highest pitched roof, the intersection of the highest roof to the exterior wall, or the top of the highest parapet, whichever yields the greatest distance. [101:30.3.5.2.1.4]

### **13.3.2.17.2.1.213.3.2.17.2.2**

Required fire department vehicle access roads used in [13.3.2.17.2.1.113.3.2.17.2.1](#) shall include only those roads that are necessary for required fire department vehicle access in accordance with Section 18.2. [101:30.3.5.2.1-2]

### **13.3.2.17.3\***

In buildings sprinklered in accordance with NFPA 13, [closets shall meet the following requirements:](#)

- (1) ~~e~~Closets of less than 12 ft<sup>2</sup> (1.1 m<sup>2</sup>) in area in individual dwelling units shall not be required to be sprinklered.
- (2) Closets that contain equipment such as washers, dryers, furnaces, or water heaters shall be sprinklered, regardless of size.

[101:30.3.5.3]

### **A.13.3.2.17.3**

The 12 ft<sup>2</sup> (1.1 m<sup>2</sup>) closet sprinkler exemption differs from requirements in NFPA 13 because fire loss data supports the long-standing position of NFPA 101, since the 1976 edition of NFPA 101, to omit sprinklers from such closets. The provision is further supported by the lack of losses in buildings protected in accordance with NFPA 13D and NFPA 13R which permit the omission of sprinklers from closets not exceeding 24 ft<sup>2</sup> (2.2 m<sup>2</sup>). [101:A.30.3.5.3]

### **13.3.2.17.4**

~~In buildings sprinklered in accordance with NFPA 13 bathrooms not greater than 55 ft<sup>2</sup> (5.1 m<sup>2</sup>) in individual dwelling units shall not be required to be sprinklered. [101:30.3.5.4]~~

### **13.3.2.17.45 Convenience Openings.**

The draft stop and closely spaced sprinkler requirements of NFPA 13 shall not be required for convenience openings complying with 8.6.9.1 of NFPA 101 where the convenience opening is within the dwelling unit. [101:30.3.5.45]

### **13.3.2.17.6**

~~Listed quick-response or listed residential sprinklers shall be used throughout all dwelling units. [101:30.3.5.6]~~

### **13.3.2.17.57 Open Parking Structures.**

Open parking structures complying with NFPA 88A that are contiguous with apartment buildings shall be exempt from the sprinkler requirements of 13.3.2.17.1. [101:30.3.5.57]

### **13.3.2.17.68 Unprotected Openings.**

Buildings with unprotected openings in accordance with 8.6.6 of NFPA 101 shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with 13.3.2.17.1. [101:30.3.5.8]

### **13.3.2.18.1 \***

Where an automatic sprinkler system is installed, either for total or partial building coverage, the system shall be installed in accordance with Section 13.3, as modified by 13.3.2.18.2 and 13.3.2.18.34. In buildings four or fewer stories in height and not exceeding 60 ft (18.3 m) in height above grade plane, systems in accordance with NFPA 13R shall be permitted. [101:31.3.5.2]

### **A.13.3.2.18.3**

~~The provision of 13.3.2.18.3 differs from NFPA 13 because fire data shows that in apartment fires where sprinklers were present, bathrooms were the area of origin in 1 percent of the total fires, and resulted in no civilian deaths, civilian injuries, or property loss. NFPA 101 and NFPA 13 both allow sprinklers to be omitted in small bathrooms in dwelling units. Historically, NFPA 13 sometimes differed in this requirement. Maintaining this provision in NFPA 101 allows all previously approved sprinkler installations to remain compliant.~~ [101:A.31.3.5.4]

### **13.3.2.18.5**

Buildings using Option 3 in accordance with NFPA 101 shall be provided with automatic sprinkler protection installed in accordance with 13.3.2.18.5.1 through 13.3.2.18.5.4. [101:31.3.5.69]

#### **13.3.2.18.5.1**

Automatic sprinklers shall be installed in the corridor, along the corridor ceiling, utilizing the maximum spacing requirements of the standards referenced ~~in~~by 13.3.1.2. [101:31.3.5.69.1]

#### **13.3.2.18.5.2**

An automatic sprinkler shall be installed within every dwelling unit that has a door opening to the corridor, with such sprinkler positioned over the center of the door, unless the door to the dwelling unit has not less than a 20-minute fire protection rating and is self-closing. [101:31.3.5.69.2]

#### **13.3.2.18.5.3**

The workmanship and materials of the sprinkler installation specified in 13.3.2.18.5 shall meet the requirements of 13.3.1.2. [101:31.3.5.69.3]

#### **13.3.2.18.5.4**

Where Option 3 is being used to permit the use of  $1\frac{3}{4}$  in. (44 mm) thick, solid-bonded wood-core doors in accordance with 31.2.2.1.3 of NFPA 101, sprinklers shall be provided within the exit enclosures in accordance with NFPA 13. [101:31.3.5.69.4]

#### **13.3.2.18.6**

Buildings using Option 4 in accordance with NFPA 101 shall be protected throughout by an approved automatic sprinkler system in accordance with 13.3.2.18.1 and meeting the requirements of Section 13.3 for supervision for buildings seven or more stories in height. [101:31.3.5.710]

### **13.3.2.18.7 \***

Where sprinklers are being used as an option to any requirement in this *Code*, the sprinklers shall be installed throughout the space in accordance with the requirements of that option. [101:31.3.5.811]

### **A.13.3.2.18.7**

For example, if an Option 3 sprinkler system were being used to justify use of Class C wall finish in an exit enclosure, the sprinkler system would need to be extended into the exit enclosure, even if the rest of the requirements for Option 3 did not require the sprinklers in the exit enclosure. [101:A.31.3.5.811]

### **13.3.2.19.2.4**

In buildings sprinklered in accordance with NFPA 13, closets less than 12 ft<sup>2</sup> (1.1 m<sup>2</sup>) in area in individual dwelling units shall not be required to be sprinklered. [101:26.3.6.2.4]

### **13.3.2.19.2.5**

In buildings sprinklered in accordance with NFPA 13, closets that contain equipment such as washers, dryers, furnaces, or water heaters shall be sprinklered, regardless of size. [101:26.3.6.2.5]

### **13.3.2.21.2.7.1**

Where an automatic sprinkler system is required by 13.3.2.21.2, attics used for living purposes, storage, or fuel-fired equipment shall be protected with automatic sprinklers that are part of the required, approved automatic sprinkler system in accordance with 13.3.1.2. [101:32.2.3.5.7.1]

### **13.3.2.22.1.4.1**

Where an automatic sprinkler system is installed, attics used for living purposes, storage, or fuel-fired equipment shall be protected with automatic sprinklers that are part of the required, approved automatic sprinkler system in accordance with 13.3.1.2. [101:33.3.3.5.4.1]

### **13.3.2.22.1.4.2**

Where an automatic sprinkler system is installed, attics not used for living purposes, storage, or fuel-fired equipment shall meet one of the following criteria:

- (1) Attics shall be protected throughout by a heat detection system arranged to activate the building fire alarm system in accordance with Section 13.7.
- (2) Attics shall be protected with automatic sprinklers that are part of the required, approved automatic sprinkler system in accordance with 13.3.1.2.
- (3) Attics shall be of noncombustible or limited-combustible construction.
- (4) Attics shall be constructed of fire-retardant-treated wood in accordance with NFPA 703.

[101:33.3.3.5.4.2]

### **13.3.2.22.4.2**

Where an automatic sprinkler system is installed, attics not used for living purposes, storage, or fuel-fired equipment shall meet one of the following criteria:

- (1) Attics shall be protected throughout by a heat detection system arranged to activate the building fire alarm system in accordance with Section 13.7.
- (2) Attics shall be protected with automatic sprinklers that are part of the required, approved automatic sprinkler system in accordance with 13.3.1.2.
- (3) Attics shall be of noncombustible or limited-combustible construction.
- (4) Attics shall be constructed of fire-retardant-treated wood in accordance with NFPA 703.
- (5) Attics shall be protected by heat alarms arranged to provide occupant notification in accordance with [13.7.2.21.213.7.2.21.333.2.3.4.2](#).

[101:33.2.3.5.7.2]

### **13.3.2.23.1**

Mercantile occupancies shall be protected by an approved automatic sprinkler system in accordance with NFPA 13 in any of the following specified locations:

- (1) Throughout all mercantile occupancies three or more stories in height
- (2) Throughout all mercantile occupancies exceeding 12,000 ft<sup>2</sup> (1115 m<sup>2</sup>) in gross area
- (3) Throughout stories below the level of exit discharge where such stories have an area exceeding 2500 ft<sup>2</sup> (232 m<sup>2</sup>) and are used for the sale, storage, or handling of combustible goods and merchandise
- (4) Throughout multiple occupancies protected as mixed occupancies in accordance with 6.1.14 where the conditions of 13.3.2.23.1(1), [13.3.2.23.1](#) (2), or [13.3.2.23.1](#) (3) apply to the mercantile occupancy

[101:36.3.5.1]

### **13.3.2.23.2**

Automatic sprinkler systems in Class A mercantile occupancies shall be supervised in accordance with 13.3.1.8. [101:36.3.5.2]

### **13.3.2.23.3 Extinguishing Requirements.**

Bulk merchandising retail buildings shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3 and the applicable provisions of the following:

- (1) This Code
- (2) NFPA 13, Standard for the Installation of Sprinkler Systems
- (3) NFPA 30, Flammable and Combustible Liquids Code
- (4) NFPA 30B, Code for the Manufacture and Storage of Aerosol Products

[101:36.4.5.5]

### **13.3.2.24.1**

Mercantile occupancies, other than one-story buildings that meet the requirements of a street floor, as defined in 3.3.196.19, shall be protected by an approved automatic sprinkler system in accordance with NFPA 13 in any of the following specified locations:

- (1) Throughout all mercantile occupancies with a story over 15,000 ft<sup>2</sup> (1400 m<sup>2</sup>) in area
- (2) Throughout all mercantile occupancies exceeding 30,000 ft<sup>2</sup> (2800 m<sup>2</sup>) in gross area
- (3) Throughout stories below the level of exit discharge where such stories have an area exceeding 2500 ft<sup>2</sup> (232 m<sup>2</sup>) and are used for the sale, storage, or handling of combustible goods and merchandise
- (4) Throughout multiple occupancies protected as mixed occupancies in accordance with 6.1.14 where the conditions of 13.3.2.24.1(1), [13.3.2.24.1](#)-(2), or [13.3.2.24.1](#)-(3) apply to the mercantile occupancy

[[101](#):37.3.5.1]

### **13.3.2.25 Underground and Limited Access Structures.**

Underground and ~~limited-limited~~-access structures, and all areas and floor levels traversed in traveling to the exit discharge, shall be protected by an approved, supervised automatic sprinkler system in accordance with Section 13.3, unless such structures meet one of the following criteria:

- (1) They have an occupant load of 50 or fewer persons in new underground or ~~limited-limited~~-access portions of the structure.
- (2) They have an occupant load of 100 or fewer persons in existing underground or ~~limited-limited~~-access portions of the structure.
- (3) The structure is a one-story underground or ~~limited-limited~~-access structure that is permitted to have a single exit, per Chapters 12 through 43 of NFPA 101, with a common path of travel not greater than 50 ft (15 m).

[[101](#):11.7.3.4]

### **13.7.1.4.2 \***

To ensure operational integrity, the fire alarm system shall have an approved maintenance and testing program complying with the applicable requirements of NFPA 70 and NFPA 72. [[101](#):9.6.1.[54](#)]

### **A.13.7.1.4.2**

Records of conducted maintenance and testing and a copy of the certificate of compliance should be maintained. [[101](#):A.9.6.1.[54](#)]

### **13.7.1.4.3**

Fire alarm system impairment procedures shall comply with NFPA 72. [[101](#):9.6.1.[65](#)]

### **13.7.1.7.1**

Where required by other sections of this *Code*, actuation of the fire alarm system shall occur by any or all of the following means of initiation, but shall not be limited to such means:

- (1) Manual fire alarm initiation
- (2) Automatic detection
- (3) Extinguishing system operation

[[101](#):9.6.2.1]

### **13.7.1.8.1**

Where required by another section of this *Code*, single-station and multiple-station smoke alarms shall be in accordance with *NFPA 72* unless otherwise provided in [13.7.1.8.3](#)[13.7.1.8.4](#), [13.7.1.8.4](#)[13.7.1.8.4.4](#), 13.7.1.8.4.7, or [13.7.1.8.5](#)[13.7.1.8.6](#). [\[101:9.6.2.10.1\]](#)

### **13.7.1.8.3 Smoke Alarms in Sleeping Rooms.**

#### **13.7.1.8.3.1**

In new construction, where required by Chapters 11 through 43, the alarm notification signal in sleeping rooms resulting from activation of smoke alarms shall be a 520 Hz low-frequency signal complying with *NFPA 72*. [\[101:9.6.2.10.3.1\]](#)

#### **13.7.1.8.3[13.7.1.8.4](#) \***

The interconnection of smoke alarms shall apply only to new construction as provided in [13.7.1.8.7](#)[13.7.1.8.8](#). [\[101:9.6.2.10.43\]](#)

#### **A.13.7.1.8.3[A.13.7.1.8.4](#)**

*NFPA 72* mandates smoke alarms in all sleeping rooms, and interconnection of smoke alarms is required for both new and existing installations. Per 13.7.1.8.1, the residential occupancy requirements determine whether smoke alarms are needed within sleeping rooms. Paragraph [13.7.1.8.3](#)[13.7.1.8.4](#) limits the requirement for interconnection of smoke alarms to those in new construction. This *Code* does not intend to require compliant, existing smoke alarm installations to be interconnected. This *Code* is periodically revised to add retrospective requirements only where the need is clearly substantiated. [\[101:A.9.6.2.10.43\]](#)

### **Renumber Existing 13.7.1.8.4 Specific Location Requirements to 13.7.1.8.5 Specific Location Requirements (including all subsections and associated Annex)**

#### **13.7.1.8.5[13.7.1.8.6](#)**

System smoke detectors in accordance with *NFPA 72* and arranged to function in the same manner as single-station or multiple-station smoke alarms shall be permitted in lieu of smoke alarms. [\[101:9.6.2.10.87\]](#)

#### **13.7.1.8.6[13.7.1.8.7](#)**

Smoke alarms, other than battery-operated smoke alarms as permitted by other sections of this *Code*, shall be powered in accordance with the requirements of *NFPA 72*. [\[101:9.6.2.10.98\]](#)

#### **13.7.1.8.7[13.7.1.8.8](#)\***

In new construction, where two or more smoke alarms are required within a dwelling unit, suite of rooms, or similar area, they shall be arranged so that operation of any smoke alarm shall cause the

alarm in all smoke alarms within the dwelling unit, suite of rooms, or similar area to sound, unless otherwise permitted by one of the following:

- (1) The requirement of [13.7.1.8.7](#)[13.7.1.8.8](#) shall not apply where permitted by another section of this *Code*.
- (2) The requirement of [13.7.1.8.7](#)[13.7.1.8.8](#) shall not apply to configurations that provide equivalent distribution of the alarm signal.

[[101:9.6.2.10.109](#)]

#### **A.13.7.1.8.7A.13.7.1.8.8**

A dwelling unit is that structure, area, room, or combination of rooms, including hotel rooms/suites, in which a family or individual lives. A dwelling unit includes living areas only and not common usage areas in multifamily buildings, such as corridors, lobbies, and basements. [[101:A.9.6.2.10.108](#)]

#### **13.7.1.8.813.7.1.8.9**

The alarms described in [13.7.1.8.7](#)[13.7.1.8.8](#) shall sound only within an individual dwelling unit, suite of rooms, or similar area and shall not actuate the building fire alarm system, unless otherwise permitted by the AHJ. [[101:9.6.2.10.110](#)]

#### **13.7.1.8.913.7.1.8.10**

Smoke alarms shall be permitted to be connected to the building fire alarm system for the purpose of annunciation in accordance with NFPA 72. [[101:9.6.2.10.124](#)]

#### **13.7.1.9.3**

Where required by Chapters 11 through 43, the audible alarm notification signal provided in sleeping rooms resulting from the activation of the fire alarm system or sleeping room smoke detector shall be a 520 Hz low-frequency signal complying with NFPA 72. [[101:9.6.3.3](#)]

#### **13.7.1.9.313.7.1.9.4**

Where permitted by Chapters 11 through 43 of NFPA 101, a presignal system shall be permitted where the initial fire alarm signal is automatically transmitted without delay to a municipal fire department, to a fire brigade (if provided), and to an on-site staff person trained to respond to a fire emergency.

[[101:9.6.3.39.6.3.4](#)]

#### **13.7.1.9.513.7.1.9.4**

Where permitted by Chapters 11 through 43 of NFPA 101, a positive alarm sequence shall be permitted, provided that it is in accordance with NFPA 72. [[101:9.6.3.45](#)]

#### **13.7.1.9.613.7.1.9.5**

Unless otherwise provided in [13.7.1.9.5.1](#)[13.7.1.9.6.1](#) through [13.7.1.9.5.8](#)[13.7.1.9.6.8](#), notification signals for occupants to evacuate shall be by audible and visible signals in accordance with NFPA 72 and ICC/ANSI A117.1, American National Standard for Accessible and Usable Buildings and Facilities, or other means of notification acceptable to the AHJ. [[101:9.6.3.65](#)]

### [13.7.1.9.6.1](#)[13.7.1.9.5.1](#)

Areas not subject to occupancy by persons who are hearing impaired shall not be required to comply with the provisions for visible signals. [101:9.6.3.65.1]

### [13.7.1.9.6.2](#)[13.7.1.9.5.2](#)

Visible-only signals shall be provided where specifically permitted in health care occupancies in accordance with Chapters 18 and 19 of NFPA 101. [101:9.6.3.65.2]

### [13.7.1.9.6.3](#)[13.7.1.9.5.3](#)

Existing alarm systems shall not be required to comply with the provision for visible signals. [101:9.6.3.65.3]

### [13.7.1.9.6.4](#)[13.7.1.9.5.4](#)

Visible signals shall not be required in lodging or rooming houses in accordance with Chapter 26 of NFPA 101. [101:9.6.3.65.4]

### [13.7.1.9.6.5](#)[13.7.1.9.5.5](#)

Visible signals shall not be required in exit stair enclosures. [101:9.6.3.65.5]

### [13.7.1.9.6.6](#)[13.7.1.9.5.6](#)

Visible signals shall not be required in elevator cars. [101:9.6.3.65.6]

### [13.7.1.9.6.7](#)[13.7.1.9.5.7](#)\*

Public mode visual notification appliances in accordance with NFPA 72 shall not be required in designated areas as permitted by Chapters 11 through 43 of NFPA 101, provided that they are replaced with approved alternative visible means. [101:9.6.3.65.7]

### [A.13.7.1.9.6.7](#)[A.13.7.1.9.5.7](#)

Visual notification appliances installed in ~~large-large~~-volume spaces, such as arenas, stadiums, mall concourses, and atriums, can be alternative devices which are not listed as visible notification appliances for fire alarm systems provided that the notification objective of the visual signal is reasonably achieved. Examples of alternative devices include, but are not limited to, scoreboards, message boards, and other electronic devices that meet the performance objectives of visible fire alarm appliances in ~~large-large~~-volume spaces. [101:A.9.6.3.65.7]

It is the intent to permit the omission of visible notification appliances as identified in [13.7.1.9.5.7](#)[13.7.1.9.6.7](#) provided that the adjacent areas that have not been specifically designated as exempt are provided with visible notification as required by [13.7.1.9.6.6](#)[13.7.1.9.5.5](#). [101:A.9.6.3.65.7]

### [13.7.1.9.6.8](#)[13.7.1.9.5.8](#)\*

Where visible signals are not required, as permitted by [13.7.1.9.6.7](#)[13.7.1.9.5.7](#), documentation of such omission shall be maintained in accordance with [9.7.79](#)[13.3](#) of NFPA 101. [101:9.6.3.65.8]

#### A.13.7.1.9.6.8A.13.7.1.9.5.8

Documentation should be maintained with the as-built drawings so that inspection and testing personnel understand that the visible appliances have been exempted from certain areas and, therefore, can note the deviation on the acceptance test documentation and ongoing inspection reports. This will provide inspection and testing personnel with necessary details regarding the omission of visible notification appliances. [101:A.9.6.3.65.8]

#### 13.7.1.9.613.7.1.9.7

The general evacuation alarm signal shall operate in accordance with one of the methods prescribed by [13.7.1.9.6.1](#)[13.7.1.9.7.1](#) through [13.7.1.9.6.3](#)[13.7.1.9.7.3](#). [101:9.6.3.76]

#### 13.7.1.9.7.113.7.1.9.6.1

The general evacuation alarm signal shall operate throughout the entire building other than the locations described in [13.7.1.9.7.4](#)[13.7.1.9.6.4](#) and [13.7.1.9.7.5](#)[13.7.1.9.6.5](#). [101:9.6.3.76.1]

#### 13.7.1.9.7.213.7.1.9.6.2\*

Where total evacuation of occupants is impractical due to building configuration, only the occupants in the affected zones shall be initially notified, and provisions shall be made to selectively notify occupants in other zones to afford orderly evacuation of the entire building, provided that such arrangement is approved by the AHJ. [101:9.6.3.76.2]

#### A.13.7.1.9.7.2A.13.7.1.9.6.2

To approve an evacuation plan to selectively notify building occupants, the AHJ should consider several building parameters, including building compartmentation, detection and suppression system zones, occupant loads, and the number and arrangement of the means of egress. [\[101:A.9.6.3.7.2\]](#)

In high-rise buildings, it is typical to evacuate the fire floor, the floor(s) above, and the floor immediately below. Other areas are then evacuated as the fire develops. [\[101:A.9.6.3.76.2\]](#)

#### 13.7.1.9.7.313.7.1.9.6.3

Where occupants are incapable of evacuating themselves because of age, physical or mental disabilities, or physical restraint, all of the following shall apply:

- (1) The private operating mode as described in NFPA 72 shall be permitted to be used.
- (2) Only the attendants and other personnel required to evacuate occupants from a zone, area, floor, or building shall be required to be notified.
- (3) Notification of personnel as specified in [13.7.1.9.7.3\(2\)](#)[13.7.1.9.6.3\(2\)](#) shall include means to readily identify the zone, area, floor, or building in need of evacuation.

[\[101:9.6.3.76.3\]](#)

#### 13.7.1.9.7.413.7.1.9.6.4

The general evacuation signal shall not be required in exit stair enclosures. [\[101:9.6.3.76.4\]](#)

### [13.7.1.9.7.5](#)[13.7.1.9.6.5](#)

The general evacuation signal shall not be required in elevator cars. [101:9.6.3.76.5]

### [13.7.1.9.8](#)[13.7.1.9.7](#)

Audible alarm notification appliances shall be of such character and so distributed as to be effectively heard above the average ambient sound level that exists under normal conditions of occupancy.

[101:9.6.3.87]

### [13.7.1.9.9](#)[13.7.1.9.8](#)

Audible alarm notification appliances shall produce signals that are distinctive from audible signals used for other purposes in a given building. [101:9.6.3.98]

### [13.7.1.9.10](#)[13.7.1.9.9](#)

Automatically transmitted or live voice evacuation or relocation instructions shall be permitted to be used to notify occupants and shall comply with either [13.7.1.9.10.1](#)[13.7.1.9.9.1](#) or [13.7.1.9.10.2](#)[13.7.1.9.9.2](#). [101:9.6.3.109]

### [13.7.1.9.10.1](#)[13.7.1.9.9.1](#)

Automatically transmitted or live voice evacuation or relocation instructions shall be in accordance with NFPA 72. [101:9.6.3.109.1]

### [13.7.1.9.10.2](#)[13.7.1.9.9.2](#)

Where permitted by Chapters 11 through 43 of NFPA 101, automatically transmitted or live voice announcements shall be permitted to be made via a voice communication or public address system that complies with all of the following:

- (1) Occupant notification, either live or recorded, shall be initiated at a constantly attended receiving station by personnel trained to respond to an emergency.
- (2) An approved secondary power supply shall be provided for other than existing, previously approved systems.
- (3) The system shall be audible above the expected ambient noise level.
- (4) Emergency announcements shall take precedence over any other use.

[101:9.6.3.109.2]

### [13.7.1.9.11](#)[13.7.1.9.10](#)

Unless otherwise permitted by another section of this *Code*, audible and visible fire alarm notification appliances shall comply with either [13.7.1.9.11.1](#)[13.7.1.9.10.1](#) or [13.7.1.9.11.2](#)[13.7.1.9.10.2](#).

[101:9.6.3.10]

### [13.7.1.9.11.1](#)[13.7.1.9.10.1](#)

Audible and visible fire alarm notification appliances shall be used only for fire alarm system or other emergency purposes. [101:9.6.3.10.1]

### [13.7.1.9.11.2](#)[13.7.1.9.10.2](#)

Emergency voice/alarm communication systems shall be permitted to be used for other purposes in accordance with NFPA 72. [101:9.6.3.110.2]

### [13.7.1.12](#)[13.7.1.11](#) **Fire Safety Emergency Control Functions.**

#### [13.7.1.12.1](#)[13.7.1.11.1](#)

Emergency control functions shall be installed in accordance with the requirements of NFPA 72. [101:9.6.65.1]

#### [13.7.1.12.2](#)[13.7.1.11.2](#)

Where required by another section of this *Code*, the following functions shall be actuated:

- (1) Release of hold-open devices for doors or other opening protectives
- (2) Stairwell or elevator shaft pressurization
- (3) Smoke management or smoke control systems
- (4) Unlocking of doors
- (5) Elevator recall and shutdown
- (6) HVAC shutdown

[101:9.6.65.2]

### [13.7.1.13](#)[13.7.1.12](#) **Location of Controls.**

Operator controls, alarm indicators, and manual communications capability shall be installed at a convenient location acceptable to the AHJ. [101:9.6.76]

### [13.7.1.14](#)[13.7.1.13](#) **Annunciation and Annunciation Zoning.**

#### [13.7.1.14.1](#)[13.7.1.13.1](#)

Where alarm annunciation is required by another section of this *Code*, it shall comply with [13.7.1.14.2](#)[13.7.1.13.2](#) through [13.7.1.14.13](#)[13.7.1.13.13](#). [101:9.6.78.1]

#### [13.7.1.14.7](#)[13.7.1.13.7](#)

Alarm annunciation at the control center shall be by means of audible and visible indicators. [101:9.6.87.2]

#### [13.7.1.14.8](#)[13.7.1.13.8](#)

For the purposes of alarm annunciation, each floor of the building, other than floors of existing buildings, shall be considered as not less than one zone, unless otherwise permitted by [13.7.1.14.9.4](#)[13.7.1.13.9.4](#), [13.7.1.14.9.5](#)[13.7.1.13.9.5](#), [13.7.1.14.9.6](#)[13.7.1.13.9.6](#), or as another section of this *Code*. [101:9.6.87.3]

#### [13.7.1.14.9](#)[13.7.1.13.9](#)

Where a floor area exceeds 22,500 ft<sup>2</sup> (2090 m<sup>2</sup>), additional fire alarm zoning shall be provided, and the

length of any single fire alarm zone shall not exceed 300 ft (91 m) in any direction, except as provided in [13.7.1.14.9.1](#)[13.7.1.13.9.1](#) through [13.7.1.14.9.6](#)[13.7.1.13.9.6](#) or otherwise modified by another section of this *Code*. [\[101:9.6.87.4\]](#)

#### [13.7.1.14.9.1](#)[13.7.1.13.9.1](#)

Where permitted by another section of this *Code*, fire alarm zones shall be permitted to exceed 22,500 ft<sup>2</sup> (2090 m<sup>2</sup>), and the length of a zone shall be permitted to exceed 300 ft (91 m) in any direction. [\[101:9.6.87.4.1\]](#)

#### [13.7.1.14.9.2](#)[13.7.1.13.9.2](#)

Where the building is protected by an automatic sprinkler system in accordance with NFPA 13, the area of the fire alarm zone shall be permitted to coincide with the allowable area of the sprinkler system. [\[101:9.6.87.4.2\]](#)

#### [13.7.1.14.9.3](#)[13.7.1.13.9.3](#)

Where the building is protected by a water mist system in accordance with 9.8.1 and Table 9.8.1 of NFPA 101, the area of the fire alarm zone shall be permitted to coincide with the allowable area of the water mist system. [\[101:9.6.87.4.3\]](#)

#### [13.7.1.14.9.4](#)[13.7.1.13.9.4](#)

Unless otherwise prohibited by another section of this *Code*, where a building not exceeding four stories in height is protected by an automatic water mist system in accordance with [9.8.17.3](#) of NFPA 101, the water mist system shall be permitted to be annunciated on the fire alarm system as a single zone. [\[101:9.6.87.4.4\]](#)

#### [13.7.1.14.9.5](#)[13.7.1.13.9.5](#)

Unless otherwise prohibited by another section of this *Code*, where a building not exceeding four stories in height is protected by an automatic sprinkler system in accordance with NFPA 13, the sprinkler system shall be permitted to be annunciated on the fire alarm system as a single zone. [\[101:9.6.87.4.5\]](#)

#### [13.7.1.14.9.6](#)[13.7.1.13.9.6](#)

Where the building is protected by an automatic sprinkler system in accordance with NFPA 13D or NFPA 13R, the sprinkler system shall be permitted to be annunciated on the fire alarm system as a single zone. [\[101:9.6.87.4.6\]](#)

#### [13.7.1.14.10](#)[13.7.1.13.10](#)

A system trouble signal shall be annunciated by means of audible and visible indicators in accordance with NFPA 72. [\[101:9.6.87.5\]](#)

#### [13.7.1.14.11](#)[13.7.1.13.11](#)

A system supervisory signal shall be annunciated by means of audible and visible indicators in accordance with NFPA 72. [\[101:9.6.87.6\]](#)

### **13.7.1.14.12****13.7.1.13.12**

Where the system serves more than one building, each building shall be annunciated separately. [101:9.6.87.7]

### **13.7.1.14.13****13.7.1.13.13**

Where permitted by another section of this *Code*, the alarm zone shall be permitted to coincide with the permitted area for smoke compartments. [101:9.6.87.8]

### **13.7.1.15****13.7.1.14** Carbon Monoxide (CO) Detection and Warning Equipment.

Where required by another section of this *Code*, carbon monoxide (CO) detection and warning equipment shall be provided in accordance with *NFPA 720*. [101:9.12]

### **13.7.1.16****13.7.1.15**\*Risk Analysis for Mass Notification Systems.

#### **A.13.7.1.16****A.13.7.1.15**

This section does not require mass notification systems, it only provides direction for the risk analysis. Where the risk analysis and resulting action plan identifies a need for a mass notification system, *NFPA 72* should be used for design and installation requirements. [101:A.9.14]

#### **13.7.1.16.1****13.7.1.15.1**\* Where Required.

##### **13.7.1.15.1.1**

Where required by another section of this *Code*, a risk analysis for mass notification systems shall be provided in accordance with the requirements of Chapter 24 of *NFPA 72* *and the provisions of 13.7.1.15.2 through 13.7.1.15.4*. [101:9.14.1]

##### **A.13.7.1.16.1**

*A risk analysis will determine whether a mass notification system is required in addition to the life safety emergency communication systems required by this Code. The risk analysis might show that no additional notification is required.* [101:A.9.14.1]

#### **13.7.1.16.2****13.7.1.15.1.2**

Where a mass notification system is required by the risk analysis in 13.7.1.15.1.113.7.1.16.1, the system shall be in accordance with the requirements of Chapter 24 of *NFPA 72*. [101:9.14.1.2]

#### **13.7.1.15.2 Purpose**

##### **13.7.1.15.2.1**

*The purpose of the mass notification system shall be to communicate information about emergencies including, but not limited to, fire, human-caused events (accidental and intentional), other dangerous situations, accidents, and natural disasters.* [101:9.14.2.1]

### **13.7.1.15.2.2**

~~The purpose of the emergency action plan for the mass notification system shall be to identify the mass notification system design and performance requirements in accordance with the results of the risk analysis. [101:9.14.2.2]~~

### **13.7.1.15.3 Documentation**

#### **13.7.1.15.3.1**

~~The emergency action plan, risk assessment report, and accompanying documentation shall be submitted to the authority having jurisdiction by the registered design professional (RDP). The format and content of the documentation shall be acceptable to the authority having jurisdiction. [101:9.14.3.1]~~

#### **13.7.1.15.3.2 \***

~~Where required by the authority having jurisdiction, an independent review of the emergency action plan, risk assessment, and the accompanying documentation by one or more individuals possessing expertise in risk characterization for accidental and intentional hazards shall be performed.~~

~~[101:9.14.3.2]~~

#### **A.13.7.1.15.3.2**

~~These peer reviews should focus on the assumptions and methods of analysis used and on the findings. Peer reviewers should submit written assessment reports to the authority having jurisdiction.~~

~~[101:A.9.14.3.2]~~

### **13.7.1.15.4 Emergency Action Plan**

~~The completed emergency action plan in accordance with Section 4.8 of NFPA 101 shall be used for the design of the mass notification/emergency communications system. [101:9.14.4]~~

#### **13.7.2.1.3.1**

Positive alarm sequence in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#) shall be permitted. [101:12.3.4.3.1]

#### **13.7.2.1.3.3**

Occupant notification shall be by means of voice announcements in accordance with [13.7.1.9.9](#)[13.7.1.9.10](#), initiated by the person in the constantly attended receiving station.  
[101:12.3.4.3.3]

#### **13.7.2.1.3.4**

Occupant notification shall be by means of visible signals in accordance with [13.7.1.9.5](#)[13.7.1.9.6](#), initiated by the person in the constantly attended receiving station, unless otherwise permitted by 13.7.2.1.3.5. [101:12.3.4.3.4]

#### **13.7.2.1.3.5 \***

Visible signals shall not be required in the assembly seating area, or the floor area used for the contest,

performance, or entertainment, where the occupant load exceeds 1000 and an approved, alternative visible means of occupant notification is provided. (See [13.7.1.9.5.7](#)[13.7.1.9.6.7](#)) [101:12.3.4.3.5]

### **13.7.2.1.3.6**

The announcement shall be permitted to be made via a voice communication or public address system in accordance with [13.7.1.9.9.2](#)[13.7.1.9.10.2](#). [101:12.3.4.3.6]

### **13.7.2.1.4.1**

New assembly occupancies shall be provided with carbon monoxide detection and warning equipment in accordance with [13.7.1.14](#)[13.7.1.15](#) in the locations specified as follows:

- (1) On the ceilings of rooms containing permanently installed fuel-burning appliances or fuel-burning fireplaces
- (2) Centrally located within occupiable spaces served by the first supply air register from permanently installed fuel-burning HVAC systems
- (3)\* Centrally located within occupiable spaces adjacent to an attached garage

[101:12.3.4.4.1]

#### **A.13.7.2.1.4.1(3)**

The intent is to require CO detectors in occupiable spaces immediately adjacent, vertically or horizontally, to attached garages, regardless of the presence of openings between the garage and the adjacent occupiable spaces. Other occupiable spaces that are not adjacent to the attached garage do not require CO detectors. [101:A.12.3.4.4.1(3)]

### **13.7.2.1.4.2**

Carbon monoxide detectors as specified in 13.7.2.1.4.1 shall not be required in the following locations:

- (1) Garages
- (2) Occupiable spaces with attached garages that are open parking structures as defined in [3.3.196.26.33.3.199.26.3](#).
- (3) Occupiable spaces with attached garages that are mechanically ventilated in accordance with the mechanical code

[101:12.3.4.4.2]

### **13.7.2.1.5 Risk Analysis for Mass Notification Systems.**

A risk analysis in accordance with [13.7.1.15](#)[13.7.1.16](#) shall be performed for new assembly occupancies with an occupant load of 500 or more to determine if a mass notification system is required.

[101:12.3.4.5]

### **13.7.2.2.3.1**

Positive alarm sequence in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#) shall be permitted. [101:13.3.4.3.1]

### **13.7.2.2.3.2**

A presignal system in accordance with [13.7.1.9.3](#)[13.7.1.9.4](#) shall be permitted. [101:13.3.4.3.2]

### **13.7.2.2.3.3**

Occupant notification shall be by means of voice announcements in accordance with [13.7.1.9.9](#)[13.7.1.9.10](#) initiated by the person in the constantly attended receiving station. [101:13.3.4.3.3]

### **13.7.2.2.3.6**

The announcement shall be permitted to be made via a voice communication or public address system in accordance with [13.7.1.9.9.2](#)[13.7.1.9.10.2](#). [101:13.3.4.3.6]

### **13.7.2.3.3.1.3**

Positive alarm sequence shall be permitted in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#). [101:14.3.4.3.1.3]

### **13.7.2.3.3.1.4**

In accordance with [13.7.1.9.10.2](#)[13.7.1.9.11.2](#), the emergency voice/alarm communication system shall be permitted to be used for other emergency signaling or for class changes. [101:14.3.4.3.1.4]

### **13.7.2.3.4.1**

Carbon monoxide detectors in accordance with [13.7.1.14](#)[13.7.1.15](#) shall be provided in new educational occupancies in the locations specified as follows:

- (1) Carbon monoxide detectors shall be installed on the ceilings of rooms containing permanently installed fuel-burning appliances.
- (2) Carbon monoxide detectors shall be installed centrally located within occupiable spaces served by the first supply air register from a permanently installed, fuel-burning HVAC system.
- (3) Carbon monoxide detectors shall be installed centrally located within occupiable spaces adjacent to a communicating attached garage.
- (4) Carbon monoxide detectors shall be installed centrally located within occupiable spaces adjacent to an attached garage with a separation wall constructed of gypsum wallboard.

[101:14.3.4.4.1]

### **13.7.2.3.4.2**

Carbon monoxide ~~alarms and carbon monoxide~~detectors as specified in 13.7.2.3.4.1 shall not be required in the following locations:

- (1) Garages
- (2) Occupiable spaces with communicating attached garages that are open parking structures as defined in [3.3.196.26.33.3.199.26.3](#)
- (3) Occupiable spaces with communicating attached garages that are mechanically ventilated in accordance with the applicable mechanical code
- (4) Occupiable spaces that are separated from attached garages by walls constructed of gypsum wallboard where the garage is an open parking structure as defined in [3.3.196.26.33.3.199.26.3](#)

- (5) Occupiable spaces that are separated from attached garages by walls constructed of gypsum wallboard where the garage is mechanically ventilated in accordance with the mechanical code

[101:14.3.4.4.3]

### **13.7.2.3.5 Risk Analysis for Mass Notification Systems.**

A risk analysis in accordance with [13.7.1.15](#)[13.7.1.16](#) shall be performed to determine if a mass notification system is required. [101:14.3.4.5]

#### **13.7.2.4.3.1.3**

Positive alarm sequence shall be permitted in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#). [101:15.3.4.3.1.3]

#### **13.7.2.5.3.2**

Positive alarm sequence shall be permitted in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#). [101:16.3.4.3.2]

#### **13.7.2.5.3.3**

Private operating mode in accordance with [13.7.1.9.6.3](#)[13.7.1.9.7.3](#) shall be permitted. [101:16.3.4.3.3]

#### **13.7.2.5.6.2**

Where a day-care home is located within a building of another occupancy, such as in an apartment building or office building, any corridors serving the day-care home shall be provided with a smoke detection system in accordance with 13.7.1.4 except as otherwise provided in [16.6.3.4.3](#)[13.7.2.5.6.3](#).  
[101:16.6.3.4.2]

#### **13.7.2.5.6.3**

The corridor smoke detection system addressed in 13.7.2.5.6.2 shall not be required where all of the following conditions are met:

- (1) The day-care home is in a building of another occupancy that is not required to have a fire alarm system by some other provision of this Code.
- (2) Smoke alarms are installed in accordance with 13.7.1.8 in the corridor serving the day-care home.
- (3) Smoke alarms are installed within the day-care home as required by 13.7.2.5.6.1.
- (4) Additional smoke alarms are installed within the day-care home within 15 ft (4.6 m) of all sleeping rooms.
- (5) The smoke alarms required by 13.7.2.5.6.3(2), (3), and (4) are interconnected, as required by NFPA 72, so that each sounds an alarm when any of these smoke alarms detects smoke.

[101:16.6.3.4.3]

#### **13.7.2.5.6.313.7.2.5.6.4**

Single-station or multiple-station smoke alarms or smoke detectors shall be provided in all rooms used for sleeping in accordance with 13.7.1.8. [101:16.6.3.4.4]

#### **13.7.2.5.6.513.7.2.5.6.4**

Single-station or multiple-station carbon monoxide alarms or detectors shall be provided in accordance with [13.7.1.14](#)[13.7.1.15](#) in day-care homes where client sleeping occurs and one or both of the following conditions exist:

- (1) Fuel-fired equipment is present.
- (2) An enclosed parking structure is attached to the day-care home.

[[101:16.6.3.4.6](#)]

### **13.7.2.6.3.2**

Positive alarm sequence shall be permitted in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#). [[101:17.3.4.3.2](#)]

### **13.7.2.6.3.3**

Private operating mode in accordance with [13.7.1.9.6.3](#)[13.7.1.9.7.3](#) shall be permitted. [[101:17.3.4.3.3](#)]

### **13.7.2.6.6.2**

Where a day-care home is located within a building of another occupancy, such as in an apartment building or office building, any corridors serving the day-care home shall be provided with a smoke detection system in accordance with 13.7.1.7 except as otherwise provided in 13.7.2.6.6.3.

[[101:17.6.3.4.2](#)]

### **13.7.2.6.6.3**

The corridor smoke detection system addressed in 13.7.2.6.6.2 shall not be required where all of the following conditions are met:

- (1) The day-care home is in a building of another occupancy that is not required to have a fire alarm system by another provision of this Code.
- (2) Smoke alarms are installed in accordance with 13.7.1.8 in the corridor serving the day-care home.
- (3) Smoke alarms are installed within the day-care home as required by 13.7.2.6.6.1.
- (4) Additional smoke alarms are installed within the day-care home within 15 ft (4.6 m) of all sleeping rooms.
- (5) The smoke alarms required by 13.7.2.6.6.3(2), (3), and (4) are interconnected, as required by NFPA 72, so that each sounds an alarm when any of these smoke alarms detects smoke.
- (6) The exemption of 13.7.2.6.6.5 for existing battery-powered smoke alarms does not apply.

[[101:17.6.3.4.3](#)]

### **13.7.2.6.6.4[13.7.2.6.6.3](#)**

Single-station or multiple-station smoke alarms or smoke detectors shall be provided in all rooms used for sleeping in accordance with 13.7.1.8, other than as permitted by 13.7.2.6.6.4. [[101:17.6.3.4.4](#)]

### **13.7.2.6.6.5[13.7.2.6.6.4](#)**

Approved existing battery-powered smoke alarms, rather than house electrical service-powered smoke alarms required by 13.7.2.6.6.3, shall be permitted where the facility has testing, maintenance, and battery replacement programs that ensure reliability of power to the smoke alarms. [[101:17.6.3.4.5](#)]

### **13.7.2.7.3 Notification.**

Positive alarm sequence in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#) shall be permitted. [101:18.3.4.3]

#### **13.7.2.7.3.1 Occupant Notification.**

Occupant notification shall be accomplished automatically in accordance with 13.7.1.9, unless otherwise modified by the following:

- (1) Paragraph 13.7.1.9.2.3 shall not be permitted to be used.
- (2)\* Where the private operating mode in accordance with NFPA 72 is used, alarm notification appliances shall not be required in patient care spaces where alarm notification adversely affects patient care. In lieu of audible alarm signals, visible alarm indicating appliances shall be permitted to be used in critical care areas.
- (3) The provision of 18.3.2.5.3(13)(c) of NFPA 101 shall be permitted to be used.

[101:18.3.4.3.1]

#### **A.13.7.2.7.3.1(2)**

In health care occupancies, fire alarm system notification is often designed primarily to notify staff who are responsible for the occupants in their care. The staff can be used as an alternate means for notifying others who might need to relocate or evacuate. It is the intent of this provision to permit a visible fire alarm signal instead of an audible signal to reduce interference between the fire alarm and medical equipment monitoring alarms. [101:A.18.3.4.3.1(2)]

#### **13.7.2.7.3.3.1**

Annunciation and annunciation zoning shall be provided in accordance with [13.7.1.13](#)[13.7.1.14](#), unless otherwise permitted by 13.7.2.7.3.3.2 or 13.7.2.7.3.3.3. [101:18.3.4.3.3.1]

#### **13.7.2.7.3.3.3**

The provision of [13.7.1.13.9.2](#)[13.7.1.14.9.2](#), which permits sprinkler system waterflow to be annunciated as a single building zone, shall be prohibited. [101:18.3.4.3.3.3]

#### **13.7.2.7.4 Emergency Control Functions.**

Operation of any activating device in the required fire alarm system shall be arranged to accomplish automatically any control functions to be performed by that device. (See [13.7.1.11](#)[13.7.1.12](#).)  
[101:18.3.4.4]

#### **A.13.7.2.7.5.3**

The requirement for smoke detectors in spaces open to the corridors eliminates the requirements of 18.3.6.1-(1)(c), [18.3.6.1](#)(2)(b), and [18.3.6.1](#)(5)(b) of NFPA 101 for direct supervision by the facility staff of nursing homes. [101:A.18.3.4.5.3]

#### **13.7.2.8.3 Notification.**

Positive alarm sequence in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#) shall be permitted in health care occupancies protected throughout by an approved, supervised automatic sprinkler system in

accordance with NFPA 13. [101:19.3.4.3]

### **13.7.2.8.3.1 Occupant Notification.**

Occupant notification shall be accomplished automatically in accordance with 13.7.1.9, unless otherwise modified by the following:

- (1)\* In lieu of audible alarm signals, visible alarm-indicating appliances shall be permitted to be used in critical care areas.
- (2) Where visual devices have been installed in patient sleeping areas in place of an audible alarm, they shall be permitted where approved by the AHJ.
- (3) The provision of 19.3.2.5.3(13)(c) of NFPA 101 shall be permitted to be used.  
(4) \* Where the private operating mode in accordance with NFPA 72 is used, alarm notification appliances shall not be required in patient care spaces where alarm notification adversely affects patient care.

[101:19.3.4.3.1]

#### **A.13.7.2.8.3.1(4)**

In health care occupancies, fire alarm system notification is often designed primarily to notify staff who are responsible for the occupants in their care. The staff can be used as an alternate means for notifying others who might need to relocate or evacuate. [101:A.19.3.4.3.1(4)]

### **13.7.2.8.3.2.1**

Emergency forces notification shall be accomplished in accordance with 13.7.1.10, except that the provision of 19.3.2.5.3(13)(d) of NFPA 101 shall be permitted to be used. [101:19.3.4.3.2.1]

### **13.7.2.8.4 Emergency Control Functions.**

Operation of any activating device in the required fire alarm system shall be arranged to accomplish automatically any control functions to be performed by that device. (See [13.7.1.11](#)[13.7.1.12](#).)

[101:19.3.4.4]

### **13.7.2.9.3.1 Occupant Notification.**

#### **13.7.2.9.3.1.1**

Occupant notification shall be accomplished automatically, without delay, in accordance with 13.7.1.9 upon operation of any fire alarm activating device. [101:20.3.4.3.1.1]

#### **13.7.2.9.3.1.2 \***

Where the private operating mode in accordance with NFPA 72 is used, alarm notification appliances shall not be required in patient care spaces where alarm notification adversely affects patient care.

[101:20.3.4.3.1.2]

#### **A.13.7.2.9.3.1.2**

In ambulatory health care occupancies, fire alarm system notification is often designed primarily to notify staff who are responsible for the occupants in their care. The staff can be used as an alternate means for notifying others who might need to relocate or evacuate. [101:A.20.3.4.3.1.2]

#### **13.7.2.9.4 Emergency Control Functions.**

Operation of any activating device in the required fire alarm system shall be arranged to accomplish automatically, without delay, any control functions required to be performed by that device. (See [13.7.1.11](#)[13.7.1.12](#).) [101:20.3.4.4]

#### **13.7.2.10.3 Notification.**

Positive alarm sequence in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#) shall be permitted. [101:21.3.4.3]

##### **13.7.2.10.3.1.1**

Occupant notification shall be accomplished automatically, without delay, in accordance with 13.7.1.9 upon operation of any fire alarm activating device. [101:21.3.4.3.1.1]

##### **13.7.2.10.3.1.2 \***

Where the private operating mode in accordance with NFPA 72 is used, alarm notification appliances shall not be required in patient care spaces where alarm notification adversely affects patient care. [101:21.3.4.3.1.2]

##### **A.13.7.2.10.3.1.2**

In ambulatory health care occupancies, fire alarm system notification is often designed primarily to notify staff who are responsible for the occupants in their care. The staff can be used as an alternate means for notifying others who might need to relocate or evacuate. [101:21.3.4.3.1.2]

#### **13.7.2.11.3.1 Occupant Notification.**

Occupant notification shall be accomplished automatically in accordance with 13.7.1.9, and the following also shall apply:

- (1) A positive alarm sequence shall be permitted in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#).
- (2)\* Any smoke detectors required by this chapter shall be permitted to be arranged to alarm at a constantly attended location only and shall not be required to accomplish general occupant notification.

[101:22.3.4.3.1]

#### **13.7.2.11.3.2.1**

Fire department notification shall be accomplished in accordance with 13.7.1.10, unless otherwise permitted by one of the following:

- (1) A positive alarm sequence shall be permitted in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#).
- (2) Any smoke detectors required by this chapter shall not be required to transmit an alarm to the fire department.

- (3) This requirement shall not apply where staff is provided at a constantly attended location that meets one of the following criteria:
- (a) It has the capability to promptly notify the fire department.
  - (b) It has direct communication with a control room having direct access to the fire department.

[101:22.3.4.3.2.1]

### **13.7.2.12.3.1 Occupant Notification.**

Occupant notification shall be accomplished automatically in accordance with 13.7.1.9, and the following also shall apply:

- (1) A positive alarm sequence shall be permitted in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#).
- (2)\* Any smoke detectors required by this chapter shall be permitted to be arranged to alarm at a constantly attended location only and shall not be required to accomplish general occupant notification.

[101:23.3.4.3.1]

### **13.7.2.12.3.2.1**

Fire department notification shall be accomplished in accordance with 13.7.1.10, unless otherwise permitted by one of the following:

- (1) A positive alarm sequence shall be permitted in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#).
- (2) Any smoke detectors required by this chapter shall not be required to transmit an alarm to the fire department.
- (3) This requirement shall not apply where staff is provided at a constantly attended location that meets one of the following criteria:
  - (a) It has the capability to promptly notify the fire department.
  - (b) It has direct communication with a control room having direct access to the fire department.

[101:23.3.4.3.2.1]

### **13.7.2.13.2.1**

Carbon monoxide alarms or carbon monoxide detectors in accordance with [13.7.1.14](#)[13.7.1.15](#) and 13.7.2.13.2 shall be provided in new one- and two-family dwellings where either of the following conditions exists:

- (1) Dwelling units with communicating attached garages, unless otherwise exempted by 13.7.2.13.2.3
- (2) Dwelling units containing fuel-burning appliances or fuel-burning fireplaces

[101:24.3.4.2.1]

### **A.13.7.2.13.2.2**

The placement requirements of [NFPA72](#) [NFPA 720](#) are modified specifically for one- and two-family dwellings as required by this *Code* and do not affect other regulations within a jurisdiction.

[101:A.24.3.4.2.2]

### **13.7.2.14.3.2**

Positive alarm sequence in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#) shall be permitted. [101:26.3.4.3.2]

### **13.7.2.14.5.2**

In other than existing buildings, the smoke alarms required by 13.7.2.14.5.1 shall be interconnected in accordance with [13.7.1.8.3](#)[13.7.1.8.4](#). [101:26.3.4.5.2]

### **13.7.2.14.6.1**

Carbon monoxide alarms or carbon monoxide detectors in accordance with [13.7.1.14](#)[13.7.1.15](#) and 13.7.2.14.6 shall be provided in new lodging or rooming houses where either of the following conditions exists:

- (1) Lodging or rooming houses with communicating attached garages, unless otherwise exempted by 13.7.2.14.6.3
  - (2) Lodging or rooming houses containing fuel-burning appliances or fuel-burning fireplaces
- [101:26.3.4.6.1]

### **13.7.2.14.6.2 \***

Where required by 13.7.2.14.6.1, carbon monoxide alarms or carbon monoxide detectors shall be installed in the following locations:

- (1) Outside of each separate sleeping area in the immediate vicinity of the sleeping rooms
  - (2) On every occupiable level, including basements, and excluding attics and crawl spaces
- [101:26.3.4.6.2]

### **A.13.7.2.14.6.2**

The placement requirements of [NFPA 72](#) [NFPA 720](#) are modified to accommodate lodging or rooming house occupancies that are part of multiple occupancy buildings (e.g., an on-call physicians' sleeping room in a hospital). The placement requirements of [NFPA 72](#) [NFPA 720](#) are modified specifically for lodging or rooming houses as required by this *Code* and do not affect other regulations within a jurisdiction. [101:A.26.3.4.6.2]

### **13.7.2.15.3.2**

In hotels and dormitories that are required by 13.7.2.15 to have a fire alarm system, the audible alarm notification signal provided in sleeping rooms of guest rooms or guest suites that is activated by the fire alarm system shall be a 520 Hz low-frequency signal in accordance with 13.7.1.8.3. [101:28.3.4.3.2]

### **13.7.2.15.3.3[13.7.2.15.3.2](#)**

Positive alarm sequence in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#) shall be permitted. [101:28.3.4.3.32]

### **13.7.2.15.3.4[13.7.2.15.3.3](#)\***

Guest rooms and guest suites specifically required and equipped to accommodate hearing-impaired individuals shall be provided with a visible notification appliance. [101:28.3.4.3.[43](#)]

#### **A.13.7.2.15.3.4A.13.7.2.15.3.3**

A quantity of such rooms and suites might be required to be equipped to accommodate hearing-impaired individuals based on the total number of rooms in a transient lodging facility. (See 28 CFR 36, Appendix A, "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities.") [101:A.28.3.4.3.[43](#)]

#### **13.7.2.15.3.513.7.2.15.3.4**

In occupiable areas, other than guest rooms and guest suites, visible notification appliances shall be provided. [101:28.3.4.3.[54](#)]

#### **13.7.2.15.3.613.7.2.15.3.5**

Annunciation and annunciation zoning in accordance with [13.7.1.13](#)[13.7.1.14](#) shall be provided in buildings three or more stories in height or having more than 50 guest rooms or guest suites.

Annunciation shall be provided at a location readily accessible from the primary point of entry for emergency response personnel. [101:28.3.4.3.[65](#)]

#### **13.7.2.15.3.713.7.2.15.3.6**

Emergency forces notification shall be provided in accordance with 13.7.1.10. [101:28.3.4.3.[76](#)]

### **A.13.7.2.15.5**

Caution needs to be exercised in locating smoke alarms with regard to their proximity to bathrooms, cooking facilities, and HVAC outlets in order to prevent nuisance alarms. [101:A.28.3.4.[65](#)]

### **13.7.2.15.6.1**

Carbon monoxide alarms or carbon monoxide detectors in accordance with [13.7.1.14](#)[13.7.1.15](#) and 13.7.2.15.6 shall be provided in new hotels and dormitories where either of the following conditions exists:

- (1) Guest rooms or guest suites with communicating attached garages, unless otherwise exempted by 13.7.2.15.6.3
- (2) Guest rooms or guest suites containing a permanently installed fuel-burning appliance or fuel-burning fireplace

[101:28.3.4.7.1]

### **13.7.2.15.6.2**

Where required by 13.7.2.15.6.1, carbon monoxide alarms or carbon monoxide detectors shall be installed on every occupiable level of a guest room and guest suite and in the immediate vicinity of the sleeping rooms, in the following locations:

- (1) Outside of each separate guest room or guest suite sleeping area in the immediate vicinity of the sleeping rooms

(2) On every occupiable level of a guest room and guest suite  
[101:28.3.4.7.2]

#### **13.7.2.15.6.4**

Where fuel-burning appliances or fuel-burning fireplaces are installed outside guest rooms or guest suites, carbon monoxide detectors shall be installed in accordance with the manufacturer's published instructions in the locations specified as follows:

- (1) On the ceilings of rooms containing permanently installed fuel-burning appliances or fuel-burning fireplaces
  - (2) Centrally located within occupiable spaces served by the first supply air register from a permanently installed, fuel-burning HVAC system
  - (3) Centrally located within occupiable spaces adjacent to a communicating attached garage
- [101:28.3.4.7.4]

#### **13.7.2.15.6.5**

Where carbon monoxide detectors are installed in accordance with 13.7.2.15.6.4(1), the alarm signal shall be automatically transmitted to an approved on-site location or to an off-premises location in accordance with NFPA 72 NFPA 720. [101:28.3.4.7.5]

#### **13.7.2.15.7.1**

A risk analysis in accordance with 13.7.1.15 13.7.1.16 shall be performed for grades K through 12, college, or university dormitories with an occupant load greater than 100 to determine if a mass notification system is required. [101:28.3.4.4.1]

#### **13.7.2.16.3.2**

Positive alarm sequence in accordance with 13.7.1.9.4 13.7.1.9.5, and a presignal system in accordance with 13.7.1.9.3 13.7.1.9.4, shall be permitted. [101:29.3.4.3.2]

### **13.7.2.16.6 Carbon Monoxide Alarms and Carbon Monoxide Detection Systems.**

#### **13.7.2.16.6.1**

Carbon monoxide alarms or carbon monoxide detectors in accordance with Section 13.7.1.15 and 13.7.2.16.6 shall be provided in existing hotels and dormitories where either of the following conditions exists:

- (1) Guest rooms or guest suites with communicating attached garages, unless otherwise exempted by 13.7.2.16.6.3
- (2) Guest rooms or guest suites containing a permanently installed fuel-burning appliance or fuel-burning fireplace

[101:29.3.4.6.1]

#### **13.7.2.16.6.2**

Where required by 29.3.4.6.1, carbon monoxide alarms or carbon monoxide detectors shall be installed on every occupiable level of a guest room and guest suite and in the immediate vicinity of the sleeping rooms. [101:29.3.4.6.2]

### **13.7.2.16.6.3**

Carbon monoxide alarms and carbon monoxide detectors as specified in 13.7.2.16.6.1(1) shall not be required in the following locations:

- (1) In garages
- (2) Within guest rooms or guest suites with communicating attached garages that are open parking structures as defined by the building code
- (3) Within guest rooms or guest suites with communicating attached garages that are mechanically ventilated in accordance with the mechanical code

[101:29.3.4.6.3]

### **13.7.2.16.6.4**

Where fuel-burning appliances or fuel-burning fireplaces are installed outside guest rooms or guest suites, carbon monoxide detectors shall be installed in accordance with the manufacturer's published instructions in the locations specified as follows:

- (1) On the ceilings of rooms containing permanently installed fuel-burning appliances or fuel-burning fireplaces
- (2) Centrally located within occupiable spaces served by the first supply air register from a permanently installed, fuel-burning HVAC system
- (3) Centrally located within occupiable spaces adjacent to a communicating attached garage

[101:29.3.4.6.4]

### **13.7.2.16.6.5**

Where carbon monoxide detectors are installed in accordance with 13.7.2.16.6.4, the alarm signal shall be automatically transmitted to an approved on-site location or to an off-premises location in accordance with NFPA 72. [101:29.3.4.6.5]

### **13.7.2.17.1.1**

New apartment buildings four or more stories in height or with more than 11 dwelling units, other than those meeting the requirements of 13.7.2.17.1.2, shall be provided with a fire alarm system in accordance with Section 13.7, except as modified by 13.7.2.17.2 through 13.7.2.17.65. [101:30.3.4.1.1]

### **13.7.2.17.3.1**

Occupant notification shall be provided automatically in accordance with Section 13.7, and both of the following shall also apply:

- (1) Visible signals shall be installed in units designed for the hearing impaired.
- (2) Positive alarm sequence in accordance with 13.7.1.9.413.7.1.9.5 shall be permitted.

[101:30.3.4.3.1]

### **13.7.2.17.3.2 \***

In apartment buildings that are required by 13.7.2.17.1 to have a fire alarm system, the audible alarm notification signal provided in sleeping rooms of dwelling units that is activated by the fire alarm system shall be a 520 Hz low-frequency signal in accordance with 13.7.1.9.9. [101:30.3.4.3.2]

#### **A.13.7.2.17.3.2**

The standard audible alarm signal used in all fire alarm horns and integral sounders of smoke detectors for the past 30 years utilized a typical frequency of approximately 3 KHz. Peer-reviewed research has concluded the waking effectiveness of a 520 Hz low-frequency signal is superior to the standard 3 KHz audible alarm signal for waking high-risk segments of the population such as people over 65, people who are hard of hearing, school-age children, and people who are alcohol impaired. Therefore, the 520 Hz low-frequency audible alarm signal is now required in areas intended for sleeping within apartment buildings that are required to have a fire alarm system. The following product solutions are currently available in the market to produce the 520 Hz low-frequency audible alarm signal in sleeping rooms:

- (1) Smoke detectors with integral sounder bases
- (2) Fire alarm system horns and horn/strobes
- (3) Speakers connected to an in-building fire alarm emergency voice alarm communication (EVAC) system

[101:A.30.3.4.3.2]

The peer-reviewed research project — *Optimizing Fire Alarm Notification for High Risk Groups: Waking Effectiveness of Alarms (Auditory, Visual and Tactile) for Adults Who Are Hard of Hearing and Waking Effectiveness of Alarms (Auditory, Visual and Tactile) for the Alcohol Impaired* — was conducted under the auspices of the Fire Protection Research Foundation. [101:A.30.3.4.3.2]

#### **13.7.2.17.3.3**

Annunciation, and annunciation zoning, in accordance with 13.7.1.13 shall be provided, unless the building complies with either 13.7.2.17.3.43 or 13.7.2.17.3.54. Annunciation shall be provided at a location readily accessible from the primary point of entry for emergency response personnel.

[101:30.3.4.3.32]

#### **13.7.2.17.3.43**

Annunciation, and annunciation zoning, shall not be required in buildings two or fewer stories in height and having not more than 50 dwelling units. [101:30.3.4.3.43]

#### **13.7.2.17.3.54**

Annunciation, and annunciation zoning, shall not be required in buildings four or fewer stories in height containing not more than 16 dwelling units and protected throughout by an approved, supervised automatic sprinkler system installed in accordance with 13.3.2.17. [101:30.3.4.3.54]

#### **13.7.2.17.3.65**

Emergency forces notification shall be accomplished in accordance with 13.7.1.10. [101:30.3.4.3.65]

#### **13.7.2.17.5.1 \***

In apartment buildings that are required by 13.7.2.17 to have a fire alarm system, the audible alarm notification signal provided in sleeping rooms that is activated by smoke alarms shall be a 520 Hz low-frequency signal in accordance with 13.7.1.8.3. [101:30.3.4.5.1]

#### **A.13.7.2.17.5.1**

The standard audible alarm signal used in all smoke alarms for the past 30 years utilized a typical frequency of approximately 3 KHz. Peer-reviewed research has concluded the waking effectiveness of the 520 Hz low-frequency signal is superior to the standard 3 KHz audible alarm signal for waking high-risk segments of the population such as people over 65, people who are hard of hearing, school-age children, and people who are alcohol impaired. Therefore, the 520 Hz low-frequency audible alarm signal is now required for smoke alarms in areas intended for sleeping within apartment buildings that are required to have a fire alarm system. If smoke alarms that are capable of producing the low-frequency audible alarm signal are not available, smoke detectors arranged to function in the same manner as smoke alarms in accordance with 13.7.1.8.6 would be required. The following product solutions are currently available in the market if the smoke alarm is unable to produce the 520 Hz low-frequency audible alarm signal in sleeping rooms:

- (1) Smoke detectors with integral sounder bases
- (2) Fire alarm system horns and horn/strobes
- (3) Speakers connected to an in-building fire alarm emergency voice alarm communication (EVAC) system

[101:A.30.3.4.5.1]

The peer-reviewed research project — Optimizing Fire Alarm Notification for High Risk Groups: Waking Effectiveness of Alarms (Auditory, Visual and Tactile) for Adults Who Are Hard of Hearing and Waking Effectiveness of Alarms (Auditory, Visual and Tactile) for the Alcohol Impaired — was conducted under the auspices of the Fire Protection Research Foundation. [101:A.30.3.4.5.1]

#### **13.7.2.17.6.1**

Carbon monoxide alarms or carbon monoxide detectors in accordance with 13.7.1.1413.7.1.15 and 13.7.2.17.6 shall be provided in new apartment buildings where either of the following conditions exists:

- (1) Dwelling units with communicating attached garages, unless otherwise exempted by 13.7.2.17.6.3
- (2) Dwelling units containing a permanently installed fuel-burning appliance or fuel-burning fireplace

[101:30.3.4.6.1]

#### **13.7.2.17.6.4 \***

Where fuel-burning appliances or fuel-burning fireplaces are installed outside dwelling units, carbon monoxide detectors shall be installed in accordance with the manufacturer's published instructions in the locations specified as follows:

- (1) On the ceilings of rooms containing permanently installed fuel-burning appliances or fuel-burning fireplaces
- (2) Centrally located position within occupiable spaces served by the first supply air register from a permanently installed, fuel-burning HVAC system

- (3) Centrally located position within occupiable spaces adjacent to a communicating attached garage

[101:30.3.4.6.4]

#### **A.13.7.2.17.6.4**

Where fuel-burning appliances or fuel-burning fireplaces are located outside but attached to the dwelling unit, the area or room containing the fuel-burning appliance or fuel-burning fireplace could be considered part of the attached dwelling unit(s). In this application, either carbon monoxide alarms or carbon monoxide detectors are permitted to be installed in the attached dwelling unit(s) in accordance with [30.3.4.413.7.2.17.6](#). [101:A.30.3.4.6.4]

#### **13.7.2.17.6.5**

Where carbon monoxide detectors are installed in accordance with 13.7.2.17.6.4(1), the alarm signal shall be automatically transmitted to an approved on-site location or to an off-premises location in accordance with [NFPA 72-NFPA-720](#). [101:30.3.4.6.5]

#### **13.7.2.18.1.2**

A fire alarm system shall not be required where each dwelling unit is separated from other contiguous dwelling units by fire barriers (see *Section 12.7*) having a minimum  $\frac{1}{2}$ -hour fire resistance rating, and where each dwelling unit has either its own independent exit or its own independent stairway or ramp discharging at the finished ground level. [101:31.3.4.1.2]

#### **13.7.2.18.4.1 \***

In buildings using Option 2 as defined by NFPA 101, a complete automatic fire detection system in accordance with 9.6.[1.32.9](#) of NFPA 101 and 13.7.2.18.4.2 shall be required. [101:31.3.4.4.1]

#### **A.13.7.2.18.4.1**

It is intended that a building compliant with Option 2, as defined in Chapter 31 of NFPA 101, function as described in the paragraph that follows. [101:A.31.3.4.4.1]

Occupants within a living unit become aware of a fire emergency, either through personal awareness or through being alerted by the smoke alarm(s) installed within the living unit. Other building occupants are alerted to the fire emergency by the building fire alarm system that is initiated by manual fire alarm boxes adjacent to the exits, heat detection within the living unit where the fire emergency exists, smoke detection in the common areas outside the living unit, or a combination thereof. The installation of system heat detectors versus smoke detectors within the living unit is intended to eliminate nuisance-type alarms and reduce occupant complacency from frequent false alarms. The installation of smoke detection within the living unit should only be contemplated after a careful analysis of the goals and with the approval of the AHJ. [101:A.31.3.4.4.1]

#### **13.7.2.18.4.2**

Automatic fire detection devices shall be installed as follows:

- (1) Smoke detectors shall be installed in all common areas and work spaces outside the living unit, such as exit stairs, egress corridors, lobbies, storage rooms, equipment rooms, and other tenantless spaces in environments that are suitable for proper smoke detector operation.
- (2) Heat detectors shall be located within each room of the living unit.  
[101:31.3.4.2]

### **13.7.2.19.1 General.**

A fire alarm system shall be provided in accordance with Section -13.7. [101:32.2.3.4.1]

### **13.7.2.19.3 General.**

~~A manual fire alarm system shall be provided in accordance with Section 13.7. [101:32.2.3.4.1]~~

### **13.7.2.19.34 Occupant Notification.**

Occupant notification shall be provided automatically, without delay, in accordance with 13.7.1.9. [101:32.2.3.4.232.2.3.4.3]

### **13.7.2.19.4 Carbon Monoxide Alarms and Carbon Monoxide Detection Systems.**

#### **13.7.2.19.4.1**

Carbon monoxide alarms or carbon monoxide detectors in accordance with 13.7.1.15 and 13.7.2.19.4 shall be provided in new, small board and care facilities where either of the following conditions exists:

- (1) Where small board and care facilities have communicating attached garages, unless otherwise exempted by 13.7.2.19.4.3
- (2) Where small board and care facilities contain fuel-burning appliances or fuel-burning fireplaces

[101:32.2.3.4.4.1]

#### **13.7.2.19.4.2**

Where required by 13.7.2.19.4.1, carbon monoxide alarms or carbon monoxide detectors shall be installed in the following locations:

- (1) Outside each separate sleeping area in the immediate vicinity of the sleeping rooms
- (2) Within sleeping rooms containing fuel-burning appliances or fuel-burning fireplaces
- (3) On every occupiable level, including basements and excluding attics and crawl spaces
- (4) Centrally located within occupiable spaces adjacent to a communicating attached garage, unless otherwise exempted by 13.7.2.19.4.3

[101:32.2.3.4.4.2]

#### **13.7.2.19.4.3**

Carbon monoxide alarms and carbon monoxide detectors as specified in 13.7.2.19.4.1(1) shall not be required in the following locations:

- (1) In garages
- (2) Within small board and care facilities with communicating attached garages that are open parking structures as defined by the building code

(3) Within small board and care facilities with communicating attached garages that are mechanically ventilated in accordance with the mechanical code

[101:32.2.3.4.4.3]

### 13.7.2.19.5.3

Additional smoke alarms shall be installed in all living areas, as defined in [3.3.21.53.3.22.5](#) of NFPA 101.

[101:32.2.3.4.5.3]

### 13.7.2.20.1 General.

A fire alarm system shall be provided in accordance with Section -13.7. [101:32.3.3.4.1]

### 13.7.2.20.6 \*Emergency Forces Notification.

Emergency forces notification shall meet the following requirements:

- (1) Emergency forces notification shall be accomplished in accordance with 13.7.1.10.
- (2) Smoke detection devices or smoke detection systems shall be permitted to initiate a positive alarm sequence in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#) for not more than 120 seconds.

[101:32.3.3.4.6]

### 13.7.2.20.7.1

Approved smoke alarms shall be installed in accordance with 13.7.1.8 inside every sleeping room, outside every sleeping area in the immediate vicinity of the bedrooms, and on all levels within a resident unit. [101:32.3.3.4.7.1]

### 13.7.2.20.7.2

Smoke alarms shall not be required to be installed in locations where smoke detection is otherwise required per 13.7.2.20.8. [101:32.3.3.4.7.2]

### 13.7.2.20.9.1

Carbon monoxide alarms ~~or carbon monoxide detectors~~ in accordance with [13.7.1.14](#)[13.7.1.15](#) and 13.7.2.20.9 shall be provided in new large board and care facilities where either of the following conditions exists:

- (1) Where ~~large board and care~~ facilities have communicating attached garages, unless otherwise exempted by 13.7.2.20.9.3
- (2) Where ~~sleeping rooms or sleeping room suites contain~~ fuel-burning appliances or fuel-burning fireplaces are in the facility

[101:32.3.3.4.9.1]

### 13.7.2.20.9.2

Where required by 13.7.2.20.9.1, ~~carbon monoxide alarms or~~ carbon monoxide detectors shall be installed in the following locations:

- (1) Within rooms containing fuel-burning appliances or fuel-burning fireplaces, unless otherwise exempted by 12.7.2.20.9.4~~Outside each separate sleeping room area in the immediate vicinity of the sleeping rooms~~

- (2) Centrally located ~~W~~ithin occupiable spaces served by the first supply air register from a sleeping rooms containing fuel-burning appliances or fuel-burning fireplacesHVAC system
  - (3) On every occupiable level ~~of a sleeping room and sleeping room suite~~
  - (4) Centrally located within occupiable spacesWithin adjacent to a communicating occupiable spaces to an attached garage, unless otherwise exempted by 13.7.2.20.9.3
- [101:32.3.3.4.9.2]

### **13.7.2.20.9.3**

Carbon monoxide ~~alarms and carbon monoxide~~ detectors as specified in 13.7.2.20.9.1(1) shall not be required in the following locations:

- (1) In garages
- (2) Within facilities with communicating attached garages that are open parking structures as defined by the building code
- (3) Within facilities with communicating attached garages that are mechanically ventilated in accordance with the mechanical code

[101:32.3.3.4.9.3]

### **13.7.2.20.9.4**

WhereWithin resident units containing fuel-burning appliances or fuel-burning fireplaces are installed outside sleeping rooms, carbon monoxide alarms or carbon monoxide detectors shall be permitted to be used. installed in the locations specified as follows:

- (1) Within rooms containing fuel-burning appliances or fuel-burning fireplaces
- (2) Centrally located within occupiable spaces served by the first supply air register from a fuel-burning HVAC system

[101:32.3.3.4.9.4]

### **13.7.2.21.1 Fire Alarm Systems.**

A ~~manual~~ fire alarm system shall be provided in accordance with Section -13.7, unless the provisions of 13.7.2.21.1.1 or 13.7.2.21.1.2 are met. [101:33.2.3.4.1]

#### **13.7.2.21.1.1**

A fire alarm system shall not be required where interconnected smoke alarms complying with 13.7.2.21.4, and not less than one manual fire alarm box per floor arranged to continuously sound the smoke detector alarms, are provided. [101:33.2.3.4.1.1]

#### **13.7.2.21.3 Occupant Notification.**

Occupant notification shall be in accordance with 13.7.1.9. [101:33.2.3.4.34]

#### **A.13.7.2.21.4**

Most often, smoke alarms sounding an alarm at 85 dBA or greater, installed outside the bedroom area, will meet the intent of this requirement. Smoke alarms remotely located from the bedroom might not be loud enough to awaken the average person. In such cases, it is recommended that smoke alarms be interconnected so that the activation of any smoke alarm will cause all smoke alarms to activate.

[101:A.33.2.3.4.43]

NFPA 101 provides adequate, balanced fire protection and takes into consideration the passive and active systems required in a given occupancy. The level of protection prescribed by NFPA 72 which includes smoke alarms in all sleeping rooms, without exception, does not necessarily take into consideration the complete protection package prescribed by NFPA 101. [101:A.33.2.3.4.43]

#### **13.7.2.21.4.1**

Approved smoke alarms shall be provided in accordance with 13.7.1.8, unless otherwise indicated in 13.7.2.21.4.6 and 13.7.2.21.4.7. [101:33.2.3.4.4.1]

#### **13.7.2.21.4.2**

Smoke alarms shall be installed on all levels, including basements but excluding crawl spaces and unfinished attics. [101:33.2.3.4.43.2]

#### **13.7.2.21.4.3**

Additional smoke alarms shall be installed for living rooms, dens, day rooms, and similar spaces. [101:33.2.3.4.43.3]

#### **13.7.2.21.4.5**

Smoke alarms shall be powered from the building electrical system and, when activated, shall initiate an alarm that is audible in all sleeping areas. [101:33.2.3.4.43.5]

#### **13.7.2.21.4.6**

Smoke alarms in accordance with 13.7.2.21.4.1, 13.7.2.21.4.2, and 13.7.2.21.4.3 shall not be required where buildings are protected throughout by an approved automatic sprinkler system, in accordance with 13.3.2.22.2, that uses quick-response or residential sprinklers, and are protected with approved smoke alarms installed in each sleeping room, in accordance with 13.7.1.8, that are powered by the building electrical system. [101:33.2.3.4.43.6]

#### **13.7.2.21.4.7**

Smoke alarms in accordance with 13.7.2.21.4.1, 13.7.2.21.4.2, and 13.7.2.21.4.3 shall not be required where buildings are protected throughout by an approved automatic sprinkler system, in accordance with 13.3.2.22.2, that uses quick-response or residential sprinklers, with existing battery-powered smoke alarms in each sleeping room, and where, in the opinion of the AHJ, the facility has demonstrated that testing, maintenance, and a battery replacement program ensure the reliability of power to the smoke alarms. [101:33.2.3.4.43.7]

#### **13.7.2.22.8.1**

All living areas, as defined in 3.3.24.5 of NFPA 101, and all corridors shall be provided with smoke detectors that comply with NFPA 72 and are arranged to initiate an alarm that is audible in all sleeping areas, as modified by 13.7.2.22.8.2 and 13.7.2.22.8.3. [101:33.3.3.4.8.1]

### **13.7.2.23.3.1 Occupant Notification.**

During all times that the mercantile occupancy is occupied, the required fire alarm system, once initiated, shall perform one of the following functions:

- (1) It shall activate an alarm in accordance with 13.7.1.9 throughout the mercantile occupancy.
- (2) Positive alarm sequence in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#) shall be permitted.

[**101:36.3.4.3.1**]

### **13.7.2.24.3.1 Occupant Notification.**

During all times that the mercantile occupancy is occupied, the required fire alarm system, once initiated, shall perform one of the following functions:

- (1) It shall activate an alarm in accordance with 13.7.1.9 throughout the mercantile occupancy, and both of the following also shall apply:
  - (a) Positive alarm sequence in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#) shall be permitted.
  - (b) A presignal system in accordance with [13.7.1.9.3](#)[13.7.1.9.4](#) shall be permitted.
- (2) Occupant notification shall be made via a voice communication or public address system in accordance with [13.7.1.9.9.2](#)[13.7.1.9.10.2](#)

[**101:37.3.4.3.1**]

### **13.7.2.25.1 General.**

A fire alarm system in accordance with Section 13.7 shall be provided in all new business occupancies where any one of the following conditions exists:

- (1) The building is three or more stories in height.
- (2) The occupancy is subject to 50 or more occupants above or below the level of exit discharge.
- (3) The occupancy is subject to 300 or more total occupants.

[**101:38.3.4.1**]

### **13.7.2.25.3 Occupant Notification.**

During all times that the building is occupied (*see 7.2.1.1.3 of NFPA 101*), the required fire alarm system, once initiated, shall perform one of the following functions:

- (1) It shall activate a general alarm in accordance with 13.7.1.9
- (2) A positive alarm sequence in accordance with [13.7.1.9.4](#)[13.7.1.9.5](#) shall be permitted.

[**101:38.3.4.3**]

### **13.7.2.25.5 \*Risk Analysis for Mass Notification.**

#### **13.7.2.25.5.1**

~~Business occupancies requiring a fire alarm system in accordance with 13.7.2.25.5.1 shall conduct a risk analysis to determine the need for a mass notification system in accordance with 13.7.1.15.~~

[**101:38.3.4.5.1**]

#### **13.7.2.25.5.2 \***

A risk analysis ~~to determine the need for a mass notification system~~ in accordance with

Section 13.7.1.15 13.7.1.16 shall be [performed for new business occupancies conducted for buildings](#) containing a classroom where the building is owned, rented, leased, or operated by a college or university [to determine whether a mass notification system is required](#). [101:38.3.4.5-2]

### **A.13.7.2.25.5-2**

It is not the intent of this [section-paragraph](#) to require a new risk analysis where an existing risk analysis addresses the issues or arrangements associated with a new building. [101:A.38.3.4.5-2]

### **13.7.2.26.3 Occupant Notification.**

During all times that the building is occupied (see 7.2.1.1.3 of NFPA 101), the required fire alarm system, once initiated, shall perform one of the following functions:

- (1) It shall activate a general alarm in accordance with 13.7.1.9, and both of the following also shall apply:
  - (a) Positive alarm sequence in accordance with [13.7.1.9.4](#) [13.7.1.9.5](#) shall be permitted.
  - (b) A presignal system in accordance with [13.7.1.9.3](#) [13.7.1.9.4](#) shall be permitted.
- (2) Occupant notification shall be permitted to be made via a voice communication or public address system in accordance with [13.7.1.9.9.2](#) [13.7.1.9.10.2](#).

[101:39.3.4.3]

### **13.7.2.27.3.2**

Positive alarm sequence in accordance with [13.7.1.9.4](#) [13.7.1.9.5](#) shall be permitted. [101:40.3.4.3.2]

### **13.7.2.27.3.3**

Existing presignal systems in accordance with [13.7.1.9.3](#) [13.7.1.9.4](#) shall be permitted. [101:40.3.4.3.3]

### **13.7.2.28.1.1**

Storage occupancies limited to [low-low](#)-hazard contents shall not be required to have a fire alarm system. [101:42.3.4.1.1]

### **13.7.2.28.1.2**

Storage occupancies with [ordinary](#)- or [high-high](#)-hazard contents not exceeding an aggregate floor area of 100,000 ft<sup>2</sup> (9300 m<sup>2</sup>) shall not be required to have a fire alarm system. [101:42.3.4.1.2]

### **13.7.2.28.3.2**

Positive alarm sequence in accordance with [13.7.1.9.4](#) [13.7.1.9.5](#) shall be permitted. [101:42.3.4.3.2]

### **13.7.2.28.3.3**

Existing presignal systems in accordance with [13.7.1.9.3](#) [13.7.1.9.4](#) shall be permitted. [101:42.3.4.3.3]

### **13.7.2.28.3.4**

In [high-high](#)-hazard storage occupancies, the required fire alarm system shall automatically initiate an occupant evacuation alarm signal in accordance with 13.7.1.9. [101:42.3.4.3.4]

### **13.7.2.29.1 Open Structures.**

Open structures shall be exempt from the requirement for detection, alarm, and communications systems. [101:11.2.3.4]

### **13.7.2.29.1.2 Detection, Alarm, and Communications SystemsTowers.**

Towers, as defined in 3.3.281 of NFPA 101, designed for occupancy by not more than three persons shall be exempt from requirements for detection, alarm, and communications systems. [101:11.3.3.4]

#### **13.7.2.29.2.2.1**

Two-way telephone communication service shall be provided for fire department use. ~~This system shall be in accordance with NFPA 72. The communications system shall operate between the emergency command center and every elevator car, every elevator lobby, and each floor level of exit stairs.~~

[101:11.8.4.2.1]

#### **13.7.2.29.2.2.1.1**

The two-way telephone communication system shall be in accordance with NFPA 72. [101:11.8.4.2.1.1]

#### **13.7.2.29.2.2.1.2**

The two-way telephone communication system shall operate between the emergency command center and every elevator car, every elevator lobby, and each floor level of exit stairs. [101:11.8.4.2.1.2]

#### **13.7.2.29.2.2.2 \***

The requirement of 13.7.2.29.2.2.1 shall not apply where the fire department radio system is approved as an equivalent system. [101:11.8.4.2.2]

### **13.7.2.29.2.3 Risk Analysis for Mass Notification Systems.**

For high-rise buildings with a total occupant load of 5000 or more persons, or where the floor of an occupiable story is greater than 420 ft (128 m) above the lowest level of fire department vehicle access, a risk analysis in accordance with 13.7.1.16 shall be performed to determine whether a mass notification system is required. [101:11.8.4.3]

#### **14.3.1**

Where this *Code* requires an exit to be separated from other parts of the building, the separating construction shall meet the requirements of Section 8.2 of NFPA 101 and the following:

- (1)\* The separation shall have a minimum 1-hour fire resistance rating where the exit connects three or fewer stories.
- (2) The separation specified in 14.3.1(1), other than an existing separation, shall be supported by construction having not less than a 1-hour fire resistance rating.
- (3)\* The separation shall have a minimum 2-hour fire resistance rating where the exit connects four or more stories, unless one of the following conditions exists:

- (a) In existing non-high-rise buildings, existing exit stair enclosures shall have a minimum 1-hour fire resistance rating.
- (b) In existing buildings protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3, existing exit stair enclosures shall have a minimum 1-hour fire resistance rating.
- (c) The minimum 1-hour enclosures in accordance with 28.2.2.1.2, 29.2.2.1.2, 30.2.2.1.2, and 31.2.2.1.2 of NFPA 101 shall be permitted as an alternative to the requirement of 14.3.1(3).

(4) **Reserved.**

- (54) The minimum 2-hour ~~fire~~~~fire~~-resistance-rated separation required by 14.3.1(3) shall be constructed of an assembly of noncombustible or limited-combustible materials and shall be supported by construction having a minimum 2-hour fire resistance rating, unless otherwise permitted by 14.3.1(67).
- (65)\* Structural elements, or portions thereof, that support exit components and either penetrate into a ~~fire~~~~fire~~-resistance-rated assembly or are installed within a ~~fire~~~~fire~~-resistance-rated wall assembly shall be protected, as a minimum, to the fire resistance rating required by 14.3.1(1) or 14.3.1(3).
- (76) Fire-retardant-treated wood enclosed in noncombustible or limited-combustible materials shall be permitted in accordance with NFPA 220.
- (87) Openings in the separation shall be protected by fire door assemblies equipped with door closers complying with 14.5.4.
- (98)\* Openings in exit enclosures shall be limited to door assemblies from normally occupied spaces and corridors and door assemblies for egress from the enclosure, unless one of the following conditions exists:
  - (a) Vestibules that separate normally unoccupied spaces from an exit enclosure shall be permitted provided the vestibule is separated from adjacent spaces by corridor walls and related opening protectives as required for the occupancy involved but not less than a smoke partition in accordance with Section 8.4 of NFPA 101.
  - (b) In buildings of Type I or Type II construction as defined in NFPA 220 (see 8.2.1.2 of NFPA 101), ~~fire~~~~fire~~-protection-rated door assemblies to normally unoccupied building service equipment support areas as addressed in Section 7.143 of NFPA 101 shall be permitted, provided the space is separated from the exit enclosure by fire barriers as required by 14.3.1(3).
  - (c) Openings in exit passageways in mall buildings as provided in Chapters 36 and 37 of NFPA 101 shall be permitted.
  - (d) In buildings of Type I or Type II construction, as defined in NFPA 220 (see 8.2.1.2 of NFPA 101), existing ~~fire~~~~fire~~-protection-rated door assemblies to interstitial spaces shall be permitted, provided that such spaces meet all of the following criteria:
    - i. The space is used solely for distribution of pipes, ducts, and conduits.
    - ii. The space contains no storage.
    - iii. The space is separated from the exit enclosure in accordance with Section 12.7.
  - (e) Existing openings to mechanical equipment spaces protected by approved existing ~~fire~~~~fire~~-protection-rated door assemblies shall be permitted, provided that the following criteria are met:
    - i. The space is used solely for non-fuel-fired mechanical equipment.

- ii. The space contains no storage of combustible materials.
- iii. The building is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3 or the mechanical equipment space is provided with sprinkler protection in accordance with Section 13.3 and provided with complete smoke detection in accordance with Section 13.7.

(109) Penetrations into, and openings through, an exit enclosure assembly shall be limited to the following:

- (a) Door assemblies permitted by 14.3.1(89)
- (b)\* Electrical conduit serving the exit enclosure
- (c) Pathways for devices for security and communication systems serving the exit enclosure, where pathways are installed in metal conduit
- (d)\* Required exit door openings
- (e) Ductwork and equipment necessary for independent stair pressurization
- (f) Water or steam piping necessary for the heating or cooling of the exit enclosure
- (g) Sprinkler piping
- (h) Standpipes
- (i) Existing penetrations
- (j) Penetrations for fire alarm circuits, where the circuits are installed in metal conduit

(104) Penetrations or communicating openings shall be prohibited between adjacent exit enclosures.

(112) All penetrations in fire barriers separating the exit from other parts of the building shall be protected in accordance with 12.7.8.

(123) Membrane penetrations shall be permitted on the exit access side of the exit enclosure and shall be protected in accordance with 12.7.5.6.

[101:7.1.3.2.1]

### **A.14.3.1(1)**

In existing buildings, existing walls in good repair and consisting of lath and plaster, gypsum wallboard, or masonry units can usually provide satisfactory protection for the purposes of this requirement where a 1-hour fire resistance rating is required. Further evaluation might be needed where a 2-hour fire resistance rating is required. Additional guidelines can be found in Annex O of NFPA 914 and in the SFPE Handbook of Fire Protection Engineering. [101:A.7.1.3.2.1(1)]

### **A.14.3.1(65)**

It is not the intent to require the structural elements supporting outside stairs, or structural elements that penetrate within exterior walls or any other wall not required to have a fire resistance rating, to be protected by ~~fire~~~~-fire-resistance-~~~~—~~rated construction. [101:A.7.1.3.2.1(56)]

### **A.14.3.1(98)**

Means of egress from the level of exit discharge is permitted to pass through an exit stair enclosure or exit passageway serving other floors. Doors for convenience purposes and unrelated to egress also are permitted to provide access to and from exit stair enclosures and exit passageways, provided that such

doors are from corridors or normally occupied spaces. It is also the intent of this provision to prohibit exit enclosure windows, other than approved vision panels in doors, that are not mounted in an exterior wall. [101:A.7.1.3.2.1(89)]

#### **A.14.3.1(910)(b)**

The intent of this provision is to prevent the exit enclosure from being used as a vertical chase for building services. Penetrations for electrical wiring are permitted where the wiring serves equipment permitted by the AHJ to be located within the exit enclosure. [101:A.7.1.3.2.1(910)(b)]

#### **A.14.3.1(910)(d)**

This provision will allow security cameras, public address systems, emergency communication systems, telephone repeaters and similar life safety devices in the exit enclosure, and wiring and similar pathways for such devices, to penetrate the fire barrier serving the exit enclosure. It is the intent of this provision to prevent the exit enclosure from being used as a vertical chase for building services.

[101:A.7.1.3.2.1(10)(d)]

#### **14.5.1.1 \*Swinging-Type Door Assembly Requirement.**

Any door assembly in a means of egress shall be of the side-hinged or pivoted-swinging type, and shall be installed to be capable of swinging from any position to the full required width of the opening in which it is installed, unless otherwise specified as follows:

- (1) Door assemblies in dwelling units, as provided in Chapter 24 of NFPA 101, shall be permitted.
- (2) Door assemblies in residential board and care occupancies, as provided in Chapters 32 and 33 of NFPA 101, shall be permitted.
- (3) Where permitted in Chapters 11 through 43 of NFPA 101, horizontal~~Horizontal~~-sliding or vertical-rolling security grilles or door assemblies that are part of the required means of egress, where ~~where~~ permitted in Chapters 11 through 43 of NFPA 101, shall be permitted, provided that all of the following criteria are met:
  - (a) Such grilles or door assemblies shall remain secured in the fully open position during the period of occupancy by the general public.
  - (b) On or adjacent to the grille or door opening, there shall be a readily visible, durable sign in letters not less than 1 in. (25 mm) high on a contrasting background that reads as follows: THIS DOOR TO REMAIN OPEN WHEN THE SPACE IS OCCUPIED.
  - (c) Door leaves or grilles shall not be brought to the closed position when the space is occupied.
  - (d) Door leaves or grilles shall be operable from within the space without the use of any special knowledge or effort.
  - (e) Where two or more means of egress are required, not more than half of the means of egress shall be equipped with horizontal-sliding or vertical-rolling grilles or door assemblies.
- (4) Horizontal-sliding door assemblies shall be permitted under any of the following conditions:
  - (a) Horizontal-sliding door assemblies in detention and correctional occupancies, as provided in Chapters 22 and 23 of NFPA 101, shall be permitted.
  - (b) ~~Special~~Special-purpose horizontally sliding accordion or folding door assemblies complying with 7.2.1.1~~34~~ of NFPA 101 shall be permitted.

- (c) Unless prohibited by Chapters 11 through 43 of NFPA 101, horizontal-sliding door assemblies serving a room or area with an occupant load of fewer than 10 shall be permitted, provided that all of the following criteria are met:
- i. The area served by the door assembly has no ~~high-high~~-hazard contents.
  - ii. The door assembly is readily operable from either side without special knowledge or effort.
  - iii. The force required to operate the door assembly in the direction of door leaf travel is not more than 30 lbf (133 N) to set the door leaf in motion and is not more than 15 lbf (67 N) to close the door assembly or open it to the minimum required width.
  - iv. The door assembly complies with any required fire protection rating, and, where rated, is self-closing or automatic-closing by means of smoke detection in accordance with 14.5.4 and is installed in accordance with NFPA 80.
  - v. Corridor door assemblies required to be self-latching shall have a latch or other mechanism that ensures that the door leaf will not rebound into a partially open position if forcefully closed.
- (d) Where private garages, business areas, industrial areas, and storage areas with an occupant load not exceeding 10 contain only ~~low~~ or ~~ordinary~~-hazard contents, door openings to such areas and private garages shall be permitted to be horizontal-sliding door assemblies.
- (5) Vertical-rolling door assemblies shall be permitted in door opening to~~Where~~ private garages, business areas, industrial areas, and storage areas with~~where such areas have~~ an occupant load not exceeding 10 and contain only low or ordinary hazard contents, ~~door openings to such areas and private garages shall be permitted to be vertical-rolling door assemblies.~~
- (6) Revolving door assemblies complying with 7.2.1.10 of NFPA 101 shall be permitted.
- (7) Existing fusible link-operated horizontal-sliding or vertical-rolling fire door assemblies shall be permitted to be used as provided in Chapters 39, 40, and 42 of NFPA 101.

[101:7.2.1.4.1]

#### A.14.5.1.1

Where doors are subject to two-way traffic, or where their opening can interfere with pedestrian traffic, an appropriately located vision panel can reduce the chance of accidents. [101:A.7.2.1.4.1]

Swinging doors in horizontal- or vertical-rolling partitions ~~complying with the following~~ should be permitted in a means of egress where the following criteria are met:

- (1) The door or doors comply with 14.5.1.
- (2) The partition in which the doors are mounted complies with the applicable fire protection rating and closes upon smoke detection or power failure at a speed not exceeding 9 in./s (230 mm/s) and not less than 6 in./s (150 mm/s).
- (3) The doors mounted in the partition are self-closing or automatic-closing in accordance with 14.5.4.1.

[101:A.7.2.1.4.1]

Pivoted-swinging-type doors include balanced doors. [101:A.7.2.1.4.1]

#### A.14.5.1.2

See 7.4.2.1.2 and 7.4.2.2.2 of NFPA 101 for door swing direction requirements for working space about electrical equipment. [\[101:A.7.2.1.4.2\]](#)

### **14.5.1.3\* Door Leaf Encroachment.**

#### **A.14.5.1.3.1A.14.5.1.3**

The requirements of 14.5.1.3 are not intended to apply to the swing of cross-corridor doors, such as smoke barrier doors and horizontal exits. Neither are the requirements intended to apply to doors from rooms that are typically unoccupied, such as janitor's closets, electrical closets, or telecommunications closets. [\[101:A.7.2.1.4.3.1\]](#)

#### **14.5.1.3.1 \***

During its swing, any door leaf in a means of egress shall leave not less than one-half of the required width of an aisle, a corridor, a passageway, or a landing unobstructed, unless both of the following conditions are met:

- (1) The door opening provides access to a stair in an existing building.
- (2) The door opening meets the requirement of 14.5.1.3.2.

[\[101:7.2.1.4.3.1\]](#)

### **14.5.1.5 Door Unlatching and Leaf Operating Forces.**

#### **14.5.1.5.1**

The forces required to fully unlock and unlatch any door leaf manually in a means of egress shall not exceed 15 lbf (67 N) where the door hardware operates by push, pull, or slide, or 28 in.-lbf (3.16 N·m) where the door hardware operates by rotation. [\[101:7.2.1.4.5.1\]](#)

#### **14.5.1.5.114.5.1.5.2**

The forces required to fully open any door leaf manually in a means of egress shall not exceed 15 lbf (67 N) to release the latch, 30 lbf (133 N) to set the leaf in motion, and 15 lbf (67 N) to open the leaf to the minimum required width, unless otherwise specified as follows:

- (1) The door opening forces for interior side-hinged or pivoted-swinging door leaves without closers shall not exceed 5 lbf (22 N).
- (2) The door opening forces for existing door leaves in existing buildings shall not exceed 50 lbf (222 N) applied to the latch stile.
- (3) The door opening forces for horizontal-sliding door leaves in detention and correctional occupancies shall be as provided in Chapters 22 and 23 of NFPA 101.
- (4) The opening forces for power-operated door leaves shall be as provided in 7.2.1.9 of NFPA 101.

[\[101:7.2.1.4.5.17.2.1.4.5.2\]](#)

#### **14.5.1.5.214.5.1.5.3**

The forces specified in 14.5.1.5 shall be applied to the latch stile. [\[101:7.2.1.4.5.27.2.1.4.5.3\]](#)

## **14.5.2 Locks, and Latches, and Alarm Devices.**

### **14.5.2.3**

Locks and latches, if provided, shall not require the use of a key, a tool, or special knowledge or effort for operation from the egress side. [101:7.2.1.5.37.2.1.5.2]

### **14.5.2.10**

**14.5.2.3 \* Latch-Release Devices**

AAll locks, latches, and all or other fastening devices on a door leaf shall be provided with a releasing device that has an obvious method of operation and that is readily operated under all lighting conditions. [101:7.2.1.5.107.2.1.5.3]

### **A.14.5.2.10**

Examples of devices that might be arranged to release locks and latches include knobs, levers, and bars. This requirement is permitted to be satisfied by the use of conventional types of hardware, whereby the door is released by turning a lever, knob, or handle or by pushing against a bar, but not by unfamiliar methods of operation such as a blow to break glass. It is also within the intent of this requirement that switches integral to traditional doorknobs, lever handles, or bars, and that interrupt the power supply to an electricalmagnetic lock, be permitted, provided that they are affixed to the door leaf. The operating devices should be capable of being operated with one hand and should not require tight grasping, tight pinching, or twisting of the wrist to operate. [101:A.7.2.1.5.310]

### **14.5.2.10.1**

The releasing mechanism for any locks and latches shall be located as follows:

- (1) Not less than 34 in. (865 mm) above the finished floor for other than existing installations
- (2) Not more than 48 in. (1220 mm) above the finished floor

[101:7.2.1.5.310.17.2.1.5.3.1]

### **14.5.2.3.2\*14.5.2.10.2\***

The operation of the releasing mechanism shall release all latching and all locking devices ofopen the door leaf with not more than one releasing operationmotion in a single linear or rotational direction,unless otherwise specified in 14.5.2.3.414.5.2.10.3 and 14.5.2.3.5, 14.5.2.3.714.5.2.10.4 or 14.5.2.3.814.5.2.10.6. [101:7.2.1.5.3.27.2.1.5.10.2]

### **A.14.5.2.3.2**

An example of a releasing motion in a single linear direction, as described in ANSI/BHMA A156.41, Standard for Door Hardware Single Motion to Egress, is pushing on a panic bar to release the locking/latching hardware to allow a door to be opened. An example of a releasing motion in a single rotational direction is turning a lever-operated handle of a door lockset in either a clockwise direction or a counterclockwise direction, but not both directions, to unlock/unlatch the door. [101:A.7.2.1.5.3.2]

### **14.5.2.3.3**

The releasing mechanism for new installations shall be capable of being operated with one hand and shall not require tight grasping, tight pinching, or twisting of the wrist to operate. [101:7.2.1.5.3.3]

**14.5.2.3.414.5.2.10.3 \***

Egress door assemblies from individual living units and guest rooms of residential occupancies shall be permitted to be provided with devices, including automatic latching devices, that require not more than one additional releasing operation, provided that such device is operable from the inside without the use of a key or tool and is mounted at a height not exceeding 48 in. (1220 mm) above the finished floor.  
[101:7.2.1.5.3.47.2.1.5.3.410.3]

**A.14.5.2.3.4A.14.5.2.10.3**

Examples of devices that, when used with a latch, can be arranged to require not more than one additional releasing operation include night latches, dead bolts, and security chains.

[101:A.7.2.1.5.3.410.3]

**14.5.2.3.514.5.2.10.4**

Existing security devices permitted by 14.5.2.10.314.5.2.3.4 shall be permitted to have two additional releasing operations motions. [101:7.2.1.5.3.510.4]

**14.5.2.3.614.5.2.10.5**

Existing security devices permitted by 14.5.2.10.314.5.2.3.4, other than automatic latching devices, shall be located not more than 60 in. (1525 mm) above the finished floor. [101:7.2.1.5.3.610.5]

**14.5.2.3.714.5.2.10.6**

Two releasing operations motions shall be permitted for existing hardware on a door leaf serving an area having an occupant load not exceeding three, provided that releasing does not require simultaneous operations. [101:7.2.1.5.3.710.6]

**14.5.2.3.814.5.2.10.7**

Where permitted by Chapters 11 through 43 of NFPA 101, two releasing operations motions shall be permitted in existing educational occupancies in accordance with 15.2.2.2.4 of NFPA 101 and in existing day care occupancies in accordance with 17.2.2.2.6 of NFPA 101 for doors secured against unwanted entry. [101:7.2.1.5.3.810.7]

**14.5.2.4**

The requirements of 14.5.2.1 and 14.5.2.23 shall not apply where otherwise provided in Chapters 18 through 23 of NFPA 101. [101:7.2.1.5.4]

**14.5.2.214.5.2.5 \***

The requirement of 14.5.2.1 shall not apply to door leaves of listed fire door assemblies after exposure to elevated temperature in accordance with the listing, based on laboratory fire test procedures.

[101:7.2.1.5.27.2.1.5.5]

## **A.14.5.2.2A.14.5.2.5**

Some fire door assemblies are listed for use with fire pins or fusible links that render the door leaf release inoperative upon exposure to elevated temperature during a fire. The door leaf release mechanism is made inoperative where conditions in the vicinity of the door opening become untenable for human occupancy, and such door opening no longer provides a viable egress path.

[101:[A.7.2.1.5.2A.7.2.1.5.5](#)]

## **14.5.2.514.5.2.6 Key-Operated Locks.**

### **14.5.2.6.1 14.5.2.7**

Where permitted in Chapters 11 through 43 of NFPA 101, key operation shall be permitted, provided that the key cannot be removed when the door leaf is locked from the side from which egress is to be made. [101:[7.2.1.5.6.17](#)]

### **14.5.2.5.1 14.5.2.6.2\***

Exterior door assemblies and interior door assemblies to an individual tenant space or to a single tenant space shall be permitted to have key-operated locks from the egress side, provided that all of the following criteria are met:

- (1) This alternative is permitted in Chapters 11 through 43 of NFPA 101 for the specific occupancy.
- (2) Doors remain unlocked when the building or space is occupied.
- (2)(3) Doors are marked with Aa readily visible, durable sign in letters not less than 1 in. (25 mm) high on a contrasting background that reads as follows and is located on or adjacent to the door leaf: THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED, or THIS DOOR TO REMAIN UNLOCKED WHEN THE BUILDING IS OCCUPIED, as applicable.
- (3)(4) The locking device is of a type that is readily distinguishable as locked.
- (4)(5) A key is immediately available to any occupant inside the building when it is locked.

[101:[7.2.1.5.5.17.2.1.5.6.2](#)]

## **A.14.5.2.5.1A. 14.5.2.6.2**

Where the entrance consists of an exterior vestibule, the locking arrangement should be permitted on the egress side of either the interior or exterior door of the vestibule. [101:[A.7.2.1.5.6.25.1](#)]

### **14.5.2.6.314.5.2.5.2**

The alternative provisions of [14.5.2.5.114.5.2.6.2](#) shall be permitted to be revoked by the AHJ for cause. [101:[7.2.1.5.6.35.2](#)]

### **14.5.2.714.5.2.8 \* Stair Enclosure Re-entry.**

Every door assembly in a stair enclosure serving more than four stories, unless permitted by [14.5.2.8.214.5.2.7.2](#), shall meet one of the following conditions:

- (1) Re-entry from the stair enclosure to the interior of the building shall be provided.

- (2) An automatic release ~~that is actuated with the initiation of the building fire alarm system~~ shall be provided ~~to unlock all stair enclosure door assemblies to allow re-entry~~ that meets all of the following:
- The automatic release shall unlock all stair enclosure door assemblies to allow re-entry.
  - The automatic release shall be actuated with the initiation of the building fire alarm system.
  - Door hardware for new installations shall be listed in accordance with UL 294, Access Control System Units.
- (3) Selected re-entry shall be provided in accordance with [14.5.2.8.1](#)[14.5.2.7.1](#).
- [**101:7.2.1.5.78**]

#### **A.14.5.2.8A.14.5.2.7**

It is intended that the re-entry provisions apply only to enclosed exit stairs, not to outside stairs. This arrangement makes it possible to leave the stairway at such floor if the fire renders the lower part of the stair unusable during egress or if the occupants seek refuge on another floor. [**101:A.7.2.1.5.78**]

#### **14.5.2.7.1****14.5.2.8.1**

Door assemblies on stair enclosures shall be permitted to be equipped with hardware that prevents re-entry into the interior of the building, provided that the following criteria are met:

- There shall be not less than two levels where it is possible to leave the stair enclosure to access another exit.
  - There shall be not more than four stories intervening between stories where it is possible to leave the stair enclosure to access another exit.
  - Re-entry shall be possible on the top story or next-to-top story served by the stair enclosure, and such story shall allow access to another exit.
  - Door assemblies allowing re-entry shall be identified as such on the stair side of the door leaf.
  - Door assemblies not allowing re-entry shall be provided with a sign on the stair side indicating the location of the nearest door opening, in each direction of travel, that allows re-entry or exit.
- [**101:7.2.1.5.78.1**]

#### **14.5.2.7.2****14.5.2.8.2**

The requirements of [14.5.2.8.1](#)[14.5.2.7](#), except as provided in [14.5.2.8.3](#)[14.5.2.7.3](#), shall not apply to the following:

- Existing installations in buildings that are not high-rise buildings as permitted in Chapters 11 through 43 of NFPA 101.
- Existing installations in high-rise buildings as permitted in Chapters 11 through 43 of NFPA 101 where the occupancy is within a building protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3.
- Existing approved stairwell re-entry installations as permitted by Chapters 11 through 43 of NFPA 101.
- Stair enclosures serving a building permitted to have a single exit in accordance with Chapters 11 through 43 of NFPA 101.
- Stair enclosures in health care occupancies where otherwise provided in Chapter 18 of NFPA 101.

- (6) Stair enclosures in detention and correctional occupancies where otherwise provided in Chapter 22 of NFPA 101.

[101:7.2.1.5.78.2]

#### 14.5.2.7.314.5.2.8.3

When the provisions of [14.5.2.8.2](#)[14.5.2.7.2](#) are used, signage on the stair door leaves shall be required as follows;

- (1) Door assemblies allowing re-entry shall be identified as such on the stair side of the door leaf.
- (2) Door assemblies not allowing re-entry shall be provided with a sign on the stair side indicating the location of the nearest door opening, in each direction of travel, that allows re-entry or exit.

[101:7.2.1.5.78.3]

#### 14.5.2.814.5.2.9

If a stair enclosure allows access to the roof of the building, the door assembly to the roof either shall be kept locked preventing access to the roof or shall allow re-entry from the roof. [101:7.2.1.5.89]

#### 14.5.2.914.5.2.11

Where pairs of door leaves are required in a means of egress, one of the following criteria shall be met:

- (1) Each leaf of the pair shall be provided with a releasing device that does not depend on the release of one leaf before the other.
- (2) Approved automatic flush bolts shall be used and arranged such that both of the following criteria are met:
  - (a) The door leaf equipped with the automatic flush bolts shall have no doorknob or surface-mounted hardware on the egress side of the door.
  - (b) Unlatching of any leaf shall not require more than one operation.

[101:7.2.1.5.911]

#### 14.5.2.1014.5.2.12 \*

On doors required to release all latching and all locking devices of the door leaf with not more than one releasing motion in accordance with 14.5.2.3.2, De~~evices~~ shall not be installed in connection with any door assembly on which panic hardware or fire exit hardware is required where such devices prevent or are intended to prevent the free use of the leaf for purposes of egress, unless otherwise provided in 14.5.3. [101:7.2.1.5.1210]

#### A.14.5.2.12A.14.5.2.10

Examples of devices prohibited by this requirement include locks, padlocks, hasps, bars, chains, or combinations thereof. [101:A.7.2.1.5.102]

#### **A.14.5.3**

None of the special locking arrangements addressed in 14.5.3 are intended to allow credentialed egress, request to exit, or similar provisions, where an occupant cannot leave the building without swiping a card through a reader. Where such an arrangement is desired to keep track of occupants, the swiping of cards needs to be procedural but not necessary for releasing the door lock or latch. Free eEgress needs

to be available at all times as required by this Code. Another option to free egress is the use of a delayed egress electrically locking system. [101:A.7.2.1.6]

### **14.5.3.1 \*Delayed-Egress Electrical Locking Systems.**

#### **A.14.5.3.1**

Delayed-egress electrical locking systems function as the name suggests: these electrical locking systems delay egress through the door. However, 14.5.3.1.1(1) and 14.5.3.1.1(2) identify situations where the delay of these locking systems must be deactivated, facilitating immediate and unobstructed egress. Delayed-egress electrical locking systems are most commonly installed where there are concerns for internal security, such as theft from a store through required perimeter exits. Delayed-egress electrical locking systems might also be installed where occupants might benefit by being protected from their actions. [101:A.7.2.1.6.1]

#### **14.5.3.1.1**

Approved, delayed-egress electrical locking systems shall be permitted to be installed on door assemblies serving low- and ordinary-hazard contents in buildings protected throughout by an approved, supervised automatic fire detection system in accordance with Section -13.7 or an approved, supervised automatic sprinkler system in accordance with Section -13.3, and where permitted in Chapters 11 through 43 of NFPA 101, provided that the following criteria are met:

- (1) The delay of the delayed-egress electrical locking system shall deactivate allowing unobstructed egress upon actuation of one of the following:
  - (a) Approved, supervised automatic sprinkler system in accordance with Section 13.3
  - (b) Not more than one heat detector of an approved, supervised automatic fire detection system in accordance with Section 13.7
  - (c) Not more than two smoke detectors of an approved, supervised automatic fire detection system in accordance with Section 13.7
- (2) The delay of the delayed-egress electrical locking system shall deactivate allowing unobstructed egress upon loss of power controlling the lock or locking mechanism.
- (3)\* An irreversible process shall release the electrical lock in the direction of egress within 15 seconds, or 30 seconds where approved by the AHJ, upon application of a force to the release device required in 14.5.2.10-14.5.2.3 under all of the following conditions:
  - (a) The force shall not be required to exceed 15 lbf (67 N).
  - (b) The force shall not be required to be continuously applied for more than 3 seconds.
  - (c) The initiation of the release process shall activate an audible signal in the vicinity of the door opening.
  - (d) Once the electrical lock has been released by the application of force to the releasing device, rearming the delay electronics shall be by manual means only.
- (4)\* A readily visible, durable sign that conforms to the visual characters requirements of ICC/ANSI A117.1, Accessible and Usable Buildings and Facilities, shall be located on the door leaf adjacent to the release device in the direction of egress, and shall read as follows:
  - (a) PUSH UNTIL ALARM SOUNDS, DOOR CAN BE OPENED IN 15 SECONDS, for doors that swing in the direction of egress travel
  - (b) PULL UNTIL ALARM SOUNDS, DOOR CAN BE OPENED IN 15 SECONDS, for doors that swing against the direction of egress travel

- (5) The egress side of doors equipped with delayed-egress electrical locking system shall be provided with emergency lighting in accordance with Section 7.9 of NFPA 101.
- (6) Hardware for new installations shall be listed in accordance with UL 294, *Access Control System Units*.

[101:7.2.1.6.1.1]

#### **A.14.5.3.1.1(3)**

It is not the intent to require a direct physical or electrical connection between the door release device and the lock. It is the intent to allow door movement initiated by operating the door release device required in [14.5.2.101](#)[14.5.2.3](#) as one option to initiate the irreversible process. [101:A.7.2.1.6.1.1(3)]

Delayed-egress electrical locking systems commonly employ a mechanical latch and/or lock in addition to an electrical lock. The use of a mechanical latch/lock in addition to an electrical lock such as a magnetic lock allows a door to be mechanically locked preventing uncontrolled ingress should the electrical lock be de-energized as in a power failure. [101:A.7.2.1.6.1.1(3)]

Several factors need to be considered in approving an increase in delay time from 15 seconds to 30 seconds. Some of those factors include occupancy, occupant density, ceiling height, fire hazards present, fire protection features provided, and the location of the delayed-egress locks. An example of a location where the increase on delay time might not be approved is at an exit stair discharge door.

[101:A.7.2.1.6.1.1(3)]

#### **14.5.3.1.2**

The provisions of 14.5.3.2 for sensor-release of electrical locking systems and 14.5.3.3, for door hardware release of electrically locked egress door assemblies shall not apply to door assemblies with delayed-egress electrical locking systems. [101:7.2.1.6.1.2]

#### **14.5.3.2 \*Sensor-Release of Electrical Locking Systems.**

#### **A.14.5.3.2**

Doors with a sensor-release electrical locking system are equipped with an electrical locking system that is released by a sensor activated by the normal motions of an occupant egressing through that door. The activation of the sensor to cause the electrical lock to release is usually by passive action by the occupant, such as walking to the door. A manual release device, such as a push-button switch that directly interrupts the power to the electrical lock, is required by item (3) as a backup. With most sensor-release electrical locking systems, the occupant might not notice the door is electrically locked in the direction of egress. Doors equipped with these locking systems provide unobstructed, immediate egress. [101:A.7.2.1.6.2]

These provisions were previously titled “Access-Controlled Egress Door Assemblies” as these doors typically have some type of access control system, such as a key pad, card scanner, or fob scanner controlling access (ingress) into the building or space. Because access control systems can be installed on essentially any door, the previous title resulted in differing interpretations, applications, and

enforcement of permitted locking systems, and they were retitled in the 2018 edition of the Code.

[\[101:A.7.2.1.6.2\]](#)

#### **14.5.3.2.1**

Where permitted in Chapters 11 through 43 of NFPA 101, door assemblies in the means of egress shall be permitted to be equipped with sensor-release electrical locking system hardware provided that all of the following criteria are met:

- (1) A sensor shall be provided on the egress side, arranged to electrically unlock the door leaf in the direction of egress upon detection of an approaching occupant.
- (2) Door leaves shall automatically electrically unlock in the direction of egress upon loss of power to the sensor or to the part of the locking system that electrically locks the door leaves.
- (3) Door locks shall be arranged to electrically unlock in the direction of egress from a manual release device complying with all of the following criteria:
  - (a) The manual release device shall be located on the egress side, 40 in. to 48 in. (1015 mm to 1220 mm) vertically above the floor, and within 60 in. (1525 mm) of the secured door openings, except as otherwise permitted by 14.5.3.2.1(3)(c).
  - (b) The requirement of 14.5.3.2.1(3)(a) to locate the manual release device within 60 in. (1525 mm) of the secured door opening shall not apply to previously approved existing installations.
  - (c) The manual release device shall be readily accessible and clearly identified by a sign that reads as follows: PUSH TO EXIT.
  - (d) When operated, the manual release device shall result in direct interruption of power to the electrical lock — independent of the locking system electronics — and the lock shall remain unlocked for not less than 30 seconds.
- (4) Activation of the building fire-protective signaling system, if provided, shall automatically electrically unlock the door leaves in the direction of egress, and the door leaves shall remain electrically unlocked until the fire-protective signaling system has been manually reset.
- (5) The activation of manual fire alarm boxes that activate the building fire-protective signaling system specified in 14.5.3.2.1(4) shall not be required to unlock the door leaves.
- (6) Activation of the building automatic sprinkler or fire detection system, if provided, shall automatically electrically unlock the door leaves in the direction of egress, and the door leaves shall remain electrically unlocked until the fire-protective signaling system has been manually reset.
- (7) The egress side of sensor-release electrically locked egress doors, other than existing sensor-release electrically locked egress doors, shall be provided with emergency lighting in accordance with Section- 14.13.
- (8) Hardware for new installations shall be listed in accordance with UL 294, Access Control System Units.

[\[101:7.2.1.6.2.1\]](#)

#### **14.5.3.2.2**

The provisions of 14.5.3.1 for delayed-egress electrical locking systems and 14.5.3.3 for door hardware release of electrically locked egress door assemblies shall not apply to door assemblies with sensor-release of electrical locking systems. [\[101:7.2.1.6.2.2\]](#)

## **14.5.2.614.5.3.3 Door Hardware Release of Electrically Locked Egress Door Assemblies.**

### **14.5.3.3.1**

Door assemblies in the means of egress shall be permitted to be equipped with approved electrical locking systems released by the operation of door hardware provided that all of the following conditions are met:

- (1) The hardware for egress-side occupant release of the electrical lock is affixed to the door leaf.
- (2) The hardware has an obvious method of operation that is readily operated in the direction of egress under all lighting conditions.
- (3) The hardware is capable of being operated with one hand in the direction of egress.
- (4) Operation of the hardware directly and immediately interrupts the power supply to the electric lock and to unlocks the door assembly in the direction of egress.
- (5) \*Loss of power to the listed releasing hardware automatically electrically unlocks the door assembly in the direction of egress.
- (6) Hardware for new installations is listed in accordance with UL 294, Access Control System Units.

[101:7.2.1.5-6.3.1]

### **A.14.5.2.5-2A.14.5.3.3.1(5)**

It is critical that the electrical lock be arranged to release upon loss of power to the releasing hardware to ensure occupants can egress in the event of a power failure. [101:7.2.1.6.3.1(5)]

## **14.5.3.314.5.3.4 \*Elevator Lobby Exit Access Door Assemblies Locking.**

### **A.14.5.3.3(14)A.14.5.3.4**

The electrical locking provisions of 14.5.3.4 for elevator lobby exit access door assemblies are similar to, but different from, the electrical locking systems of 14.5.3.1, 14.5.3.2, and 14.5.3.3. [101:A.7.2.1.6.4]

On doors to tenant spaces from the elevator lobby, it is not the intent to prohibit elevator lobby these doors from being equipped with card-access systems, such as card readers controlling access to the for gaining access, for example, to tenant spaces, provided that the door leading from the elevator lobby is not in the path to the exit access required by 14.9.1.6.1. [101:A.7.2.1.6.4]

It is the acceptable to use a sensor-release of electrical locking systems described in 14.5.3.2 that is prohibited from being installed on the same door as the lock addressed by 14.5.3.3 from a tenant space into the elevator lobby with the sensor on the tenant (egress)side of the door to allow free access to the elevator lobby. [101:A.7.2.1.6.3(14)A.7.2.1.6.4]

### **14.5.3.4.1**

Where permitted in Chapters 11 through 43 of NFPA 101, door assemblies separating the elevator lobby from the exit access required by 14.9.1.6.1 shall be permitted to be electrically locked, provided that all the following criteria are met:

- (1) The electrical locking hardware is listed in accordance with UL 294, *Access Control System Units*.
- (2) The building is protected throughout by a fire alarm system in accordance with Section -13.7.
- (3) The building is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section -13.3.
- (4) Waterflow in the sprinkler system required by [14.5.3.3\(3\)](#)[14.5.3.4.1](#) is arranged to initiate the building fire alarm system.
- (5) The elevator lobby is protected by an approved, supervised smoke detection system in accordance with Section 13.7.
- (6) Detection of smoke by the detection system required by [14.5.3.4.1](#)[14.5.3.3\(5\)](#) is arranged to initiate the building fire alarm system and notify building occupants.
- (7) Initiation of the building fire alarm system by other than manual fire alarm boxes unlocks the electrical locks on the elevator lobby door assembly.
- (8) Loss of power to the elevator lobby electrical lock system unlocks the electrical locks on the elevator lobby door assemblies.
- (9) Once unlocked, the elevator lobby door assemblies remain electrically unlocked until the building fire alarm system has been manually reset.
- (10) Where the elevator lobby door assemblies remain mechanically latched after being electrically unlocked, latch-releasing hardware in accordance with [14.5.2.10](#)[14.5.2.3](#) is affixed to the door leaves.
- (11) A two-way communication system is provided for communication between the elevator lobby and a central control point that is constantly staffed.
- (12) The central control point staff required by [14.5.3.3\(11\)](#)[14.5.3.4.1](#) is capable, trained, and authorized to provide emergency assistance.
- (13) ~~The provisions of 14.5.3.1 for delayed egress electrical locking systems are not applied to the elevator lobby door assemblies.~~
- (14)\* ~~The provisions of 14.5.3.2 for sensor release of electrical locking systems are not applied to the elevator lobby door assemblies.~~

[101:7.2.1.6.4.13]

#### [14.5.3.4.2](#)

Elevator lobby exit access doors equipped with electrical locking systems shall not be required to comply with 14.5.3.4.1, 14.5.3.4.2, or 14.5.3.4.3. [101:7.2.1.6.4.2]

#### [14.5.3.5](#)[14.5.3.4](#) \*Panic Hardware and Fire Exit Hardware.

##### [A.14.5.3.4](#)[A.14.5.3.5](#)

See 14.9.2.1.2 and 14.9.2.2.2 for door unlatching requirements for working space about electrical equipment. [101:A.7.2.1.7]

#### [14.5.3.5.1](#)[14.5.3.4.1](#)

Where a side-hinged, ~~or a~~ pivoted-swinging door assembly, ~~or a balanced door assembly~~ is required to be equipped with panic or fire exit hardware, such hardware shall meet all of the following criteria:

- (1) It shall consist of a cross bar or a push pad, with the length of the actuating portion of the cross bar or push pad not less than one-half of the width of the door leaf measured from the latch stile unless otherwise required by 14.5.3.5.2.

- (2) It shall be mounted as follows:
- New installations shall be not less than 34 in. (865 mm), and not more than 48 in. (1220 mm), above the floor.
  - Existing installations shall be not less than 30 in. (760 mm), and not more than 48 in. (1220 mm), above the floor.
- (3) It shall be constructed so that a horizontal force not to exceed 15 lbf ([66-67](#) N) actuates the cross bar or push pad and latches.

[[101:7.2.1.7.1](#)]

#### **14.5.3.4.2-14.5.3.5.2**

Where panic or fire exit hardware is installed on a balanced door assembly or pivoted-swinging door assembly, the panic or fire exit hardware shall be of the push-pad type, and the pad shall extend approximately one-half the width of the door leaf, measured from the latch stile. [[101:7.2.1.7.2](#)]

#### **14.5.3.4.32-14.5.3.5.3\***

Only approved fire exit hardware shall be used on ~~fire~~-~~fire~~-protection-rated door assemblies. New panic hardware and new fire exit hardware shall comply with UL 305, *Panic Hardware*, and ANSI/BHMA A156.3, *Exit Devices* and ANSI/BHMA A156.3. [[101:7.2.1.7.32](#)]

#### **A.14.5.3.4.32A.14.5.3.5.3**

The presence of fire exit hardware on a door does not imply the door is required to be a fire protection-rated door. [[101:A.7.2.1.7.32](#)]

#### **14.5.3.5.41-14.5.3.4.43**

Required panic hardware and fire exit hardware, in other than detention and correctional occupancies as otherwise provided in Chapters 22 and 23 of NFPA 101, shall not be equipped with any locking device, set screw, or other arrangement that prevents the release of the latch when pressure is applied to the releasing device. [[101:7.2.1.7.43](#)]

#### **14.5.3.5.51-14.5.3.4.54**

Devices that hold the latch in the retracted position shall be prohibited on fire exit hardware, unless such devices are listed and approved for such a purpose. [[101:7.2.1.7.54](#)]

### **14.5.4.2**

In any building of ~~low~~ or ~~ordinary~~-~~ordinary~~-hazard contents, as defined in 3.3.152.2 and 3.3.152.3, or where approved by the AHJ, door leaves shall be permitted to be automatic-closing, provided that all of the following criteria are met:

- Upon release of the hold-open mechanism, the leaf becomes self-closing.
- The release device is designed so that the leaf instantly releases manually and, upon release, becomes self-closing, or the leaf can be readily closed.
- The automatic releasing mechanism or medium is activated by the operation of approved smoke detectors ~~in~~-stalled in accordance with the requirements for smoke detectors for door leaf release service in NFPA 72.

- (4) Upon loss of power to the hold-open device, the hold-open mechanism is released and the door leaf becomes self-closing.
- (5) The release by means of smoke detection of one door leaf in a stair enclosure results in closing all door leaves serving that stair.

[101:7.2.1.8.2]

#### **14.5.4.3**

The elevator car doors<sub>2</sub> and the associated hoistway enclosure doors<sub>2</sub> at the floor level designated for recall in accordance with the requirements of 11.3.1 shall be permitted to remain open during Phase I Emergency Recall Operation. [101:7.2.1.8.3]

#### **A.14.5.5**

Special-purpose horizontally sliding accordion or folding door assemblies installed in accordance with [7.2.1.134 of NFPA 101](#) [14.5.9](#) should not be considered powered doors subject to the provisions of 14.5.5. [101:A.7.2.1.9]

Powered doors are divided into two categories — power-assisted [or low-energy power-operated doors](#) and power-operated [doors](#). [Power assisted doors](#) that conform to ANSI/BHMA A156.19, *Power Assist and Low Energy Power Operated Doors*, use limited power to operate the door. [They require fewer safeguards as compared to full power-operated doors.](#) These door operators are for swinging, [sliding, or folding doors only](#). [Power-assisted and low-energy power-operated doors require fewer safeguards as compared to power-operated doors.](#) [Power-operated doors](#) that conform to ANSI/BHMA A156.10, *Power Operated Pedestrian Doors*, require more power to operate the door and require additional safeguards to provide protection against personal injury. Power-operated doors can be swinging, sliding, or folding doors. [101:A.7.2.1.9]

##### **14.5.5.1 \*General.**

Where means of egress door leaves are operated by power [by any automatic mechanism upon the approach of a person](#) or are provided with power-assisted manual operation, the design shall be such that, in the event of power failure, the leaves open manually to allow egress travel or close when necessary to safeguard the means of egress. [101:7.2.1.9.1]

##### **14.5.5.1.5**

The door assembly shall be designed and installed so that, when a force is applied to the door leaf on the [egress side from which egress is made](#), [it the door leaf](#) shall be capable of swinging from any position to provide full use of the required width of the opening in which it is installed. (See 14.5.1.) [101:7.2.1.9.1.5]

##### **14.5.5.1.10**

Door assemblies complying with 14.5.10 shall be permitted to be used. [101:7.2.1.9.1.10]

##### **14.5.5.1.11**

The requirements of 14.5.5.1.1 through 14.5.5.1.10 shall not apply in detention and correctional occupancies where otherwise provided in Chapters 22 and 23 [of NFPA 101](#). [101:7.2.1.9.1.11]

#### **14.5.5.2 Self-Closing or Self-Latching Door Leaf Operation.**

Where door leaves are required to be self-closing or self-latching and are operated by power upon the approach of a person, by any automatic device, or are provided with power-assisted manual operation, they shall be permitted in the means of egress where they meet the following criteria:

- (1) The door leaves can be opened manually in accordance with 14.5.5.1.1 to allow egress travel in the event of power failure.
- (2) New door leaves remain in the closed position, unless actuated or opened manually.
- (3) When actuated, new door leaves remain open for not more than 30 seconds.
- (4) Door leaves held open for any period of time close — and the power-assist mechanism ceases to function — upon operation of approved smoke detectors installed in such a way as to detect smoke on either side of the door opening in accordance with the provisions of *NFPA 72*.
- (5) Door leaves required to be self-latching are either self-latching or become self-latching upon operation of approved smoke detectors per 14.5.5.2(4).
- (6) New power-assisted swinging door assemblies comply with BHMA/ANSI A156.19, *Power Assist and Low Energy Power Operated Doors*.

[101:7.2.1.9.2]

#### **14.5.6.1**

Revolving door assemblies, whether used or not used in the means of egress, shall comply with all of the following:

- (1) New revolving doors shall comply with ANSI/BHMA A156.27, *Power and Manual Operated Revolving Pedestrian Doors*, and shall be installed in accordance with the manufacturer's installation instructions.
- (2) Revolving door wings shall be capable of book-fold or breakout for egress in accordance with ANSI/BHMA A156.27, unless they are existing revolving doors approved by the authority having jurisdiction AHJ.
- (3) When revolving door wings are collapsed into the book-fold position, the parallel egress paths formed shall provide an aggregate width of 36 in. (915 mm), unless they are approved existing revolving door assemblies.
- (4) Revolving door assemblies shall not be used within 10 ft (3050 mm) of the foot or the top of stairs or escalators.
- (5) A dispersal area acceptable to the authority having jurisdiction shall be located between stairs or escalators and the revolving door assembly.
- (6) The revolutions per minute (rpm) of door wings shall not exceed the following:
  - (a) The values in Table 14.5.6.1 for existing revolving doors.
  - (b) The values in ANSI/BHMA A156.27 for new revolving doors.
- (7) Each revolving door assembly shall have a conforming side-hinged swinging door assembly in the same wall as the revolving door within 10 ft (3050 mm) of the revolving door, unless one of the following conditions applies:
  - (a) Revolving door assemblies shall be permitted without adjacent swinging door assemblies, as required by 14.5.6.1(6), in street floor elevator lobbies, provided that no stairways or door openings from other parts of the building discharge through the lobby and the lobby has no occupancy other than as a means of travel between the elevators and street.

- (b) The requirement of 14.5.6.1(6) shall not apply to existing revolving door assemblies where the number of revolving door assemblies does not exceed the number of swinging door assemblies within 20 ft (6100 mm) of the revolving door assembly.

[101:7.2.1.10.1]

**Table 14.5.6.1 Existing Revolving Door Assembly Maximum Speed**

Inside Diameter ft/in. mm	Power-Driven Speed Control (rpm)	Manual Speed Control (rpm)	
		12	11
6 ft 6 in. 1980	11	12	
7 ft 2135	10	11	
7 ft 6 in. 2285	9	11	
8 ft 2440	9	10	
8 ft 6 in. 2590	8	9	
9 ft 2745	8	9	
9 ft 6 in. 2895	7	8	
10 ft 3050	7	8	

[101:Table 7.2.1.10.1]

#### **14.5.7.1.2**

Where turnstiles are approved by the authority having jurisdiction and permitted in Chapters 11 through 43 of NFPA 101, each turnstile shall be credited for a capacity of 50 persons, provided that such turnstiles meet all of the following criteria:

- (1) They freewheel in the egress direction when primary power is lost, and freewheel in the direction of egress travel upon manual release by an employee assigned in the area.
- (2) They are not given credit for more than 50 percent of the required egress width.
- (3) They are not in excess of 39 in. (990 mm) in height and have a clear width of not less than 16<sup>1/2</sup> in. (420 mm).

[101:7.2.1.11.1.2]

#### **14.5.7.1.3 \***

Security access turnstiles that impede travel in the direction of egress utilizing a physical barrier shall be permitted to be considered as a component of the means of egress, where permitted in Chapters 11 through 43 of NFPA 101, provided that all the following criteria are met:

- (1) The building is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section [14.8.13.3](#).
- (2) Each security access turnstile lane configuration has a minimum clear passage width of 22 in. (560 mm).
- (3) Any security access turnstile lane configuration providing a clear passage width of less than 32 in. (810 mm) shall be given an egress capacity of 50 persons.
- (4) Any security access turnstile lane configuration providing a clear passage width of 32 in. (810 mm) or more shall be given an egress capacity as calculated in accordance with Section [14.5.6.14.8](#).
- (5) Each secured physical barrier shall automatically retract or swing to an unobstructed open position in the direction of egress, under each of the following conditions:

- (a) Upon loss of power to the turnstile or any part of the access control system that secures the physical barrier
- (b) Upon actuation of a readily accessible and clearly identified manual release device that results in direct interruption of power to each secured physical barrier, remains in the open position for not less than 30 seconds, and is positioned at one of the following locations:
  - i. The manual release device is located on the egress side of each security access turnstile lane.
  - ii. The manual release device is located at an approved location where it can be actuated by an employee assigned to the area.
- (c) Upon actuation of the building fire-protective signaling system, if provided, and for which the following apply:
  - i. The physical barrier remains in the open position until the fire-protective signaling system is manually reset.
  - ii. The actuation of manual fire alarm boxes that actuate the building fire-protective signaling system is not required to meet the requirements specified in 14.5.7.1.3(5)(c)i.
- (d) Upon actuation of the building automatic sprinkler or fire detection system, and for which the physical barrier remains in the open position until the fire-protective signaling system is manually reset

[101:7.2.1.11.1.3]

#### **14.5.9 Balanced Door Assemblies.**

~~If panic hardware is installed on balanced door leaves, the panic hardware shall be of the push-pad type, and the pad shall not extend more than approximately one-half the width of the door leaf, measured from the latch stile. [See 14.5.3.4.1(1).] [101:7.2.1.13]~~

#### **14.5.910 Special-Purpose Horizontally Sliding Accordion or Folding Door Assemblies.**

Special-purpose horizontally sliding accordion or folding door assemblies shall be permitted in means of egress, provided that all of the following criteria are met:

- (1) The door leaf is readily operable from either the egress side without special knowledge or effort.
- (2) The force that, when applied to the operating device in the direction of egress, is required to operate the door leaf is not more than 15 lbf (67 N).
- (3) The force required to operate the door leaf in the direction of travel is not more than 30 lbf (133 N) to set the leaf door in motion and is not more than 15 lbf (67 N) to close the leaf or open it to the minimum required width.
- (4) The door leaf is operable using a force of not more than 50 lbf (222 N) when a force of 250 lbf (1100 N) is applied perpendicularly to the leaf door adjacent to the operating device, unless the door opening is an existing special-purpose horizontally sliding accordion or folding exit access door assembly serving an area with an occupant load of fewer than 50.
- (5) The door assembly complies with the fire protection rating, if required, and, where rated, is self-closing or automatic-closing by means of smoke detection in accordance with 14.5.4 and is installed in accordance with NFPA 80.

[101:7.2.1.134]

## **14.5.101 Inspection of Door Openings.**

### **14.5.101.1 \***

Where required by Chapters 11 through 43 of NFPA 101, the following door assemblies shall be inspected and tested not less than annually in accordance with 14.5.101.2 through 14.5.101.7:

- (1) Door leaves equipped with panic hardware or fire exit hardware in accordance with 14.5.3.4
- (2) Door assemblies in exit enclosures
- (3) Door hardware-release of electrically locked egress door assemblies
- (4) Door assemblies with special locking arrangements subject to 14.5.3.3

[101:7.2.1.145.1]

### **A.14.5.101.1**

Door assemblies within the required means of egress (e.g., door assemblies that discharge from exit enclosures) require a higher level of care and maintenance throughout the life of their installations to ensure they perform as intended by the *Code*. Annual inspection and functional testing of these door assemblies is necessary to verify that they are maintained in proper working condition. Panic hardware and fire exit hardware devices are specifically required to be used in assembly and educational occupancies. However, door leaves that are equipped with panic hardware or fire exit hardware, in areas not specifically required by the *Code* (e.g., stairwell entry doors and double-egress cross-corridor door assemblies not serving an assembly occupancy), should be subject to annual inspection and functional testing to ensure that the operating hardware functions correctly in accordance with 14.5.3.4, since the presence of panic hardware and fire exit hardware implies it is required by the *Code*.

[101:A.7.2.1.145.1]

Additionally, door assemblies that are door hardware-release of electrically locked egress door assemblies in accordance with 14.5.2.5 and door assemblies that are equipped with special locking arrangements in accordance with 14.5.3.3 are outfitted with electrified hardware and access control devices that are susceptible to wear and abuse. Consequently, these door assemblies need to be inspected and tested on an annual basis, regardless of the occupant load being served.

[101:A.7.2.1.145.1]

In cases where the authority having jurisdiction determines there is a distinct hazard to building occupant safety, the inspection requirements of 7.2.1.15 should be applied to other exit access, exit, and exit discharge door assemblies. [101:A.7.2.1.145.1]

### **14.5.101.2 \***

The inspection and testing interval for fire-rated and nonrated door assemblies shall be permitted to exceed 12 months under a written performance-based program. [101:7.2.1.145.2]

### **A.14.5.101.2**

See NFPA 80, Annex J, for information pertaining to performance-based inspection, testing, and maintenance of door assemblies. [101:A.7.2.1.145.2]

#### **14.5.101.2.1**

Goals established under a performance-based program shall provide assurance that the door assembly will perform its intended function. [101:7.2.1.145.2.1]

#### **14.5.101.2.2**

Technical justification for inspection, testing, and maintenance intervals shall be documented. [101:7.2.1.145.2.2]

#### **14.5.101.2.3**

The performance-based option shall include historical data. [101:7.2.1.145.2.3]

#### **14.5.101.3**

A written record of the inspections and testing shall be signed and kept for inspection by the authority having jurisdiction. [101:7.2.1.145.3]

#### **14.5.101.4**

Functional testing of door assemblies shall be performed by individuals who can demonstrate knowledge and understanding of the operating components of the type of door being subjected to testing. [101:7.2.1.145.4]

#### **14.5.101.5**

Door assemblies shall be visually inspected from both sides of the opening to assess the overall condition of the assembly. [101:7.2.1.145.5]

#### **14.5.101.6**

As a minimum, the following items shall be verified:

- (1) Floor space on both sides of the openings is clear of obstructions, and door leaves open fully and close freely.
- (2) Forces required to set door leaves in motion and move to the fully open position do not exceed the requirements in 14.5.1.5.
- (3) Latching and locking devices comply with 14.5.2.
- (4) Releasing hardware devices are installed in accordance with [14.5.2.10.1](#)[14.5.2.3.1](#).
- (5) Door leaves of paired openings are installed in accordance with [14.5.2.11](#)[14.5.2.9](#).
- (6) Door closers are adjusted properly to control the closing speed of door leaves in accordance with accessibility requirements.
- (7) Projection of door leaves into the path of egress does not exceed the encroachment permitted by 14.5.1.3.
- (8) Powered door openings operate in accordance with 14.5.5.
- (9) Signage required by 14.5.1.1(3), [14.5.2.5](#)[14.5.2.6](#), 14.5.3, and 14.5.5 is intact and legible.
- (10) Door openings with special locking arrangements function in accordance with 14.5.3.
- (11) Security devices that impede egress are not installed on openings, as required by [14.5.2.12](#)[14.5.2.10](#).
- (12) Where required by 7.2.2.5.5.7 of NFPA 101, door hardware marking is present and intact.

(13) Emergency lighting on sensor-release of electrical locking systems and doors equipped with delayed-egress electrical locking systems is present in accordance with Section 14.13.

[101:7.2.1.145.6]

#### **14.5.101.7 \***

Door openings not in proper operating condition shall be repaired or replaced without delay.

[101:7.2.1.145.7]

#### **A.14.5.101.7**

Performing corrective action work on door assemblies frequently requires ordering replacement components that might take time to produce, ship, and install. Consideration of the time it takes to procure and install components should be included in the timeline for restoring the door assemblies to normal working condition. [101:A.7.2.1.145.7]

#### **A.14.6.2**

The purpose of this provision is to protect the exterior wall of a stairway from fires in other portions of the building. If the exterior wall of the stair is flush with the building exterior wall, the fire would need to travel around 180 degrees in order to impact the stair. This has not been a problem in existing buildings, so no protection is required. However, if the angle of exposure is less than 180 degrees, protection of either the stair wall or building wall is required. [101:A.7.2.2.5.2]

Figure A.14.6.2(a), Figure A.14.6.2(b), and Figure A.14.6.2(c) illustrate the requirement, assuming nonrated glass on the exterior wall of the stair is used. [101:A.7.2.2.5.2]

##### **Figure A.14.6.2(a) Stairway with Nonrated Exterior Wall in Same Plane as Building Exterior Wall.**

[101:Figure A.7.2.2.5.2(a)]

\*\*\*\*INSERT FIGURE\*\*\*\*

##### **Figure A.14.6.2(b) Stairway with Unprotected Exterior Perimeter Protruding Past Building Exterior Wall. [101:Figure A.7.2.2.5.2(b)]**

\*\*\*\*INSERT FIGURE\*\*\*\*

##### **Figure A.14.6.2(c) Stairway with Nonrated Exterior Wall Exposed by Adjacent Exterior Wall of Building.**

[101:Figure A.7.2.2.5.2(c)]

\*\*\*\*INSERT FIGURE\*\*\*\*

#### **A.14.7**

An exit passageway serves as a horizontal means of exit travel that is protected from fire in a manner similar to an enclosed interior exit stair. Where it is desired to offset exit stairs in a multistory building, an exit passageway can be used to preserve the continuity of the protected exit by connecting the bottom of one stair to the top of the stair that continues to the street floor. Probably the most important use of an exit passageway is to satisfy the requirement that at least 50 percent of the exit stairs discharge directly outside from multistory buildings (see 7.7.2 of NFPA 101). Thus, if it is impractical to locate the stair on an exterior wall, an exit passageway can be connected to the bottom of

the stair to convey the occupants safely to an outside exit door. In buildings of extremely large area, such as shopping mall concourses and some factories, the exit passageway can be used to advantage where the travel distance to reach an exit would otherwise be excessive. [101:A.7.2.6]

#### 14.7.4.1

The width of an exit passageway shall be sized to accommodate the aggregate required capacity of all exits that discharge through it, unless one of the following conditions applies:

- (1)\* Where an exit passageway serves occupants of the level of exit discharge as well as other stories, the capacity shall not be required to be aggregated.
- (2) As provided in Chapters 36 and 37 of NFPA 101, an exit passageway in a mall structure shall be permitted to accommodate occupant loads independently from the mall concourse and the tenant spaces. (See 36.2.2.7.2 and 37.2.2.7.2 of NFPA 101.)

[101:7.2.6.4.1]

#### 14.8.1.1.1

The total capacity of the means of egress for any story, balcony, tier, or other occupied space shall be sufficient for the occupant load thereof unless one of the following conditions exists:

- (1) The authority having jurisdiction shall be permitted to establish the occupant load as the number of persons for which existing means of egress is adequate, provided that measures are established to prevent occupancy by a greater number of persons.
- (2) The egress capacity shall have been previously approved as being adequate.

[101:7.3.1.1.1]

#### 14.8.1.2 \*Occupant Load Factor.

The occupant load in any building or portion thereof shall be not less than the number of persons determined by dividing the floor area assigned to that use by the occupant load factor for that use as specified in Table 14.8.1.2, Figure 14.8.1.2(a), and Figure 14.8.1.2(b). Where both gross and net area figures are given for the same occupancy, calculations shall be made by applying the gross area figure to the gross area of the portion of the building devoted to the use for which the gross area figure is specified and by applying the net area figure to the net area of the portion of the building devoted to the use for which the net area figure is specified. [101:7.3.1.2]

9Table 14.8.1.2 Occupant Load Factor

Use		(ft <sup>2</sup> /person) <sup>a</sup>	(m <sup>2</sup> /person) <sup>b</sup>
<b>Assembly Use</b>		-	-
Concentrated use, without fixed seating		7 net	0.65 net
Less concentrated use, without fixed seating		15 net	1.4 net
Bench-type seating		1 person/ 18 linear in.	1 person/ 455 linear mm
Fixed seating		Use number of fixed seats	Use number of fixed seats
Waiting spaces		See 12.1.7.2 and 13.1.7.2 of NFPA 101	See 12.1.7.2 and 13.1.7.2 of NFPA 101

Kitchens		100	9.3
Library stack areas		100	9.3
Library reading rooms		50 net	4.6 net
Swimming pools		50 (water surface)	4.6 (water surface)
Swimming pool decks		30	2.8
Exercise rooms with equipment		50	4.6
Exercise rooms without equipment		15	1.4
Stages		15 net	1.4 net
Lighting and access catwalks, galleries, gridirons		100 net	9.3 net
Casinos and similar gaming areas		11	1
Skating rinks		50	4.6
<b>Business Use (other than below)</b>		<a href="#">100150</a>	<a href="#">9.314</a>
Concentrated Business <a href="#">Use<sup>a</sup>Use<sup>b</sup></a>		50	4.6
Airport control tower observation levels		40	3.7
<a href="#">Collaboration rooms/spaces ≤450 ft<sup>2</sup> (41.8 m<sup>2</sup>) in area<sup>b</sup></a>		<a href="#">30</a>	<a href="#">2.8</a>
<a href="#">Collaboration rooms/spaces &gt;450 ft<sup>2</sup> (41.8 m<sup>2</sup>) in area<sup>b</sup></a>		<a href="#">15</a>	<a href="#">1.4</a>
<b>Day-Care Use</b>		35 net	3.3 net
<b>Detention and Correctional Use</b>		120	11.1
<b>Educational Use</b>		-	-
Classrooms		20 net	1.9 net
Shops, laboratories, vocational rooms		50 net	4.6 net
<b>Health Care Use</b>		-	-
Inpatient treatment departments		240	22.3
Sleeping departments		120	11.1
Ambulatory health care		150	<a href="#">1314</a>
<b>Industrial Use</b>		-	-
General and high hazard industrial		100	9.3
Special-purpose industrial		<a href="#">NAMP</a>	<a href="#">NAMP</a>
<b>Mercantile Use</b>		-	-
Sales area on street floor <a href="#"><sup>b</sup>ec<sup>d</sup></a>		30	2.8
Sales area on two or more street <a href="#">floors<sup>e</sup>floors<sup>d</sup></a>		40	3.7
Sales area on floor below street <a href="#">floor<sup>e</sup>floor<sup>d</sup></a>		30	2.8
Sales area on floors above street <a href="#">floor<sup>e</sup>floor<sup>d</sup></a>		60	5.6
Floors or portions of floors used only for offices		See business use.	See business use.
Floors or portions of floors used only for storage, receiving, and shipping, and not open to general public		300	27.9
Mall <a href="#">structures<sup>d</sup>structures<sup>e</sup></a>		Per factors applicable to use of <a href="#">space<sup>e</sup>space<sup>f</sup></a>	
<b>Residential Use</b>		-	-
Hotels and dormitories		200	18.6
Apartment buildings		200	18.6
Board and care, large		200	18.6
<b>Storage Use</b>		-	-

In storage occupancies			<b>NAMP</b>	<b>NAMP</b>
In mercantile occupancies			300	27.9
In other than storage and mercantile occupancies			500	46.5

**NAMP:** Not applicable. The occupant load is the maximum probable number of occupants present at any time.

<sup>a</sup>All factors are expressed in gross area unless marked “net.”

<sup>b</sup>See A.14.8.1.2

<sup>b</sup>cFor the purpose of determining occupant load in mercantile occupancies where, due to differences in the finished ground level of streets on different sides, two or more floors directly accessible from streets (not including alleys or similar back streets) exist, each such floor is permitted to be considered a street floor. The occupant load factor is one person for each 40 ft<sup>2</sup> (3.7 m<sup>2</sup>) of gross floor area of sales space.

<sup>c</sup>dFor the purpose of determining occupant load in mercantile occupancies with no street floor, as defined in 3.3.234, but with access directly from the street by stairs or escalators, the floor at the point of entrance to the mercantile occupancy is considered the street floor.

<sup>d</sup>eFor any food court or other assembly use areas located in the mall concourse that are not included as a portion of the gross leasable area of the mall structure, the occupant load is calculated based on the occupant load factor for that use as specified in Table 14.8.1.2. The remaining mall concourse area is not required to be assigned an occupant load.

<sup>e</sup>fThe portions of the mall concourse that are considered a pedestrian way and not used as gross leasable area are not required to be assessed an occupant load based on Table 14.8.1.2. However, means of egress from a mall pedestrian way concourse are required to be provided for an occupant load determined by dividing the gross leasable area of the mall structure building (not including anchor storesbuildings) by the appropriate lowest whole number occupant load factor from Figure 14.8.1.2(a) or Figure 14.8.1.2(b).

Each individual tenant space is required to have means of egress to the outside or to the mall concourse based on occupant loads calculated by using the appropriate occupant load factor from Table 14.8.1.2.

Each individual anchor store is required to have means of egress independent of the mall concourse.

<sup>f</sup>See A.14.8.1.2

[101:Table 7.3.1.2]

**Figure 14.8.1.2(a) Mall Structure Occupant Load Factors (U.S. Customary Units). [101:Figure 7.3.1.2(a)]**

\*\*\*\*INSERT FIGURE\*\*\*\*

**Figure 14.8.1.2(b) Mall Structure Occupant Load Factors (SI Units). [101:Figure 7.3.1.2(b)]**

\*\*\*\*INSERT FIGURE\*\*\*\*

### A.14.8.1.2

The normal occupant load is not necessarily a suitable criterion, because the greatest hazard can occur when an unusually large crowd is present, which is a condition often difficult for AHJs to control by regulatory measures. The principle of this *Code* is to provide means of egress for the maximum probable number of occupants, rather than to attempt to limit occupants to a number commensurate with available means of egress. However, limits of occupancy are specified in certain special cases for other reasons. [101:A.7.3.1.2]

Suggested occupant load factors for components of large airport terminal buildings are given in Table A.14.8.1.2. However, the AHJ might elect to use different occupant load factors, provided that egress requirements are satisfied. [101:A.7.3.1.2]

10Table A.14.8.1.2 Airport Terminal Occupant Load Factors

Airport Terminal Area	ft <sup>2</sup> (gross)	m <sup>2</sup> (gross)
Concourse	100	9.3
Waiting areas	15	1.4
Baggage claim	20	1.9
Baggage handling	300	27.9

[101:Table A.7.3.1.2]

The figure used in determining the occupancy load for mall shopping centers of varying sizes was arrived at empirically by surveying over 270 mall shopping centers, by studying mercantile occupancy parking requirements, and by observing the number of occupants per vehicle during peak seasons.

[101:A.7.3.1.2]

These studies show that, with an increase in shopping center size, there is a decrease in the number of occupants per square foot of gross leasable area. [101:A.7.3.1.2]

This phenomenon is explained when one considers that, above a certain shopping center gross leasable area [approximately 600,000 ft<sup>2</sup> (56,000 m<sup>2</sup>)], there exists a multiplicity of the same types of stores. The purpose of duplicate types of stores is to increase the choices available to a customer for any given type of merchandise. Therefore, when shopping center size increases, the occupant load increases as well, but at a declining rate. In using [Table-Figure A.14.8.1.2\(a\) or Figure 14.8.1.2\(b\)](#), the occupant load factor is applied only to the gross leasable area that uses the mall concourse as a means of egress.

[\[101:A.7.3.1.2\]](#)

[\[101:A.7.3.1.2\]](#)  
The value for concentrated business use is intended to address business use spaces with a higher density of occupants than would normally be expected in a general business occupancy. Where furnishings and floor layouts are arranged to maximize the number of occupants in the space, the value

for concentrated business use should be applied. Examples of concentrated business use areas are call centers, trading floors, and data processing centers. [101:A.7.3.1.2]

Collaboration rooms/spaces are common to office buildings. Their principal function is to permit collaboration among occupants in the privacy of a small room/space. These rooms/spaces are primarily used by occupants of the business occupancy to transition temporarily from their regular workstation area in order to obtain privacy and to avoid disturbing other employees located in the open office environment. Collaboration rooms/spaces have been commonly referred to as quiet rooms, focus rooms, huddle rooms, and team rooms. [101:A.7.3.1.2]

Collaboration rooms/spaces are not considered conference rooms, since a conference room's principal function is to be used for assembly purposes. [101:A.7.3.1.2]

#### **14.8.2.2**

Projections within the means of egress of not more than 4 $\frac{1}{2}$  in. (114 mm) on each side shall be permitted at a height of 38 in. (965 mm) and below. In the case of stair and landing handrails forming part of a guard, in accordance with 7.2.2.4.54.3 of NFPA 101, such projections shall be permitted at a height of 42 in. (1065 mm) and below. [101:7.3.2.2]

#### **14.8.3 \*Egress Capacity.**

##### **A.14.8.3**

In egress capacity calculations, standard rounding should be used. [101:7.3.3]

#### **14.8.3.1**

Egress capacity for approved components of means of egress shall be based on the capacity factors shown in Table 14.8.3.1, unless otherwise provided in 14.8.3.2. [101:7.3.3.1]

**11Table 14.8.3.1 Capacity Factors**

Area	Stairways (width/person)		Level Components and Ramps (width/person)	
	in.	mm	in.	mm
Board and care	0.4	10	0.2	5
Health care, sprinklered	0.3	7.6	0.2	5
Health care, nonsprinklered	0.6	15	0.5	13
<u>High-High</u> -hazard contents	0.7	18	0.4	10
All others	0.3	7.6	0.2	5

[101:Table 7.3.3.1]

#### **14.8.3.2 \***

For stairways wider than 44 in. (1120 mm) and subject to the 0.3 in. (7.6 mm) width per person capacity factor, the capacity shall be permitted to be increased using the following equation:

$$C = 146.7 + \left( \frac{Wn - 44}{0.218} \right)$$

[14.8.3.2]

where:

$C$  = capacity, in persons, rounded to the nearest integer

$Wn$  = nominal width of the stair as permitted by 14.8.3.2 (in.) [101:7.3.3.2]

### A.14.8.3.2

The effective capacity of stairways has been shown by research to be proportional to the effective width of the stairway, which is the nominal width minus 12 in. (305 mm). This phenomenon, and the supporting research, were described in [the chapter Chapter 59, “Movement of People Employing the Hydraulic Model in Assessing Emergency Movement”](#) in the [first, second, and third](#)<sup>fifth</sup> editions of the *SFPE Handbook of Fire Protection Engineering* and was also addressed in Appendix D of the 1985 edition of NFPA 101, among several other publications. In 1988, this appendix was moved to form Chapter 2 of the 1988 edition of NFPA 101M, *Alternative Approaches to Life Safety*. (This document was later designated as NFPA 101A and this chapter remained in the document through the 1998 edition.) In essence, the effective width phenomenon recognizes that there is an edge or boundary effect at the sides of a circulation path. It has been best examined in relation to stairway width, where the edge effect was estimated to be 6 in. (150 mm) on each side, but a similar phenomenon occurs with other paths, such as corridors and doors, although quantitative estimates of their edge effect are not as well established as they have been for stairways, at least those stairways studied in Canada during the late 1960s through the 1970s in office building evacuation drills and in crowd movement in a variety of buildings with assembly occupancy. [101:A.7.3.3.2]

More recent studies have not been performed to determine how the edge effect might be changing (or has changed) with demographic changes to larger, heavier occupants moving more slowly, and thus swaying laterally, to maintain balance when walking. The impact of such demographic changes, which are significant and influential for evacuation flow and speed of movement on stairs, for example, has the effect of increasing the time of evacuation in a way that affects all stair widths, but will be most pronounced for nominal widths less than 56 in. (1422 mm). [101:A.7.3.3.2]

Without taking into account occupant demographic changes in the last few decades that affect evacuation performance, especially on stairs, the formula for enhanced capacity of stairways wider than 44 in. (1120 mm) assumes that any portion of the nominal width greater than 44 in. (1120 mm) is as effective proportionally as the effective width of a nominal 44 in. (1120 mm) stair, that is, 32 in. (810 mm). Thus, the denominator (0.218) in the equation is simply the effective width of 32 in. (810 mm) divided by the capacity of 147 persons that is credited, by the 0.3 in. (7.6 mm) capacity factor in Table [A.14.8.3.2](#)[14.8.3.1](#), to the corresponding nominal width, 44 in. (1120 mm). [101:A.7.3.3.2]

The resulting permitted stairway capacities, based on occupant load of single stories (in accordance with 7.3.1.4 of NFPA 101), for several stairway widths are shown in Table A.14.8.3.2. [101:A.7.3.3.2]

#### 12Table A.14.8.3.2 Stairway Capacities

Permitted Capacity (no. of persons)	Nominal Width		Clear Width Between Handrails <sup>a</sup>		Effective Width	
	in.	mm	in.	mm	in.	mm
120 <sup>b</sup>	36	915	28	710	24	610
147	44	1120	36	915	32	810
202	56	1420	48	1220	44	1120
257	68	1725	60 <sup>c</sup>	1525 <sup>c</sup>	56	1420

<sup>a</sup>A reasonable handrail incursion of only 4 in. (100 mm), into the nominal width, is assumed on each side of the stair, although 7.3.23.2 of NFPA 101 permits a maximum incursion of 4½ in. (114 mm) on each side.

<sup>b</sup>Other *Code* sections limit the occupant load for such stairs more severely (e.g., 50 persons in 7.2.2.2.1.2 of NFPA 101). Such lower limits are partly justified by the relatively small effective width of such stairs, which, if taken into account by Table 7.3.3.1 of NFPA 101 14.8.3.1, would result in a correspondingly low effective capacity of only 110 persons (24 divided by 0.218), or a more realistic capacity factor of 0.327, applicable to nominal width.

<sup>c</sup>A clear width of 60 in. (1525 mm) is the maximum permitted by the handrail reachability criteria of 7.2.2.4.1.2 of NFPA 101. Although some prior editions of the *Code* permitted wider portions of stairs [up to 88 in. (2240 mm), between handrails], such wider portions are less effective for reasonably safe crowd flow and generally should not be used for major crowd movement. To achieve the maximum possible, reasonably safe egress capacity for such stairs, retrofit of an intermediate — not necessarily central — handrail is recommended; for example, with an intermediate handrail located 36 in. (915 mm) from the closest side handrail. In this case, the effective capacity would be 358 persons for the formerly permitted, now retrofitted, stair. This is based on a retrofitted, effective width of about 78 in. (1980 mm) [subtracting 2 in. (51 mm) from each usable side of a handrail and assuming a 2 in. (51 mm) wide, retrofitted intermediate handrail].

[101:Table A.7.3.3.2]

#### 14.8.3.4.1

The width of any means of egress, unless otherwise provided in 14.8.3.4.1.1 through 14.8.3.4.1.3, shall be as follows:

- (1) Not less than that required for a given egress component in this chapter or Chapter 7 or Chapters 11 through 43 of NFPA 101
- (2) Not less than 36 in. (915 mm) where another part of this chapter and Chapters 11 through 43 of NFPA 101 do not specify a minimum width.

[101:7.3.4.1]

#### A.14.8.3.4.1.1

The criteria of 14.8.3.4.1.1, as initially written, were intended to provide for minimum widths for small spaces such as individual offices. The intent is that these reductions in required width apply to spaces formed by furniture and movable walls, so that accommodations can easily be made for mobility-impaired individuals. One side of a path could be a fixed wall, provided that the other side is movable. This does not exempt the door widths or widths of fixed-wall corridors, regardless of the number of people or length. The allowance for reduction in width has been expanded to include all exit accesses serving not more than six people where the travel length along the reduced-width path does not exceed

50 ft (15 m), regardless of occupancy or use of the space. [101:A.7.3.4.1.1]

Figure A.14.8.3.4.1.1(a) and Figure A.14.8.3.4.1.1(b) present selected anthropometric data for adults. The male and female figures depicted in the figures are average, 50th percentile, in size. Some dimensions apply to very large, 97.5 percentile, adults (noted as 97.5 P). [101:A.7.3.4.1.1]

**Figure A.14.8.3.4.1.1(a) Anthropometric Data (in in.) for Adults; Males and Females of Average, 50th Percentile, Size; Some Dimensions Apply to Very Large, 97.5 Percentile (97.5 P), Adults. [101:Figure A.7.3.4.1.1(a)]**

\*\*\*\*INSERT FIGURE\*\*\*\*

**Figure A.14.8.3.4.1.1(b) Anthropometric Data (in mm) for Adults; Males and Females of Average, 50th Percentile, Size; Some Dimensions Apply to Very Large, 97.5 Percentile (97.5 P), Adults. [101:Figure A.7.3.4.1.1(b)]**

\*\*\*\*INSERT FIGURE\*\*\*\*

### **14.8.3.4.1.3**

The requirement of 14.8.3.4.1 shall not apply to the following:

- (1) Doors as otherwise provided for in 7.2.1.2 of NFPA 101
- (2) Aisles and aisle accessways in assembly occupancies as otherwise provided in Chapters 12 and 13 of NFPA 101
- (3) Industrial equipment access as otherwise provided in 40.2.5.32 of NFPA 101

[101:7.3.4.1.3]

## **14.9 \*Number of Means of Egress.**

### **A.14.9**

Section 14.9 requires a minimum number of means of egress, unless otherwise specified by an occupancy chapter in subsection 2.4, which addresses number of means of egress. Several occupancy chapters establish not only the minimum number of means of egress but also the minimum number of actual exits that must be provided on each floor. For example, for new educational occupancies, 14.2.4 requires access to two exits and further requires that both of the exits be provided on the floor. In contrast, for industrial occupancies, 40.2.4.1.1 requires access to two exits and further requires that at least one of the exits be located on the floor. Access to the other exit can involve traveling to another floor via an egress component such as an open stair, provided that such open stair is permitted by the occupancy chapter's provisions for the protection of vertical openings. [101:A.7.4.1]

In most occupancy chapters, meeting the requirements for egress capacities and travel distances means the required minimum number of means of egress will automatically be met. However, in occupancies characterized by high occupant loads, such as assembly and mercantile occupancies, compliance with requirements for more than two exits per floor might require specific attention. [101:A.7.4.1]

#### **14.9.1.5**

Doors other than the hoistway door; the elevator car door; and doors that are readily openable from the car side without a key, a tool, special knowledge, or special effort, shall be prohibited at the point of access to an elevator car. [101:7.4.1.5]

##### **14.9.2.1.1 Number of Means of Egress.**

The minimum number of means of egress for working space about electrical equipment, other than existing electrical equipment, shall be in accordance with NFPA 70, Section 110.26(C) of NFPA 70. [101:7.4.2.1.1]

##### **14.9.2.1.2 Door Unlatching and Direction of Door Swing.**

The method of door unlatching and direction of door swing for working space about electrical equipment, other than existing electrical equipment, shall be in accordance with Section 110.26(C)(3) of NFPA 70. [101:7.4.2.1.2]

##### **14.9.2.2.1 Number of Means of Egress.**

The minimum number of means of egress for working space about electrical equipment, other than existing electrical equipment, shall be in accordance with NFPA 70, Section 110.33(A) of NFPA 70. [101:7.4.2.2.1]

##### **14.9.2.2.2 Door Unlatching and Direction of Door Swing.**

The method of door unlatching and direction of door swing for working space about electrical equipment, other than existing electrical equipment, shall be in accordance with Section 110.33(A)(3) of NFPA 70. [101:7.4.2.2.2]

#### **14.10.1.1**

Exits shall be located, and exit access shall be arranged, so that exits are readily accessible at all times. [101:7.5.1.1]

#### **14.10.1.2**

Corridors shall provide exit access without passing through any intervening rooms other than corridors, lobbies, and other spaces permitted to be open to the corridor, unless otherwise provided in 14.10.1.2.4 2 and 14.10.1.2.23. [101:7.5.1.2]

#### **14.10.1.5-2.1 \***

Exit access shall be arranged so that there are no dead ends in corridors, unless permitted by, and limited to the lengths specified in, Chapters 11 through 43 of NFPA 101. [101:7.5.1.2.15]

#### **A.14.10.1.5-2.1**

The terms *dead end* and *common path of travel* are commonly used interchangeably. Although the concepts of each are similar in practice, they are two different concepts. [101:A.7.5.1.2.15]

A common path of travel exists where a space is arranged so that occupants within that space are able to travel in only one direction to reach any of the exits or to reach the point at which the occupants have the choice of two paths of travel to remote exits. Part (a) of Figure A.14.10.1.5-2.1 is an example of a common path of travel. [101:A.7.5.1.2.15]

**Figure A.14.10.1.5-2.1 Common Paths of Travel and Dead-End Corridors. [101:Figure A.7.5.1.2.15]**

\*\*\*\*INSERT FIGURE\*\*\*\*

While a dead end is similar to a common path of travel, a dead end can exist where there is no path of travel from an occupied space but can also exist where an occupant enters a corridor thinking there is an exit at the end and, finding none, is forced to retrace his or her path to reach a choice of exits. Part (b) of Figure A.14.10.1.5 is an example of such a dead-end arrangement. [101:A.7.5.1.2.15]

Combining the two concepts, Part-part (c) of Figure A.14.10.1.5-2.1 is an example of a combined dead-end/common path of travel problem. [101:A.7.5.1.2.15]

Common paths of travel and dead-end travel are measured using the same principles used to measure travel distance as described in Section 7.6 of NFPA 101. Starting in the room shown in Part-part (d) of Figure A.14.10.1.52.1, measurement is made from the most remote point in the room, A, along the natural path of travel, and through the doorway along the centerline of the corridor to point C, located at the centerline of the corridor, which then provides the choice of two different paths to remote exits; this is common path of travel. The space between point B and point C is a dead end. (See 3.3.70 for the definition of common path of travel.) [101:A.7.5.1.2.15]

#### **14.10.1.2.1-2**

Approved existing corridors that require passage through a room to access an exit shall be permitted to continue to be used, provided that all of the following criteria are met:

- (1) The path of travel is marked in accordance with Section 14.14.
- (2) Doors to such rooms comply with 7.2.1 of NFPA 101.
- (3) Such arrangement is not prohibited by the applicable occupancy chapter in NFPA 101.

[101:7.5.1.2.24]

#### **14.10.1.2.2-3**

Corridors that are not required to be fire resistance rated shall be permitted to discharge into open floor plan areas. [101:7.5.1.2.32]

#### **A.14.10.1.3.2**

Figure A.14.10.1.3.2(a) through Figure A.14.10.1.3.2(e) illustrate the method of measurement intended by 14.10.1.3.2. [101:A.7.5.1.3.2]

**Figure A.14.10.1.3.2(a) Diagonal Rule for Exit Remoteness. [101:Figure A.7.5.1.3.2(a)]**

\*\*\*\*INSERT FIGURE\*\*\*\*

**Figure A.14.10.1.3.2(b) Diagonal Rule for Exit and Exit Access Door Remoteness. [101:Figure A.7.5.1.3.2(b)]**

\*\*\*\*INSERT FIGURE\*\*\*\*

**Figure A.14.10.1.3.2(c) Diagonal Rule for Exit and Access Remoteness. [101:Figure A.7.5.1.3.2(c)]**

\*\*\*\*INSERT FIGURE\*\*\*\*

**Figure A.14.10.1.3.2(d) Exit Separation and Diagonal Measurement of Area Served. [101:Figure A.7.5.1.3.2(d)]**

\*\*\*\*INSERT FIGURE\*\*\*\*

**Figure A.14.10.1.3.2(e) Diagonal Measurement for Unusually Shaped Areas. [101:Figure A.7.5.1.3.2(e)]**

\*\*\*\*INSERT FIGURE\*\*\*\*

#### **14.10.1.3.4 \***

In other than high-rise buildings, where exit enclosures are provided as the required exits specified in 14.10.1.3.2 or 14.10.1.3.3 and are interconnected by not less than a 1-hour ~~fire~~~~fire~~-resistance-rated corridor, exit separation shall be measured along the shortest line of travel within the corridor [101:7.5.1.3.4]

#### **A.14.10.1.3.4**

Figure A.14.10.1.3.4 illustrates the method of measuring exit separation distance along the line of travel within a minimum 1-hour ~~fire~~~~fire~~-resistance-rated corridor. [101:A.7.5.1.3.4]

**Figure A.14.10.1.3.4 Exit Separation Measured Along Corridor Path. [101:A.7.5.1.3.4]**

\*\*\*\*INSERT FIGURE\*\*\*\*

#### **14.10.1.4.2 \***

Existing interlocking or scissor stairs shall be permitted to be considered separate exits, provided that they meet all of the following criteria:

- (1) They are enclosed in accordance with Section 14.3.
- (2) They are separated from each other by 2-hour ~~fire~~~~fire~~-resistance-rated noncombustible construction.
- (3) No protected or unprotected penetrations or communicating openings exist between the stair enclosures.

[101:7.5.1.4.2]

#### **14.10.1.6.5**

Exit access from rooms or spaces shall be permitted to be through adjoining or intervening rooms or areas, provided that such rooms or areas are accessory to the area served. Foyers, lobbies, and reception rooms constructed as required for corridors shall not be construed as intervening rooms. Exit access shall be arranged so that it is not necessary to pass through any area identified under Protection

from Hazards in Chapters 11 through 43 of NFPA 101. [101:7.5.1.56]

#### **A.14.10.4.1**

An accessible means of egress should comply with the accessible route requirements of ICC/ANSI A117.1, *Accessible and Usable Buildings and Facilities*. [101:A.7.5.4.1]

#### **14.10.4.1.3**

Accessible means of egress shall not be required in health care occupancies protected throughout by an approved, supervised automatic sprinkler system in accordance with Section -13.3. [101:7.5.4.1.3]

#### **14.10.4.2.1**

Where exit enclosures are provided as the required exits specified in 14.10.4.2 and are interconnected by not less than a 1-hour ~~fire~~<sup>fire</sup>-resistance-rated corridor, exit separation shall be permitted to be measured along the line of travel within the corridor. [101:7.5.4.2.1]

#### **14.10.4.2.2**

The requirement of 14.10.4.2 shall not apply to buildings protected throughout by an approved, supervised automatic sprinkler system in accordance with Section -13.3. [101:7.5.4.2.2]

#### **14.10.4.6**

To be considered part of an accessible means of egress, a smoke barrier in accordance with Section -12.9 with not less than a 1-hour fire resistance rating, or a horizontal exit in accordance with 7.2.4 of NFPA 101, shall discharge to an area of refuge in accordance with 7.2.12 of NFPA 101. [101:7.5.4.6]

#### **14.11.1.2**

New exit discharge paths to a public way shall have a width of not less than 36 in. (915 mm) and existing exit discharge paths to a public way shall have a width of not less than 28 in. (710 mm). [101:7.7.1.2]

#### **14.11.1.2.3**

The requirement of 14.11.1 shall not apply to interior exit discharge as otherwise provided in 14.11.2. [101:7.7.1.32]

#### **14.11.1.4.3**

The requirement of 14.11.1 shall not apply to rooftop exit discharge as otherwise provided in 14.11.6. [101:7.7.1.43]

#### **14.11.1.5.4**

Means of egress shall be permitted to terminate in an exterior area ~~of refuge~~ for detention and correctional occupancies as otherwise provided in Chapters 22 and 23 of NFPA 101. [101:7.7.1.54]

### **14.11.2 Exit Discharge Through Interior Building Areas.**

Exits shall be permitted to discharge through interior building areas, provided that all of the following are met:

- (1) Not more than 50 percent of the required number of exit stairs serving normally occupied areas of each floor, and not more than 50 percent of the exit stair capacity required for normally occupied areas of each floor, shall discharge through areas on any level of discharge, except as otherwise permitted by one of the following:
  - (a) One hundred percent of the exits shall be permitted to discharge through areas on any level of discharge in detention and correctional occupancies as otherwise provided in Chapters 22 and 23 of NFPA 101.
  - (b) In existing buildings, the 50 percent limit on egress capacity shall not apply if the 50 percent limit on the required number of exits is met.
- (2) Each level of discharge shall discharge directly outside at the finished ground level or discharge directly outside and provide access to the finished ground level by outside stairs or outside ramps.
- (3) The interior exit discharge shall lead to a free and unobstructed way to the exterior of the building, and such way shall be readily apparent or shall be identifiable by exit signage from the point of discharge from the exit.
- (4) The interior exit discharge shall be protected by one of the following methods:
  - (a) The level of discharge shall be protected throughout by an approved automatic sprinkler system in accordance with Section 13.3, or the portion of the level of discharge used for interior exit discharge shall be protected by an approved automatic sprinkler system in accordance with Section 13.3 and shall be separated from the nonsprinklered portion of the floor by fire barriers with a fire resistance rating meeting the requirements for the enclosure of exits. (See 14.3.1.)
  - (b) The interior exit discharge area shall be in a vestibule or foyer that meets all of the following criteria:
    - i. The depth from the exterior of the building shall be not more than 10 ft (3050 mm), and the length shall be not more than 30 ft (9.1 m).
    - ii. The foyer shall be separated from the remainder of the level of discharge by fire barriers with a minimum 1-hour fire resistance rating, and existing installations of wired glass in steel frames shall be permitted to be continued in use.
    - iii. The foyer shall serve only as means of egress and shall include an exit directly to the outside.
- (5) The entire area on the level of discharge shall be separated from areas below by construction having a fire resistance rating not less than that required for the exit enclosure, unless otherwise provided in 14.11.2(6).
- (6) Levels below the level of discharge in an atrium shall be permitted to be open to the level of discharge where such level of discharge is protected in accordance with 8.6.7 of NFPA 101.

[101:7.7.2]

#### **A.14.11.3.3**

Examples include partitions and gates. The design should not obstruct the normal movement of occupants to the exit discharge. Signs, graphics, or pictograms, including tactile types, might be permitted for existing exit enclosures where partitions or gates would obstruct the normal movement of occupants to the exit discharge. [101:A.7.7.3.34]

#### **14.12.1.1 \***

Illumination of means of egress shall be provided in accordance with Section 14.12 for every building and structure where required in Chapters 11 through 43 of NFPA 101. For the purposes of this requirement, exit access shall include only designated stairs, aisles, corridors, ramps, escalators, and passageways leading to an exit. For the purposes of this requirement, exit discharge shall include only designated stairs, aisles, corridors, ramps, escalators, walkways, and ~~exit~~-passageways leading to a public way. [101:7.8.1.1]

#### **A.14.12.1.2.2**

Photoluminescent materials and battery-powered luminaires require some period of time to restore themselves to full operational capacity after being de-energized. [101:A.7.8.1.2.2]

Photoluminescent products rely on nearby luminaires to maintain their full capacity. When those luminaires are de-energized, the photoluminescent product will gradually deplete its capacity. Listed photoluminescent exit signs and path markers are restored to full rated capacity within one hour and there is no known limit to the number of times they can be discharged and recharged, nor any known degradation of overall capacity or lifetime as a result of discharge/charge cycles. [101:A.7.8.1.2.2]

De-energizing the normal (utility) power source will automatically begin the battery discharge cycle of emergency luminaires, unit equipment, and exit signs provided with battery backup. Once drained, these batteries will typically require between 24 ~~to-and~~ 72 hours, depending on the battery technology and charging circuitry design, to regain full capacity. Frequent discharge/charge cycles can reduce overall battery lifetime and, depending on battery technology, might also prematurely reduce overall battery capacity. [101:A.7.8.1.2.2]

#### **14.12.1.3**

The floors and other walking surfaces within an exit and within the portions of the exit access and exit discharge designated in 14.12.1.1 shall be illuminated as follows:

- (1) During conditions of stair use, the minimum illumination for new stairs shall be at least 10 foot-candles (108 lux), measured at the walking surfaces.
- (2) The minimum illumination for floors and other walking surfaces, other than new stairs during conditions of stair use, shall be to values of at least 1 foot-candle (10.8 lux), measured at the floor.
- (3) In assembly occupancies, the illumination of the walking surfaces of exit access shall be at least 0.2 foot-candle (2.2 lux) during periods of performances or projections involving directed light.
- (4)\* The minimum illumination requirements shall not apply where operations or processes require low lighting levels.

[101:7.8.1.3]

#### **A.14.12.1.3(4)**

Some processes, such as manufacturing or handling of photosensitive materials, cannot be performed in areas provided with the minimum specified lighting levels. The use of spaces with lighting levels below 1 foot-candle (10.8 lux) might necessitate additional safety measures, such as written emergency plans,

training of new employees in emergency evacuation procedures, and periodic fire drills.

[101:A.7.8.1.3(54)]

#### **14.12.1.4 \***

Required illumination shall be arranged so that the failure of any single lighting unit does not result in an illumination level of less than 0.2 foot-candle (2.2 lux) in any designated area. [101:7.8.1.4]

#### **14.13.1.1 \***

Emergency lighting facilities for means of egress shall be provided in accordance with Section 14.13 for the following:

- (1) Buildings or structures where required in Chapters 11 through 43 of NFPA 101
- (2) Underground and ~~limited~~-access structures as addressed in Section 11.7 of NFPA 101
- (3) High-rise buildings as required by NFPA 101
- (4) Doors equipped with delayed-egress locks
- (5) Stair shafts and vestibules of smokeproof enclosures, for which the following also apply:
  - (a) The stair shaft and vestibule shall be permitted to include a standby generator that is installed for the smokeproof enclosure mechanical ventilation equipment.
  - (b) The standby generator shall be permitted to be used for the stair shaft and vestibule emergency lighting power supply.
- (6) New sensor-release of electrical locking systems in accordance with 14.5.3.2

[101:7.9.1.1]

#### **14.13.2.1.4**

Testing of required emergency lighting systems shall be permitted to be conducted in accordance with 7.9.2.4 of NFPA 101. [101:7.9.3.1.4]

#### **A.14.14.1.2.1**

Where a main entrance also serves also as an exit, it will usually be sufficiently obvious to occupants so that no exit sign is needed. [101:A.7.10.1.2.1]

The character of the occupancy has a practical effect on the need for signs. In any assembly occupancy, hotel, department store, or other building subject to transient occupancy, the need for signs will be greater than in a building subject to permanent or semipermanent occupancy by the same people, such as an apartment house where the residents are presumed to be familiar with exit facilities by reason of regular use thereof. Even in a permanent residence-type building, however, there is need for signs to identify exit facilities such as outside stairs that are not subject to regular use during the normal occupancy of the building. [101:A.7.10.1.2.1]

The requirement for the locations of exit signs visible from any direction of exit access is illustrated in Figure A.14.14.1.2.1. [101:A.7.10.1.2.1]

#### **Figure A.14.14.1.2.1 Location of Exit Signs. [101:Figure A.7.10.1.2.1]**

\*\*\*\*INSERT FIGURE\*\*\*\*

#### **A.14.14.1.2.2**

The direction of travel to the exit discharge within a stair enclosure with horizontal components in excess of the typical landings might need additional signage to be readily visible or obvious. Exit signs should be installed above doors through which the egress path leads. Directional exit signs should be installed where the horizontal egress path changes directions. The stairway marking signs required by 10.112.3, provided within the stair enclosure at each floor landing, indicate the vertical direction to exit discharge. [101:A.7.10.1.2.2]

#### **14.14.1.3 Exit Stair Door Tactile Signage.**

Tactile signage shall be provided to meet all of the following criteria, unless otherwise provided in 14.14.1.4:

- (1) Tactile signage shall be located at each exit door requiring an exit sign.
- (2) Tactile signage shall read as follows: EXIT
- (3) Tactile signage shall comply with ICC/ANSI A117.1, American National Standard for Accessible and Usable Buildings and Facilities.

[101:7.10.1.3]

#### **A.14.14.1.7**

See 3.3.15445.2 of NFPA 101 for the definition of *internally illuminated*. [101:A.7.10.1.7]

#### **A.14.14.1.8**

In stores, for example, an otherwise adequate exit sign could be rendered inconspicuous by a high-intensity illuminated advertising sign located in the immediate vicinity. [101:A.7.10.1.8]

Red is the traditional color for exit signs and is required by law in many places. However, at an early stage in the development of NFPA 101, a provision made green the color for exit signs, following the concept of traffic lights in which green indicates safety and red is the signal to stop. During the period when green signs were specified by NFPA 101, many such signs were installed, but the traditional red signs also remained. In 1949, the Fire Marshals Association of North America voted to request that red be restored as the required exit sign color, because it was found that the provision for green involved difficulties in law enactment that were out of proportion to the importance of safety. Accordingly, the 10th edition of NFPA 101 specified red where not otherwise required by law. The present text avoids any specific requirement for color, based on the assumption that either red or green will be used in most cases and that there are some situations in which a color other than red or green could actually provide better visibility. [101:A.7.10.1.8]

#### **14.14.2.1**

A sign complying with 14.14.32 with a directional indicator showing the direction of travel2 shall be placed in every location where the direction of travel to reach the nearest exit is not apparent.

[101:7.10.2.1]

#### **14.14.6.1.1**

Externally illuminated signs required by 14.14.1 and 14.14.2, other than approved existing signs, unless

otherwise provided in 14.14.6.1.2, shall read EXIT or shall use other appropriate wording in plainly legible letters sized as follows:

- (1) For new signs, the letters shall be not less than 6 in. (150 mm) high, with the principal strokes of letters not less than  $\frac{3}{4}$  in. (19 mm) wide.
- (2) For existing signs, the required wording shall be permitted to be in plainly legible letters not less than 4 in. (100 mm) high.
- (3) The word EXIT shall be in letters of a width not less than 2 in. (51 mm), except the letter I, and the minimum spacing between letters shall be not less than  $\frac{3}{8}$  in. (9.5 mm).
- (4) Sign legend elements larger than the minimum established in 14.14.6.1.1(1) through 14.14.6.1.1(3) shall use letter widths, strokes, and spacing in proportion to their height.

[101:7.10.6.1.1]

## **A.14.14.6.2**

Figure A.14.14.6.2 shows examples of acceptable locations of directional indicators with regard to left and right orientation. Directional indicators are permitted to be placed under the horizontal stroke of the letter T, provided that spacing of not less than  $\frac{3}{8}$  in. (9.5 mm) is maintained from the horizontal and vertical strokes of the letter T. [101:A.7.10.6.2]

### **Figure A.14.14.6.2 Directional Indicators. [101:Figure A.7.10.6.2]**

\*\*\*\*INSERT FIGURE\*\*\*\*

## **14.14.6.2.1**

Directional indicators, unless otherwise provided in 14.14.6.2.2, shall comply with all of the following:

- (1) The directional indicator shall be located outside of the EXIT legend, not less than  $\frac{3}{8}$  in. (9.5 mm) from any letter.
- (2) The directional indicator shall be of a chevron type, as shown in Figure 14.14.6.2.1.
- (3) The directional indicator shall be identifiable as a directional indicator at a distance of 40 ft (12 m).
- (4) A directional indicator larger than the minimum established for compliance with 14.14.6.2.1(3) shall be proportionately increased in height, width, and stroke.
- (5) The directional indicator shall be located at the end of the sign for the direction indicated.

[101:7.10.6.2.1]

### **Figure 14.14.6.2.1 Chevron-Type Indicator. [101:Figure 7.10.6.2.1]**

\*\*\*\*INSERT FIGURE\*\*\*\*

## **14.14.6.3 \*Level of Illumination.**

| Externally illuminated signs shall be illuminated by not less than 5 foot-candles (54 lux) at the illuminated surface and shall have a contrast ratio of not less than 0.5. [101:7.10.6.3]

## **A.14.14.6.3**

Colors providing a good contrast are red or green letters on matte white background. Glossy background and glossy letter colors should be avoided. [101:A.7.10.6.3]

The average luminance of the letters and background is measured in footlamberts or candela per square meter. The contrast ratio is computed from these measurements by the following formula:

$$\text{Contrast} = \frac{L_g - L_e}{L_g} \quad [\text{A.14.14.6.3}]$$

Where  $L_g$  is the greater luminance and  $L_e$  is the lesser luminance, either the variable  $L_g$  or  $L_e$  is permitted to represent the letters, and the remaining variable will represent the background. The average luminance of the letters and background can be computed by measuring the luminance at the positions indicated in Figure A.14.14.6.3 by numbered spots. [101:A.7.10.6.3]

**Figure A.14.14.6.3 Measurement of Exit Sign Luminance.** [101:Figure A.7.10.6.3]

\*\*\*\*INSERT FIGURE\*\*\*\*

## A.14.14.7.2

Photoluminescent signs need a specific minimum level of light on the face of the sign to ensure that the sign is charged for emergency operation and legibility in both the normal and emergency modes. Additionally, the type of light source (for example, incandescent, fluorescent, halogen, metal halide) is important. Each light source produces different types of visible and invisible light (e.g. for example, UV) that might affect the ability of some photoluminescent signs to charge and might also affect the amount of light output available during emergency mode. This type of sign would not be suitable where the illumination levels are permitted to decline. The charging light source should not be connected to automatic timers, because the continuous illumination of the sign is needed; otherwise, the sign illumination would not be available, because it would be discharged. [101:A.7.10.7.2]

## 14.14.8.2 Characters.

Special signs, where required by other provisions of this *Code*, shall comply with the visual character requirements of ICC/ANSI A117.1, *American National Standard for Accessible and Usable Buildings and Facilities*. [101:7.10.8.2]

### 14.14.8.3.2

For other than previously approved existing NO EXIT signs, the sign shall comply with all of the following:

- (1) The NO EXIT sign shall have the word NO in letters 2 in. (51 mm) high, with a stroke width of  $\frac{3}{8}$  in. (9.5 mm).<sup>15</sup>
- (2) ~~and~~<sup>16</sup> The word EXIT shall be in letters 1 in. (25 mm) high.<sup>17</sup>
- (3) Larger signs shall retain the same letter-height-to-stroke-width ratio for the word NO and a 2:1 letter-height ratio between the words NO and EXIT.
- (4) ~~with~~<sup>18</sup> The word EXIT shall be located below the word NO, ~~unless such sign is an approved existing sign.~~

[101:7.10.8.3.2]

### **A.16.1.3**

See also NFPA 241. [101:A.4.6.10.32]

### **20.1.2.1**

Combustible scenery of cloth, film, vegetation (dry), and similar materials shall comply with one of the following:

- (1) They shall meet the flame propagation performance criteria contained in Test Method 1 or Test Method 2, as appropriate, of NFPA 701.
- (2) They shall exhibit a heat release rate not exceeding 100 kW when tested in accordance with NFPA 289 using the 20 kW ignition source.

[101:12.4.76.11.1; 101:13.4.76.11.1]

### **20.1.2.2**

Foamed plastics (*see definition of cellular or foamed plastic in 3.3.424 of NFPA 101*) shall be permitted to be used if they exhibit a heat release rate not exceeding 100 kW when tested in accordance with NFPA 289 using the 20 kW ignition source or by specific approval of the AHJ. [101:12.4.76.11.2; 101:13.4.76.11.2]

### **20.1.2.3**

Scenery and stage properties not separated from the audience by proscenium opening protection shall be of noncombustible materials, limited-combustible materials, or fire-retardant-treated wood.

[101:12.4.7.11.3; 101:13.4.76.11.3]

### **20.1.2.4**

In theaters, motion picture theaters, and television stage settings as assembly occupancies, with or without horizontal projections, and in simulated caves and caverns of foamed plastic, any single fuel package shall have a heat release rate not to exceed 100 kW where tested in accordance with one of the following:

- (1) UL 1975, *Fire Tests for Foamed Plastics Used for Decorative Purposes*
- (2) NFPA 289 using the 20 kW ignition source

[101:12.4.76.11.4; 101:13.4.76.11.4]

### **A.20.1.4**

Where a special amusement building is installed inside another building on a temporary basis, such as within an exhibit hall, the special amusement building requirements apply only to the portions of the building used as a special amusement building. For example, the smoke detectors required by 20.1.4.4 are not required to be connected to the building's fire alarm system. Where installed in an exhibit hall, such smoke detectors are also required to comply with the provisions applicable to an exhibit.

[101:A.12.4.98; 101:A.13.4.98]

### **20.1.4.1\*General.**

#### **20.1.4.1.1\***

Special amusement buildings, regardless of occupant load, shall meet the requirements for assembly occupancies in addition to the requirements of 20.1.4, unless the special amusement building is a multilevel play structure that is not more than 10 ft (3050 mm) in height and has aggregate horizontal projections not exceeding 160 ft<sup>2</sup> (15 m<sup>2</sup>). [101:12.4.9.1.18.1; 101:13.4.9.1.18.1]

#### **A.20.1.4.1.1**

The aggregate horizontal projections of a multilevel play structure are indicative of the number of children who might be within the structure and at risk from a fire or similar emergency. The word "aggregate" is used in recognition of the fact that the platforms and tubes that make up the multilevel play structure run above each other at various levels. In calculating the area of the projections, it is important to account for all areas that might be expected to be occupied within, on top of, or beneath the components of the structure when the structure is used for its intended function.

[101:A.12.4.9.1.18.1; 101:A.13.4.9.1.18.1]

#### **20.1.4.1.2\***

Special amusement buildings shall be subclassified as follows:

- (1) Class A: Permanently installed special amusement buildings that include an amusement ride or device in which patrons are contained or restrained and are unable to evacuate without the assistance of the ride operator
- (2) Class B: Permanently installed special amusement buildings that do not include an amusement ride or device, or that include an amusement ride or device from which patrons are able to self-evacuate
- (3) Class C: Temporary or mobile special amusement buildings

[101:12.4.9.1.2; 101:13.4.9.1.2]

#### **A.20.1.4.1.2**

An example of a Class A special amusement building would be a theme park attraction or dark ride where patrons are restrained inside a ride vehicle and guided through a building on a track.

[101:12.4.9.1.2; 101:13.4.9.1.2]

An example of a Class B special amusement building would be an escape room or theme park attraction where a patron can exit the building once the amusement or effects are stopped. Temporary rides such as a merry-go-round or train located in a mall would not meet the definition of a Class B special amusement building unless there was an element to the ride where a patron would become confused or is otherwise confined to the ride vehicle and unable to self-evacuate. See A.3.3.29.10. [101:12.4.9.1.2; 101:13.4.9.1.2]

An example of a Class C special amusement building would be a temporary haunted house, maze, or carnival attraction. [101:12.4.9.1.2; 101:13.4.9.1.2]

#### **20.1.4.2 Means of Egress.**

##### **20.1.4.7 20.1.4.2.1 Exit Marking.**

### **20.1.4.7.120.1.4.2.1.1**

Exit marking shall be in accordance with Section 14.14. [101:12.4.9.2.1.18.7.1; 101:13.4.9.2.2.18.7.1]

### **20.1.4.7.220.1.4.2.1.2**

Floor proximity exit signs shall be provided in accordance with 14.14.1.6. [101:12.4.9.2.1.28.7.2; 101:13.4.9.2.1.28.7.2]

### **20.1.4.7.320.1.4.2.1.3** \*

In special amusement buildings where mazes, mirrors, or other designs are used to confound the egress path, approved directional exit marking that becomes apparent in an emergency shall be provided.

[101:12.4.9.2.1.38.7.3; 101:13.4.9.2.1.38.7.3]

### **A.20.1.4.7.3A.20.1.4.2.1.3**

Consideration should be given to the provision of directional exit marking on or adjacent to the floor.

[101:A.12.4.9.2.1.38.7.3; 101:A.13.4.9.2.1.38.7.3]

### **20.1.4.2.2 20.1.4.6 Illumination.**

#### **20.1.4.2.2.1**

Unless otherwise permitted by 12.4.9.2.2.220.1.4.2.2.2, Actuation of the automatic sprinkler system, or any other suppression system, or actuation of a smoke detection system having an approved verification or cross-zoning operation capability shall provide for the following:

- (1) Increase in illumination in the means of egress to that required by Section 14.12
- (2) Termination of any conflicting or confusing sounds and visuals

[101:12.4.9.2.2.18.6; 101:13.4.9.2.2.18.6]

#### **A.20.1.4.2.2.1**

Lighting levels within special amusement buildings might be reduced to levels that are lower than those required by Section 7.8 of NFPA 101 for show purposes. In addition, projections, special effects, haze, and other theatrical elements might be combined, which can disorient occupants who are unfamiliar with the egress route. The activation of the automatic sprinkler system or smoke detection system should immediately increase illumination to the required levels and stop all show elements that would continue to disorient or confuse occupants. [101:A.12.4.9.2.2.1; 101:A.13.4.9.2.2.1]

Because of the delay in verification or cross-zoning of smoke detectors, positive alarm sequence should not be utilized when alarm-verification or cross-zoned smoke detectors is selected. [101:A.12.4.9.2.2.1; 101:A.13.4.9.2.2.1]

In the context of a special amusement building, a conflicting or confusing sound or visual is any audio or visual device that is intended to quickly distract the attention the patron of a special amusement building for the purpose of frightening, confounding, disorienting, or otherwise capturing the attention of the patron. Examples of this include strobing and flashing lights, loud sound effects, scare or jump effects, loud music, animated figures, projected animation, and interactive games. These can all

interfere with the fire alarm notification devices and live announcements from the attraction operator for the patron's attention. In addition, effects that simulate the sound, sight, and smell of flames or smoke will confuse the patron if they continue to operate when the fire alarm system has been activated. [101:A.12.4.9.2.2.1; 101:A.13.4.9.2.2.1]

Some examples of audio and visuals that might occur in a special amusement building, but that might not constitute a conflicting sound or visual, include static or very slow-moving video or projected images, background music, steady state lighting, and ride vehicle triggered effects. [101:A.12.4.9.2.2.1; 101:A.13.4.9.2.2.1]

#### **20.1.4.2.2.2**

Class A special amusement buildings shall not be required to comply with 20.1.4.2.2.1 where all of the following conditions apply:

- (1) The emergency action plan required by 20.1.4.6.2 provides specific evacuation instructions to all attraction operators for cycling out the attraction when it is determined that meeting the requirements of 20.1.4.2.2.1 presents a hazard to ride patrons.
- (2) A means of manually complying with 20.1.4.2.2.1 is provided to the primary attraction operator.
- (3) Attraction operators are trained on the alternative procedures for evacuations.
- (4) The AHJ approves the modifications.

[101:12.4.9.2.2.2; 101:13.4.9.2.2.2]

#### **A.20.1.4.2.2.2**

Amusement rides and devices that contain or restrain their patrons such that they are unable to evacuate without the assistance of a ride operator present a unique challenge during an emergency. ASTM F2291, Standard Practice for Design of Amusement Rides or Devices, provides for the design of evacuation paths in case the ride stops before completing its full cycle. The safest and fastest way to exit patrons during an emergency might be to "cycle out" by continuing ride operation until all patrons have exited the ride at the normal exit point (at the unload platform). If a patron were to attempt to exit the ride vehicle while the ride continues operation during an emergency, the patron may potentially be struck by the ride vehicle, or the ride's safety systems might stop all ride motion, potentially extending the evacuation period. Because increasing the illumination of the means of egress along the ride and terminating any conflicting or confusing sounds or visuals while the ride is cycling out might entice the patrons to attempt to self-evacuate while the ride is in motion, the authority having jurisdiction and the owner are encouraged to work closely to develop a plan that implements the safest and most efficient method to exit the patrons from the ride, which might include continuing normal show operation during cycle out. In addition, the plan should assure that all ride operators and emergency responders understand their roles during cycle out, or during an evacuation if the ride cycle out is interrupted.

[101:12.4.9.2.2.2; 101:A.13.4.9.2.2.2]

The ride owner should work with the authority having jurisdiction from an early stage to develop a pre-incident plan in accordance with NFPA 1620 and any required or applicable provisions of 12.4.2.5.2 of NFPA 101. [101:12.4.9.2.2.2; 101:A.13.4.9.2.2.2]

#### **20.1.4.8-3 Interior Finish.**

Interior wall and ceiling finish materials complying with Section 12.5 shall be Class A throughout.

[101:12.4.9.38.8; 101:13.4.9.38.8]

#### **20.1.4.4 Detection, Alarm, and Communications Systems.**

##### **20.1.4.4.1 General.**

###### **20.1.4.4.1.1**

Class A and Class B special amusement buildings shall be provided with an approved fire alarm system and smoke detection system in accordance with 13.7.1 and 20.1.4.4. [101:12.4.9.4.1.1; 101:13.4.9.4.1.1]

###### **20.1.4.4.1.2**

Class C special amusement buildings shall be provided with an approved automatic smoke detection system in accordance with Section 13.7. [101:12.4.9.4.1.2; 101:13.4.9.4.1.2]

##### **20.1.4.4.2 Initiation.**

###### **A.20.1.4.4.2**

Special amusement attractions might contain an operator console or “tower,” which might also serve as a constantly attended location when the ride is operating.

###### **20.1.4.4.2.1**

In Class A and Class B special amusement buildings, the required fire alarm system shall be initiated by each of the following:

- (1) Manual fire alarm box located at a constantly attended location under continuous supervision by competent persons when the special amusement building is open to patrons
- (2) Required automatic sprinkler system
- (3) Required automatic detection systems

[101:12.4.9.4.2.1, 101:13.4.9.4.2.1]

###### **20.1.4.520.1.4.4.2.2 Alarm Initiation.**

In Class C special amusement buildings, Actuation of any smoke detection system device shall activate sound an audible and visible alarm at in a constantly attended receiving station within the building when occupied for purposes of initiating emergency action location on the premises. [101:12.4.8.512.4.9.4.2.2, 101:13.4.8.513.4.9.4.2.2]

##### **20.1.4.4.3 Smoke Detection.**

Where the nature of the special amusement building is such that it operates in reduced lighting levels, the building shall be protected throughout by an approved automatic smoke detection system in accordance with Section 13.7. [101:12.4.9.4.38.4; 101:13.4.9.4.38.4]

#### **20.1.4.4.4\* Notification.**

##### **A.20.1.4.4.4**

Notification in special amusement buildings should be considered carefully depending on the operation of the special amusement. Voice announcements are the required method. However, automatically transmitted evacuation instructions might not be appropriate in some rides when occupants are confined to a ride vehicle and unable to self-evacuate. In order to avoid confusion, manual voice announcements from the ride operator might be preferable to pre-recorded evacuation instructions for some rides. [101:A.12.4.9.4.4, 101:A.13.4.9.4.4]

##### **20.1.4.4.4.1**

Occupant notification for Class A and Class B special amusement buildings shall be in accordance with 13.7.2.1.3. [101:12.4.9.4.4.1, 101:13.4.9.4.4.1]

##### **12.4.9.4.4.2**

Occupant notification for Class C special amusement buildings shall be in accordance with 13.7.2.1.3; however, positive alarm sequence shall not be permitted. [101:12.4.9.4.4.2, 101:13.4.9.4.4.2]

##### **12.4.9.4.4.3\***

An automatic means for sounding the general evacuation alarm shall be provided when the constantly attended location is not staffed. [101:12.4.9.4.4.3, 101:13.4.9.4.4.3]

##### **A.12.4.9.4.4.3**

Special amusement buildings that contain rides tend to be occupied after operating hours by maintenance staff. After-hours maintenance work might take place along the ride track or in an attached maintenance bay where ride vehicles are moved on and off spur tracks. When no ride operator is located at the constantly attended location to receive alarm signals, a means of automatically sounding the general evacuation signal should be provided for after-hours occupants. [101:A.12.4.9.4.4.3, 101:A.13.4.9.4.4.3]

#### **20.1.4.5 Extinguishment Requirements.**

##### **20.1.4.220.1.4.5.1 \*Automatic Sprinklers.**

Every special amusement building, other than buildings or structures not exceeding 10 ft (3050 mm) in height and not exceeding 160 ft<sup>2</sup> (15 m<sup>2</sup>) in aggregate horizontal projection, shall be protected throughout by an approved, supervised automatic sprinkler system installed and maintained in accordance with Section 13.3. [101:12.4.9.5.18.2; 101:13.4.9.5.18.2]

##### **A.20.1.4.2A.20.1.4.5.1**

See A.20.1.4.1. [101:A.12.4.9.5.18.2; 101:A.13.4.9.5.18.2]

##### **20.1.4.3-20.1.4.5.2 Temporary Water Supply.**

Where the special amusement building required to be sprinklered by 20.1.4.220.1.4.5.1 is movable or portable, the sprinkler water supply shall be permitted to be provided by an approved temporary means. [101:12.4.9.5.28.3; 101:13.4.9.5.28.3]

#### **20.1.4.6 Operating Features.**

##### **20.1.4.6.1\* Furnishings, Decorations, and Scenery.**

Furnishings shall be in accordance with 20.1.5.4. [101:12.4.9.6.1, 101:13.4.9.6.1]

##### **A.20.1.4.6.1**

Special amusement buildings might simulate different structures, such as an outdoor scene where false walls and ceilings, commonly known as sets, are recreated indoors with various fabrics and materials used to simulate trees, leaves, or other items. Sets in special amusement buildings are often designed by entertainment companies familiar with Broadway-style stage productions. However, unlike stages and theaters, there are no requirements for smoke control or proscenium protection. The authority having jurisdiction should consider and evaluate the total quantity of material introduced into the space.

[101:A.12.4.9.6.1, 101:A.13.4.9.6.1]

##### **20.1.4.6.2\* Emergency Action Plan.**

In Class A special amusement buildings, the emergency action plan shall be reviewed and approved by the authority having jurisdiction. [101:12.4.9.6.2, 101:13.4.9.6.2]

##### **A.20.1.4.6.2**

The evacuation plan for special amusement buildings should consider the safest and fastest way to remove occupants from the structure. When a ride stops within the special amusement building, removing occupants from the ride system might present an extended evacuation. Additionally, hazards associated with the ride and show system might present electrical and entanglement challenges to occupants unfamiliar with the building. Evacuation of special amusement buildings can also pose challenges to the local fire department if they are not familiar with the nature of the building or ride system. Specialized equipment for rescue, ride vehicle-specific tools for releasing doors, and high-energy ride vehicle hazard awareness might all be required when evacuating from a location other than a load/unload station. [101:A.12.4.9.6.2, 101:A.13.4.9.6.2]

The ride owner should work with the authority having jurisdiction from an early stage to develop a pre-incident plan in accordance with NFPA 1620 and any required or applicable provisions of 12.4.2.5.2 of NFPA 101. [101:A.12.4.9.6.2, 101:A.13.4.9.6.2]

#### **20.1.5.1.3 Inspection of Door Openings.**

Door openings shall be inspected in accordance with 7.2.1.145 of NFPA 101 14.5.10. [101:12.7.1.3]

#### **20.1.5.2.3**

Food preparation facilities shall be protected in accordance with Chapter 50 (NFPA 96) and shall not be required to have openings protected between food preparation areas and dining areas. [101:12.7.2.3; 101:13.7.2.3]

#### **20.1.5.4.1 \***

Fabrics and films used for decorative purposes, all draperies and curtains, and similar furnishings shall be in accordance with the provisions of [12.6.2](#)[12.6.1](#). [**101:12.7.4.1; 101:13.7.4.1**]

#### **A.20.1.5.4.3**

The phrase “unprotected materials containing foamed plastic” is meant to include foamed plastic items covered by “thermally thin” combustible fabrics or paint. (See [A.12.5.4.3](#)[4](#)) [**101:A.12.7.4.3; 101:A.13.7.4.3**]

#### **20.1.5.5.4.4**

Exhibit booth construction materials shall be limited to the following:

- (1) Noncombustible or limited-combustible materials
- (2) Wood exceeding  $\frac{1}{4}$  in. (6.3 mm) nominal thickness
- (3) Wood that is pressure-treated, fire-retardant wood meeting the requirements of NFPA 703
- (4) Flame-retardant materials complying with one of the following:
  - (a) They shall meet the flame propagation performance criteria contained in Test Method 1 or Test Method 2, as appropriate, of NFPA 701.
  - (b) They shall exhibit a heat release rate not exceeding 100 kW when tested in accordance with NFPA 289 using the 20 kW ignition source.
- (5) Textile wall coverings, such as carpeting and similar products used as wall or ceiling finishes, complying with the provisions of [12.5.3](#) and [12.5.5](#)[10.2.2](#) and [10.2.4.4](#) of [NFPA 101](#)
- (6) Plastics limited to those that comply with [Sections 12.3.3 and 10.2 of NFPA 101](#)[20.1.3](#) and [Section 12.5](#)
- (7) Foamed plastics and materials containing foamed plastics having a heat release rate for any single fuel package that does not exceed 100 kW where tested in accordance with one of the following:
  - (a) UL 1975, *Fire Tests for Foamed Plastics Used for Decorative Purposes*
  - (b) NFPA 289 using the 20 kW ignition source
- (8) Cardboard, honeycombed paper, and other combustible materials having a heat release rate for any single fuel package that does not exceed 150 kW where tested in accordance with one of the following:
  - (a) UL 1975, *Fire Tests for Foamed Plastics Used for Decorative Purposes*
  - (b) NFPA 289, using the 20 kW ignition source

[**101:12.7.5.3.4; 101:13.7.5.3.4**]

#### **20.1.5.5.4.5**

Curtains, drapes, and decorations shall comply with [12.6.2](#)[1](#). [**101:12.7.5.3.5; 101:13.7.5.3.5**]

#### **20.1.5.5.4.6**

Acoustical and decorative material including, but not limited to, cotton, hay, paper, straw, moss, split bamboo, and wood chips shall be flame-~~retardant~~-~~retardant~~-treated to the satisfaction of the AHJ.

[**101:12.7.5.3.6; 101:13.7.5.3.6**]

#### **20.1.5.5.4.7.1**

The requirements of 20.1.5.5.4.7 shall not apply where otherwise permitted by the following:

- (1) Ceilings that are constructed of open grate design or listed dropout ceilings in accordance with NFPA 13 shall not be considered ceilings within the context of 20.1.5.5.4.7.
- (2) Vehicles, boats, and similar exhibited products having over 100 ft<sup>2</sup> (9.3 m<sup>2</sup>) of roofed area shall be provided with smoke detectors acceptable to the AHJ.
- (3)\* The requirement of 20.1.5.5.4.7(2) shall not apply where fire protection of multilevel exhibit booths is consistent with the criteria developed through a life safety evaluation of the exhibition hall in accordance with 12.4.21 or 13.4.1 of NFPA 101, subject to approval of the AHJ.  
[101:12.7.5.3.7.1; 101:13.7.5.3.7.1]

#### **A.20.1.5.6.2**

Crowd managers and crowd manager supervisors need to clearly understand the required duties and responsibilities specific to the venue's emergency plan. The crowd management training program should include a clear appreciation of crowd dynamics factors including space, energy, time, and information, as well as specific crowd management techniques, such as metering. Training should involve specific actions necessary during normal and emergency operations, and include an assessment of people people-handling capabilities of a space prior to its use, the identification of hazards, an evaluation of projected levels of occupancy, the adequacy of means of ingress and egress and identification of ingress and egress barriers, the processing procedures such as ticket collection, and the expected types of human behavior. Training should also involve the different types of emergency evacuations and, where required by the emergency plan, relocation and shelter-in-place operations, and the challenges associated with each. [101:A.12.7.6.2; 101:A.13.7.6.2]

#### **20.1.5.10.3 Festival Seating.**

Festival seating, as defined in 3.3.119, shall be prohibited within a building, unless otherwise permitted by one of the following:

- (1) Festival seating shall be permitted in assembly occupancies having occupant loads of 250 or less.
- (2) Festival seating shall be permitted in assembly occupancies where occupant loads exceed 250, provided that an approved life safety evaluation has been performed. (See 10.16.3.)

[101:12.2.5.64.1; 101:13.2.5.64.1]

#### **20.1.5.11 Clothing.**

Clothing and personal effects shall not be stored in corridors, and spaces not separated from corridors, unless otherwise permitted by one of the following:

- (1) In new assembly occupancies, this requirement shall not apply to corridors, and spaces not separated from corridors, that are protected by an approved, supervised automatic sprinkler system in accordance with Section 13.3. [101:12.7.12(1)]
- (2) In existing assembly occupancies, this requirement shall not apply to corridors, and spaces not separated from corridors, that are protected by an approved automatic sprinkler system in accordance with Section 13.3. [101:13.7.12(1)]
- (3) This requirement shall not apply to corridors, and spaces not separated from corridors, that are protected by a smoke detection system in accordance with Section 13.3. [101:12.7.12(2); 101:13.7.12(2)]

- (4) This requirement shall not apply to storage in metal lockers, provided that the required egress width is maintained. [101:12.7.12(3); 101:13.7.12(3)]  
[101:12.7.12(3); 101:13.7.12(3)]

#### **20.1.5.12.1**

Film or video projectors or spotlights utilizing light sources that produce particulate matter or toxic gases, or light sources that produce hazardous radiation, without protective shielding shall be located within a projection room complying with 12.3.2.1.2 of NFPA 101. [101:12.4.87.3; 101:13.4.87.3]

#### **20.1.5.12.2**

Every projection room shall be of permanent construction consistent with the building construction type in which the projection room is located and shall comply with the following:

- (1) Openings shall not be required to be protected.
- (2) The room shall have a floor area of not less than 80 ft<sup>2</sup> (7.4 m<sup>2</sup>) for a single machine and not less than 40 ft<sup>2</sup> (3.7 m<sup>2</sup>) for each additional machine.
- (3) Each motion picture projector, floodlight, spotlight, or similar piece of equipment shall have a clear working space of not less than 30 in. (760 mm) on each side and at its rear, but only one such space shall be required between adjacent projectors.

[101:12.4.87.4; 101:13.4.87.4]

#### **20.1.5.13 Integrated Fire Protection and Life Safety Systems.**

Integrated fire protection and life safety systems shall be tested in accordance with 13.1.3.1.

[101:12.7.14.1; 101:13.7.14.1]

#### **20.2.2.1**

Flexible plan and open plan buildings shall comply with the requirements of 20.2.2 as modified by 20.2.2.2 through 20.2.2.5. [101:14.4.43.1; 101:15.4.43.1]

#### **20.2.2.2**

Each room occupied by more than 300 persons shall have two or more means of egress entering into separate atmospheres. [101:14.4.43.2; 101:15.4.43.2]

#### **20.2.2.3**

Where three or more means of egress are required, the number of means of egress permitted to enter into the same atmosphere shall not exceed two. [101:14.4.43.3; 101:15.4.43.3]

#### **20.2.2.4**

Flexible plan buildings shall be permitted to have walls and partitions rearranged periodically only if revised plans or diagrams have been approved by the AHJ. [101:14.4.43.4; 101:15.4.4.4]

#### **20.2.2.5**

Flexible plan buildings shall be evaluated while all folding walls are extended and in use as well as when they are in the retracted position. [101:14.4.43.5; 101:15.4.43.5]

### **20.2.3.2 Interior Wall and Ceiling Finish.**

New and existing interior wall and ceiling finish materials complying with Section 12.5 shall be permitted as follows: [101:14.3.3.2; 101:15.3.3.2]

- (1) Exits — Class A [101:14.3.3.2(1); 101:15.3.3.2(1)]
- (2) In new educational occupancies other than exits — Class A or Class B [101:14.3.3.2(2)]
- (3) In existing educational occupancies, corridors and lobbies — Class A or Class B [101:15.3.3.2(2)]
- (4) Low-height partitions not exceeding 60 in. (1525 mm) and used in locations other than exits — Class A, Class B, or Class C [101:14.3.3.2(3); 101:15.3.3.2(3)]

### **20.2.3.3**

New interior floor finish shall comply with 12.5.89.1 or 12.5.89.2, as applicable. [101:14.3.3.3]

### **20.2.4.2.3**

Emergency egress drills shall be conducted as follows:

- (1) Not less than one emergency egress drill shall be conducted every month the facility is in session, unless both of the following criteria are met:
  - (a) In climates where the weather is severe, the monthly emergency egress drills shall be permitted to be deferred.
  - (b) The required number of emergency egress drills shall be conducted, and not less than four shall be conducted before the drills are deferred.
- (2) All occupants of the building shall participate in the drill.
- (3) One additional emergency egress drill, other than for educational occupancies that are open on a year-round basis, shall be required within the first 30 days of operation.

[101:14.7.2.3; 101:15.7.2.3]

### **20.2.4.2.4 \***

Where permitted by the authority having jurisdiction, up to two of the emergency egress drills required by 20.2.4.2.3 shall be permitted to consist of alternative emergency drills for one or both of the following:

- (1) Targeted violence events
  - (2) Natural hazard events
- [101:14.7.2.4; 101:15.7.2.4]

### **A. 20.2.4.2.4**

Many jurisdictions are now conducting other drills in addition to emergency egress drills. Targeted violence events can include everything from active shooters to use of other weapons intended to cause harm. Natural hazard drills generally consist of tornado or earthquake drills. [101:A.14.7.2.4; 101:A.15.7.2.4]

### **20.2.4.2.54**

All emergency drill alarms shall be sounded on the fire alarm system. [101:14.7.2.54; 101:15.7.2.54]

### **20.2.4.3.3 Inspection of Door Openings.**

Door openings shall be inspected in accordance with [7.2.1.145 of NFPA 101](#) [14.5.10](#). [101:14.7.3.3; 101:15.7.3.3]

#### **20.2.4.4.1**

Draperies, curtains, and other similar furnishings and decorations in educational occupancies shall be in accordance with the provisions of [12.6.2](#) [12.6.1](#). [101:14.7.4.1; 101:15.7.4.1]

#### **20.2.4.4.3**

Artwork and teaching materials shall be permitted to be attached directly to the walls in accordance with the following: [101:14.7.4.3](#); [101:15.7.4.3](#)

- (1) In new educational occupancies, the artwork and teaching materials shall not exceed 20 percent of the wall area in a building that is not protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3. [101:14.7.4.3(1)]
- (2) In existing educational occupancies, the artwork and teaching materials shall not exceed 20 percent of the wall area in a building that is not protected throughout by an approved automatic sprinkler system in accordance with Section 13.3. [101:15.7.4.3(1)]
- (3) In new educational occupancies, the artwork and teaching materials shall not exceed 50 percent of the wall area in a building that is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3. [101:14.7.4.3(2)]
- (4) In existing educational occupancies, the artwork and teaching materials shall not exceed 50 percent of the wall area in a building that is protected throughout by an approved automatic sprinkler system in accordance with Section 13.3. [101:15.7.4.3(2)]

[101:14.7.4.3](#); [101:15.7.4.3](#)

### **20.2.4.5 Unvented Fuel-Fired Heating Equipment.**

Unvented fuel-fired heating equipment, other than gas space heaters in compliance with NFPA 54 [/ANSI Z223.1](#) shall be prohibited. [101:14.5.2.2; 101:15.5.2.2]

### **20.2.4.6 Integrated Fire Protection and Life Safety Systems.**

In new and existing educational occupancies, integrated fire protection and life safety systems shall be tested in accordance with 13.1.3.1. [101:14.7.6; 101:15.7.6.1]

#### **20.3.2.1**

Unvented fuel-fired heating equipment, other than gas space heaters in compliance with NFPA 54 [/ANSI Z223.1](#) shall be prohibited. [101:16.5.2.2; 101:17.5.2.2]

#### **20.3.2.4.1**

In new day-care occupancies, flexible plan and open plan buildings shall comply with the requirements of 20.3.2.4 as modified by 20.3.2.4.3 through 20.3.2.4.6. [101:16.4.43.1]

#### **20.3.2.4.2**

In existing day-care occupancies, flexible plan and open plan buildings shall comply with the requirements of 20.3.2.4 as modified by 20.3.2.4.3 and 20.3.2.4.4. [101:17.4.43.1]

#### **20.3.2.4.3**

Flexible plan buildings shall be permitted to have walls and partitions rearranged periodically only if revised plans or diagrams have been approved by the AHJ. [101:16.4.3.2; 101:17.4.43.2]

#### **20.3.2.4.4**

Flexible plan buildings shall be evaluated while all folding walls are extended and in use as well as when they are in the retracted position. [101:16.4.43.3; 101:17.4.43.3]

#### **20.3.2.4.5**

In new day-care occupancies, Each room occupied by more than 300 persons shall have two or more means of egress entering into separate atmospheres. [101:16.4.43.4]

#### **20.3.2.4.6**

In new day-care occupancies, Where three or more means of egress are required from a single room, the number of means of egress permitted to enter into a common atmosphere shall not exceed two. [101:16.4.43.5]

#### **20.3.3.4.3**

New interior floor finish shall comply with 12.5.89.1 or 12.5.89.2, as applicable. [101:16.3.3.3.3]

#### **A.20.3.4.2.1**

The requirements are, of necessity, general in scope, because it is recognized that they apply to all types of day-care occupancies as well as conditions of occupancies, such as truant day-care occupancies; occupancies for the mentally handicapped, vision impaired, hearing impaired, and speech impaired; adult day-care; care of infants; and day-care occupancies. It is fully recognized that no one code can meet all the conditions of the various buildings involved, and it will be necessary for site administrators, through the written fire emergency response plan, to issue supplements to these requirements; however, all supplements should be consistent with these requirements. Additionally, it is recommended that fire safety be a part of the educational programs of the occupancy for clients. [101:A.16.7.1; 101:A.17.7.1]

Fire emergency response plans need to be written and made available to all employees, including temporary or substitute staff, so that all employees know what is expected of them during a fire emergency. The elements needed in the written plan should be identified in coordination with the AHJ. [101:A.16.7.1; 101:A.17.7.1]

The facility fire emergency response plan might be a module of a facility disaster plan that covers other emergencies. [101:A.16.7.1; 101:A.17.7.1]

The proper safeguarding of clients during a fire emergency requires prompt and effective response by the facility employees in accordance with the fire emergency response plan. Duties covered under the plan should be assigned by position rather than by employee name. Such assignment ensures that, in

the absence of an employee, the duties of the position will be performed by a substitute or temporary employee assigned to the position. Temporary or substitute employees should be instructed in advance regarding their duties under the plan for the position to which they are assigned. [101:A.16.7.1; 101:A.17.7.1]

Written fire emergency response plans should include, but should not be limited to, information for employees regarding methods and devices available for alerting occupants of a fire emergency. Employees should know how the fire department is to be alerted. Even where automatic systems are expected to alert the fire department, the written plan should provide for backup alerting procedures by staff. Other responses of employees to a fire emergency should include the following:

- (1) Removal of clients in immediate danger to areas of safety, as set forth in the plan
- (2) Methods of using building features to confine the fire and its ~~by~~-byproducts to the room or area of origin
- (3) Control of actions and behaviors of clients during removal or evacuation activities and at predetermined safe assembly areas

[101:A.16.7.1; 101:A.17.7.1]

The written plan should state clearly the facility policy regarding the actions staff are to take or not take to extinguish a fire. It should also incorporate the emergency egress and relocation drill procedures set forth in 20.3.4.2.2. [101:A.16.7.1; 101:A.17.7.1]

For additional guidance on emergency action plans, see *NFPA 1600*. This standard establishes a common set of criteria for disaster management, emergency management, and business continuity programs.

[101:A.16.7.1; 101:A.17.7.1]

#### **A.20.3.4.2.2.1**

The requirements are, of necessity, general in scope, because it is recognized that they apply to all types of day-care occupancies as well as conditions of occupancies, such as truant day-care occupancies; and day-care occupancies for the mentally handicapped, vision impaired, hearing impaired, and speech impaired. It is fully recognized that no one code can meet all the conditions of the various buildings involved, and it will be necessary for site administrators to issue supplements to these requirements, but all supplements should be consistent with these requirements. [101:A.16.7.2.1; 101:A.17.7.2.1]

#### **20.3.4.2.3.4 Inspection of Door Openings.**

Door openings shall be inspected in accordance with [7.2.1.145 of NFPA 101](#) [14.5.10](#). [101:16.7.3.4; 101:17.7.3.4]

#### **20.3.4.2.3.5.1**

Draperys, curtains, and other similar furnishings and decorations in day-care occupancies, other than in day-care homes, shall be in accordance with the provisions of 12.6.[12](#). [101:16.7.4.1; 101:17.7.4.1]

#### **20.3.4.2.3.5.3**

Artwork and teaching materials shall be permitted to be attached directly to the walls in accordance with the following:

- (1) In new day-care homes, the artwork and teaching materials shall not exceed 20 percent of the wall area in a building that is not protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3. [101:16.7.4.3(1)]
- (2) In existing day-care homes, the artwork and teaching materials shall not exceed 20 percent of the wall area in a building that is not protected throughout by an approved automatic sprinkler system in accordance with Section 13.3. [101:17.7.4.3(1)]
- (3) In new day-care homes, the artwork and teaching materials shall not exceed 50 percent of the wall area in a building that is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3. [101:16.7.4.3(2)]
- (4) In existing day-care homes, the artwork and teaching materials shall not exceed 50 percent of the wall area in a building that is protected throughout by an approved automatic sprinkler system in accordance with Section 13.3. [101:17.7.4.3(2)]

[\[101:16.7.4.3; 101:17.7.4.3\]](#)

#### **20.3.4.2.3.7 Integrated Fire Protection and Life Safety Systems.**

~~In new day day-care occupancies, integrated fire protection and life safety~~ systems shall be tested in accordance with 13.1.3.1. [101:16.7.6, [101:17.7.6.1](#)]

#### **20.4.2.1.5 \***

Fire drills in health care occupancies shall include the ~~transmission of a fire alarm signal and~~ simulation of emergency fire conditions ~~and, except as indicated in 20.4.2.1.8, include activation of the fire alarm system notification appliances.~~ [101:18.7.1.4; 101:19.7.1.4]

#### **20.4.2.1.8**

When drills are conducted between 9:00 p.m. ([2100 hours](#)) and 6:00 a.m. ([2100 hours and](#) 0600 hours), a coded announcement shall be permitted to be used ~~instead of activating the fire alarm system notification appliances~~instead of audible alarms. [101:18.7.1.7; 101:19.7.1.7]

#### **20.4.2.5.1\***

Draperys, curtains, and other loosely hanging fabrics and films serving as furnishings or decorations in health care occupancies shall be in accordance with the provisions of [12.6.2](#)[12.6.1](#) (see 18.3.5.[10-11](#) or 19.3.5.[10-11](#) of NFPA 101), and the following also shall apply:

- (1) Such curtains shall include cubicle curtains.
- (2) Such curtains shall not include curtains at showers and baths.
- (3) Such draperys and curtains shall not include draperys and curtains at windows in patient sleeping rooms in sprinklered smoke compartments.
- (4) Such draperys and curtains shall not include draperys and curtains in other rooms or areas where the draperys and curtains comply with all of the following:
  - a. Individual drapery or curtain panel area does not exceed 48 ft<sup>2</sup> (4.5 m<sup>2</sup>).
  - b. Total area of drapery and curtain panels per room or area does not exceed 20 percent of the aggregate area of the wall on which they are located.
  - c. For existing healthcare occupancies, Smoke compartment in which draperys or curtains are located is sprinklered in accordance with 13.3.2.11.

[**101:18.7.5.1**; **101:19.7.5.1**]

#### **A.20.4.2.5.1**

In addition to the provisions of 12.6.12, which deal with ignition resistance, additional requirements with respect to the location of cubicle curtains relative to sprinkler placement are included in NFPA 13. [**101:A.18.7.5.1**; **101:A.19.7.5.1**]

#### **20.4.2.5.4**

Newly introduced mattresses within health care occupancies shall comply with one of the following provisions, unless otherwise provided in 20.4.2.5.5:

- (1) The mattresses shall meet the criteria specified in 12.6.3.2 and 12.6.3.2.2.
- (2) The mattresses shall be in a building protected throughout by an approved, supervised automatic sprinkler system in accordance with NFPA 13.

[**101:18.7.5.4**; **101:19.7.5.4**]

#### **20.4.2.5.5**

The requirements of 20.4.2.5.4, 12.6.3.2, and 12.6.3.2.2, and 20.4.2.5.4 shall not apply to mattresses belonging to the patient in sleeping rooms of existing nursing homes where the following criteria are met:

- (1) A smoke detector shall be installed where the patient sleeping room is not protected by automatic sprinklers.
- (2) Battery-powered single-station smoke detectors shall be permitted.

[**101:19.7.5.5**]

#### **20.4.2.5.6**

Combustible decorations shall be prohibited in any health care occupancy, unless one of the following criteria is met:

- (1) They are flame-retardant or are treated with approved fire-retardant coating that is listed and labeled for application to the material to which it is applied.
- (2)\* The decorations meet the flame propagation performance criteria contained in Test Method 1 or Test Method 2, as appropriate, of NFPA 701.
- (3) The decorations exhibit a heat release rate not exceeding 100 kW when tested in accordance with NFPA 289 using the 20 kW ignition source.
- (4)\* The decorations, such as photographs, paintings, and other art, are attached directly to the walls, ceiling, and non-fire-rated doors in accordance with the following:
  - (a) Decorations on non-fire-rated doors do not interfere with the operation or any required latching of the door and do not exceed the area limitations of 20.4.2.5.6(b), 20.4.2.5.6(c), or 20.4.2.5.6(d).
  - (b) Decorations do not exceed 20 percent of the wall, ceiling, and door areas inside any room or space of a smoke compartment that is not protected throughout by an approved automatic sprinkler system in accordance with Section 13.3.

- (c) Decorations do not exceed 30 percent of the wall, ceiling, and door areas inside any room or space of a smoke compartment that is protected throughout by an approved supervised automatic sprinkler system in accordance with Section 13.3.
- (d) Decorations do not exceed 50 percent of the wall, ceiling, and door areas inside patient sleeping rooms having a capacity not exceeding four persons, in a smoke compartment that is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3.
- (5) In existing health care occupancies, they are decorations, such as photographs or paintings, in such limited quantities that a hazard of fire development or spread is not present.

[101:19.7.5.6(5)]

[101:18.7.5.6; 101:19.7.5.6]

#### **A.20.4.2.5.6(4)**

The percentage of decorations should be measured against the area of any wall or ceiling, not the aggregate total of walls, ceilings, and doors. The door is considered part of the wall. The decorations must be located such that they do not interfere with the operation of any door, sprinkler, smoke detector, or any other life safety equipment. Other art might include hanging objects or three-dimensional items. [101:A.18.7.5.6(4); 101:A.19.7.5.6(4)]

#### **20.4.2.5.7 Soiled Linen and Trash Receptacles.**

##### **20.4.2.5.7.1** \*

Soiled linen or trash collection receptacles shall not exceed with capacities greater than 3264 gal (121-242 L) in capacity and shall be located in meet the following requirements:

- (1) The average density of container capacity in a room or space shall not exceed 0.5 gal/ft<sup>2</sup> (20.4 L/m<sup>2</sup>).
- (2) Mobile soiled linen or trash collection receptacles with capacities greater than 32 gal (121 L) shall be located in a room protected as a hazardous area when not attended.
- (3) Container size and density shall not be limited in hazardous areas.

[101:18.7.5.7.1; 101:19.7.5.7.1]

##### **A.20.4.2.5.7.1**

It is not the intent to permit collection receptacles with a capacity greater than 64 gal (242 L) to be positioned at or near a nurses' station based on the argument that such nurses' station is constantly attended. The large collection receptacle itself needs to be actively attended by staff. Staff might leave the large receptacle in the corridor outside a patient room while entering the room to collect soiled linen or trash, but staff is expected to return to the receptacle, move on to the next room, and repeat the collection function. Where staff is not actively collecting material for placement in the receptacle, the receptacle is to be moved to a room protected as a hazardous area. [101:A.18.7.5.7.1; 101:A.19.7.5.7.1]

##### **20.4.2.5.8 20.4.2.5.7.2** \*

Containers greater than 64 gal (242 L) used solely for recycling clean waste or for patient records awaiting destruction shall be permitted to be excluded from the limitations of 20.4.2.5.7 where all the following conditions are met:

- (1) Each container is limited to a capacity of 96 gal (363 L) ~~except as permitted by 20.4.2.5.8(2) or (3).~~
- (2)\* ~~Containers with capacities greater than 96 gal (363 L) shall be located in a room protected as a hazardous area when not attended.~~
- (3) ~~Container size shall not be limited in hazardous areas.~~
- (42) Containers for combustibles shall be labeled and listed as meeting the requirements of FM Approval 6921, *Approval Standard for Containers for Combustible Waste*; however, such testing, listing, and labeling shall not be limited to FM Approvals.

[101:18.7.5.7.2; 101:19.7.5.7.2]

#### **A.20.4.2.5.8A.20.4.2.5.7.2**

It is the intent that this provision allows permits recycling for of bottles, cans, paper and similar clean items that do not contain grease, oil, flammable liquids, or significant plastic materials using to use larger containers or have several adjacent containers and not require locating such containers in a room protected as be restricted to a hazardous areas. Containers for medical records awaiting shredding are often larger than 3264 gallons (242 L). These containers are not to be included in the calculations and limitations of 20.4.2.5.7. There is no limit on the number of these containers as FM Approval 6921, Approval Standard for Containers for Combustible Waste, ensures the FM Standard assures that the fire will not spread out of the container. FM approval standards are written for use with FM Approvals. The tests can be conducted by any approved laboratory. The portions of the standard referring to FM Approvals are not included in this reference. [101:A.18.7.5.7.2; 101:A.19.7.5.7.2]

#### **20.4.2.5.7.3**

The provisions of 12.6.8, applicable to containers for waste or linen, shall not apply. [101:18.7.5.7.3; 101:19.7.5.7.3]

#### **20.4.2.6 \*Portable Space-Heating Devices.**

Portable space-heating devices shall be prohibited in all health care occupancies, unless both of the following criteria are met:

- (1) Such devices are permitted to be used only in nonsleeping staff and employee areas.
- (2) Such devices are listed and labeled for use as a freestanding, movable heater in accordance with UL 1278, Movable and Wall- or Ceiling-Hung Electric Room Heaters. The heating elements of such devices do not exceed 212°F (100°C).

[101:18.7.8; 101:19.7.8]

#### **A.20.4.2.6**

Portable space heaters complying with 20.4.2.6 should be permitted to be located in office areas, nurses stations, and other similar nonpatient spaces within the same smoke compartment as patient sleeping rooms.

#### **20.4.2.7 Integrated Fire Protection and Life Safety Systems.**

Integrated fire protection and life safety systems shall be tested in accordance with 13.1.3.1.  
[101:18.7.10; 101:19.7.10.1]

#### **20.4.3.2 \*New Interior Wall and Ceiling Finish.**

New interior wall and ceiling finish materials complying with Section 12.5 shall be permitted throughout if Class A, except as indicated in 20.4.3.2.1 or 20.4.3.2.2. [101:18.3.3.2]

#### **20.4.3.3.**

New interior floor finish shall comply with 12.5.89.1 or 12.5.89.2, as applicable. [101:18.3.3.3]

#### **20.4.3.4.1 General.**

Interior finish within the modification area shall be in accordance with Section 12.5. [101:18.4.54.6.1]

#### **20.4.3.4.2 Interior Wall and Ceiling Finish.**

Newly installed interior wall and ceiling finish materials complying with Section 12.5 shall be permitted throughout nonsprinklered smoke compartments if the materials are Class A, except as otherwise permitted in 20.4.3.4.2.1 or 20.4.3.4.2.2. [101:18.4.54.6.2]

#### **20.4.3.4.2.1**

Walls and ceilings shall be permitted to have Class A or Class B interior finish in individual rooms having a capacity not exceeding four persons. [101:18.4.54.6.2.1]

#### **20.4.3.4.2.2**

Corridor wall finish not exceeding 48 in. (1220 mm) in height and restricted to the lower half of the wall shall be permitted to be Class A or Class B. [101:18.4.54.6.2.2]

#### **20.4.3.5.1**

Newly installed interior floor finish shall comply with Section 12.5. [101:18.4.54.6.3.1]

#### **20.4.3.5.2**

The requirements for newly installed interior floor finish in exit enclosures and corridors not separated from them by walls complying with 19.3.5.7 of NFPA 101 shall be as follows:

- (1) Unrestricted in smoke compartments protected throughout by an approved, supervised automatic sprinkler system in accordance with 19.3.5.7 of NFPA 101
- (2) Not less than Class I in smoke compartments not protected throughout by an approved, supervised automatic sprinkler system in accordance with 19.3.5.7 of NFPA 101

[101:18.4.54.6.3.2]

#### **20.5.2.1.1 \***

The administration of every residential board and care facility shall have, in effect and available to all supervisory personnel, written copies of a plan for protecting all persons in the event of fire, for keeping

persons in place, for evacuating persons to areas of refuge, and for evacuating persons from the building when necessary. [101:32.7.1.1; 101:33.7.1.1]

#### **A.20.5.2.1.1**

Where residents require evacuation or relocation assistance, the plan should address the specific needs for each resident, and adequate staffing should be provided as necessary to implement the plan. [101:A:32.7.1.1; 101:A:33.7.1.1]

#### **20.5.2.1.4**

A copy of the plan shall be readily available at all times within the facility.

[101:32.7.1.4; 101:33.7.1.4]

#### **20.5.2.2.1**

All residents participating in the emergency action plans shall be trained in the proper actions to be taken in the event of fire. [101:32.7.2.1; 101:33.7.2.1]

#### **20.5.2.3.3 \***

The drills shall involve the actual evacuation of all residents to an assembly point, as specified in the emergency action plan, and shall provide residents with experience in egressing through all exits and means of escape required by this *Code*. [101:32.7.3.3; 101:33.7.3.3]

#### **20.5.2.3.6**

Residents who cannot meaningfully assist in their own evacuation or who have special health problems shall not be required to actively participate in the drill. Subsection 20.4.2 shall apply in such instances. [101:32.7.3.6; 101:33.7.3.6]

#### **A.20.5.2.5**

The requirements applicable to draperies/curtains, upholstered furniture, and mattresses apply only to new draperies/curtains, new upholstered furniture, and new mattresses. The word *new* means unused, normally via procurement from the marketplace, either by purchase or donation, of items not previously used. Many board and care facilities allow residents to bring into the board and care home upholstered furniture items from the resident's previous residence. Such an items is are not new and, thus, is are not regulated. On the other hand, some of the larger board and care homes purchase contract furniture, as is done in hotels. Such new, unused furniture, whether purchased or received as a donation, is regulated by the requirements of 20.5.2.5.2. By federal law, mattresses manufactured and sold within the United States must pass testing per 16 CFR 1632 (FF4-72), "Standard for the Flammability of Mattresses and Mattress Pads." [101:A.32.7.5; 101:A.33.7.5]

#### **20.5.2.5.1**

New draperies, curtains, and other similar loosely hanging furnishings and decorations in board and care facilities shall comply with 20.5.2.5.1.1 and 20.5.2.5.1.2. [101:32.7.5.1; 101:33.7.5.1]

#### **20.5.2.5.1.1**

New draperies, curtains, and other similar loosely hanging furnishings and decorations in board and care facilities shall be in accordance with the provisions of [12.6.212.6.1](#), unless otherwise permitted by 20.5.2.5.1.2. [**101:32.7.5.1.1; 101:33.7.5.1.1**]

#### **20.5.3.1.4.2**

New interior floor finish shall comply with 12.5.[89.1](#) or 12.5.[89.2](#), as applicable. [**101:32.2.3.3.2**]

#### **20.5.3.1.4.3 Existing Interior Floor Finish. (Reserved)**

(No requirements.) [**101:33.2.3.3.3**]

#### **20.5.3.2.4.3**

New interior floor finish shall comply with 12.5.[89.1](#) or 12.5.[89.2](#), as applicable. [**101:32.3.3.3.3.3**]

#### **20.6.2.1.1**

The administration of every ambulatory health care facility shall have, in effect and available to all supervisory personnel, written copies of a plan for the protection of all persons in the event of fire, for their evacuation to areas of refuge, and for their evacuation from the building when necessary.

[**101:20.7.1.1; 101:21.7.1.[12](#)**]

#### **A.20.6.2.4**

The most rigid discipline with regard to prohibition of smoking might not be nearly as effective in reducing incipient fires from surreptitious smoking as the open recognition of smoking, with provision of suitable facilities for smoking. Proper education and training of the staff and attendants in the ordinary fire hazards and their abatement is unquestionably essential. The problem is a broad one, varying with different types and arrangements of buildings; the effectiveness of rules of procedure, which need to be flexible, depends in large part on the management. [**101:A.20.7.4; 101:A.21.7.4**]

#### **20.6.2.5.1 \***

Draperies, curtains, and other loosely hanging fabrics and films serving as furnishings or decorations in ambulatory health care occupancies shall be in accordance with the provisions of [12.6.212.6.1](#), and the following also shall apply:

- (1) Such curtains shall include cubicle curtains.
- (2) Such curtains shall not include curtains at showers.

[**101:20.7.[5](#).1; 101:21.7.5.1**]

#### **A.20.6.2.5.1**

In addition to the provisions of [12.6.212.6.1](#), which deal with ignition resistance, additional requirements with respect to the location of cubicle curtains relative to sprinkler placement are included in NFPA 13. [**101:A.20.7.5.1; 101:A.21.7.5.1**]

#### **20.6.2.5.2**

Newly introduced upholstered furniture shall comply with [12.6.3.112.6.2.1](#) and one of the following provisions:

- (1) The furniture shall meet the criteria specified in [12.6.23.2.112.6.2.1.2](#).
- (2) The furniture shall be in a building protected throughout by an approved, supervised automatic sprinkler system in accordance with NFPA 13.

[**101**:20.7.5.2; **101**:21.7.5.2]

### **20.6.2.5.3**

Newly introduced mattresses shall comply with 12.6.3-2 and one of the following provisions:

- (1) The mattresses shall meet the criteria specified in 12.6.3.2-2.
- (2) The mattresses shall be in a building protected throughout by an approved, supervised automatic sprinkler system in accordance with [NFPA 1313.3](#).

[**101**:20.7.5.3; **101**:21.7.5.3]

### **20.6.2.5.4**

Combustible decorations shall be prohibited, unless one of the following criteria is met:

- (1) They are flame-retardant.
- (2) The decorations meet the flame propagation performance criteria contained in Test Method 1 or Test Method 2, as appropriate, of NFPA 701.
- (3) The decorations exhibit a heat release rate not exceeding 100 kW when tested in accordance with NFPA 289 using the 20 kW ignition source.
- (4)\* The decorations, such as photographs, paintings, and other art, are attached directly to the walls, ceiling, and non-fire-rated doors in accordance with the following:
  - (a) Decorations on non-fire-rated doors do not interfere with the operation or any required latching of the door and do not exceed the area limitations of 20.6.2.5.4(4)(b) or [20.6.2.5.4\(4\)\(c\)](#).
  - (b) Decorations do not exceed 20 percent of the wall, ceiling, and door areas inside any room or space of a smoke compartment that is not protected throughout by an approved automatic sprinkler system in accordance with Section 13.3.
  - (c) Decorations do not exceed 30 percent of the wall, ceiling, and door areas inside any room or space of a smoke compartment that is protected throughout by an approved supervised automatic sprinkler system in accordance with Section 13.3.

[**101**:20.7.5.4; **101**:21.7.5.4]

### **20.6.2.5.5.1**

Soiled linen or trash collection receptacles ~~shall not exceed with capacities greater than 32-64 gal (121-242 L) shall be located in capacity, and all of the following also shall apply:~~

- ~~(1) The average density of container capacity in a room or space shall not exceed 0.5 gal/ft<sup>2</sup> (20.4 L/m<sup>2</sup>).~~
- ~~(2) Mobile soiled linen or trash collection receptacles with capacities greater than 32 gal (121 L) shall be located in a room protected as a hazardous area when not attended.~~
- ~~(3) Container size and density shall not be limited in hazardous areas.~~

[**101**:20.7.5.5.1; **101**:21.7.5.5.1]

#### **20.6.2.5.5.2 \***

Containers greater than 64 gal (242 L) used solely for recycling clean waste or for patient records awaiting destruction shall be permitted to be excluded from the requirements of 20.6.2.5.5.1 where all the following conditions are met:

- (1) Each container shall be limited to a maximum capacity of 96 gal (363 L), except as permitted by 20.6.2.5.5.2(2) or (3).
- (2) Containers with capacities greater than 96 gal (363 L) shall be located in a room protected as a hazardous area when not attended.
- (3) Container size shall not be limited in hazardous areas.
- (4) Containers for combustibles shall be labeled and listed as meeting the requirements of FM Approval 6921, *Approval Standard for Containers for Combustible Waste*; however, such testing, listing, and labeling shall not be limited to FM Approvals.

[101:20.7.5.5.2; 101:21.7.5.5.2]

#### **A.20.6.2.5.5.2**

It is the intent that this provision permits recycling of bottles, cans, paper and similar clean items that do not contain grease, oil, flammable liquids, or significant plastic materials using larger containers or several adjacent containers and not require locating such containers in a room protected as a hazardous area. Containers for medical records awaiting shredding are often larger than 6432 gal (121-242 L).

These containers are not to be included in the calculations and limitations of 20.6.2.5.5.1. There is no limit on the number of these containers, as FM Approval Standard 6921, *Approval Standard for Containers for Combustible Waste*, ensures that the fire will not spread outside of the container. FM approval standards are written for use with FM Approvals. The tests can be conducted by any approved laboratory. The portions of the standard referring to FM Approvals are not included in this reference.

[101:A.20.7.5.5.2; 101:A.21.7.5.5.2]

#### **20.6.2.5.5.3**

The provisions of 12.6.8, applicable to containers for waste or linen, shall not apply. [101:20.7.5.5.3; 101:21.7.5.5.3]

#### **20.6.2.6 Portable Space-Heating Devices.**

Portable space-heating devices shall be prohibited in all ambulatory health care occupancies, unless both of the following criteria are met:

- (1) Such devices are used only in nonsleeping staff and employee areas.
- (2) Such devices are listed and labeled for use as a freestanding, movable heater in accordance with UL 1278, *Movable and Wall- or Ceiling-Hung Electric Room Heaters*. The heating elements of such devices do not exceed 212°F (100°C).

[101:20.7.8; 101:21.7.8]

#### **20.6.2.7 Integrated Fire Protection and Life Safety Systems.**

Integrated fire protection and life safety systems shall be tested in accordance with 13.1.3.1.

[101:20.7.10; 101:21.7.10.1]

### **20.6.3.3.3**

New interior floor finish shall comply with 12.5.89.1 or 12.5.89.2, as applicable. [101:20.3.3.3.3]

### **20.7.2.1.1**

Detention and correctional facilities, or those portions of facilities having such occupancy, shall be provided with 24-hour staffing, and the following requirements also shall apply:

- (1) Staff shall be within three floors or a 300 ft (91 m) horizontal distance of the access door of each resident housing area.
- (2) For Use Condition III, Use Condition IV, and Use Condition V, the arrangement shall be such that the staff involved starts the release of locks necessary for emergency evacuation or rescue and initiates other necessary emergency actions within 2 minutes of alarm.
- (3) The following shall apply to areas in which all locks are unlocked remotely in compliance with 22.2.11.1.8 or 23.2.11.1.8 of NFPA 101.
  - (a) Staff shall not be required to be within three floors or 300 ft (91 m) of the access door.
  - (b) The 10-lock, manual key exemption of 22.2.11.1.8.2 or 23.2.11.1.8.2 of NFPA 101 shall not be permitted to be used in conjunction with the alternative requirement of 20.7.2.1.1(3)(a).

[101:22.7.1.1; 101:23.7.1.1]

### **20.7.2.4.1**

Draperies and curtains, including privacy curtains, in detention and correctional occupancies shall be in accordance with the provisions of 12.6.2.1 [101:22.7.4.1; 101:23.7.4.1]

### **20.7.2.4.2**

Newly introduced upholstered furniture within new detention and correctional occupancies shall be tested in accordance with the provisions of 12.6.2.1(2). [101:22.7.4.2]

### **20.7.2.4.220.7.2.4.3**

Newly introduced upholstered furniture within existing detention and correctional occupancies shall ~~be tested in accordance with the provisions~~meet the criteria specified in 12.6.23.1(2) and 12.6.23.2.1.  
[101:23.7.4.2]

### **20.7.2.4.4\***

Newly introduced mattresses within new detention and correctional occupancies shall be tested in accordance with the provisions of 10.3.3. [101:22.7.4.3]

### **A.20.7.2.4.4**

### **20.7.2.4.320.7.2.4.5 \***

Newly introduced mattresses within existing detention and correctional occupancies shall be tested in accordance with the provisions in 12.6.3.2 and 12.6.3.2.2. [101:23.7.4.3]

### **A.20.7.2.4.5A.20.7.2.4.3**

Mattresses used in detention and correctional facilities should be evaluated with regard to the fire hazards of the environment. The potential for vandalism and excessive wear and tear also should be taken into account when evaluating the fire performance of the mattress. ASTM F1870, *Standard Guide for Selection of Fire Test Methods for the Assessment of Upholstered Furnishings in Detention and Correctional Facilities*, provides guidance for this purpose. ASTM F1870 also includes guidance on alternate fire test methods that can be used to assess whether a mattress meets the requirements 12.6.3.2 by simply melting and flowing away from the flame. [101:A.23.7.4.3]

#### **20.7.2.8 Integrated Fire Protection and Life Safety Systems.**

Integrated fire protection and life safety systems shall be tested in accordance with 13.1.3.1.  
[101:22.7.8; 101:23.7.8.17]

#### **20.7.3.2 New Interior Wall and Ceiling Finish.**

New interior wall and ceiling finish materials complying with Section 12.5 shall be Class A or Class B in corridors, in exits, and in any space not separated from corridors and exits by partitions capable of retarding the passage of smoke; and Class A, Class B, or Class C in all other areas. The provisions of 12.5.9.1 shall not apply to new detention and correctional occupancies. [101:22.3.3.2]

#### **20.7.3.4.2**

New 4 interior floor finish in exit enclosures and exit access corridors shall be not less than Class II. The provisions of 12.5.9.2 shall not apply to new detention and correctional occupancies. [101:22.3.3.3.2]

#### **20.7.3.4.3**

New interior floor finish shall comply with 12.5.89.1 or 12.5.89.2, as applicable. [101:22.3.3.3]

#### **20.7.3.6.1 Interior Wall and Ceiling Finish.**

Interior wall and ceiling finish materials complying with Section 12.5 shall be Class A in corridors, in exits, and in any space not separated from corridors and exits by partitions capable of retarding the passage of smoke; and Class A, Class B, or Class C in all other areas. [101:22.4.54.8.1]

#### **20.7.3.6.2.1**

Interior floor finish shall comply with Section 12.5. [101:22.4.54.8.2.1]

#### **20.7.3.6.2.2**

New 5 interior floor finish in exit enclosures and exit access corridors shall be not less than Class I. [101:22.4.54.8.2.2]

#### **20.7.3.6.2.3**

Interior floor finish shall comply with 12.5.89.1 or 12.5.89.2, as applicable. [101:22.4.54.8.2.3]

#### **A.20.8.2.1.1**

Employers are obligated to determine the degree to which employees are to participate in emergency

activities. Regulations of the U.S. Department of Labor (OSHA) govern these activities and provide options for employers, from total evacuation to aggressive structural fire fighting by employee brigades. (For additional information, see 29 CFR 1910, Subparts E and L, "OSHA Regulations for Emergency Procedures and Fire Brigades.") [101:A.28.7.1.1; 101:A.29.7.1.1]

#### **20.8.2.5.2.1**

Newly introduced upholstered furniture shall meet the criteria specified in 12.6.2.3.1 and 12.6.3.2.4. [101:28.7.6.2.1; 101:29.7.6.2.1]

#### **20.8.2.5.2.2**

Newly introduced mattresses shall meet the criteria specified in 12.6.3.2 and 12.6.3.2.2. [101:28.7.6.2.2; 101:29.7.6.2.2]

#### **20.8.2.6 Fuel-Fired Heaters.**

Unvented fuel-fired heaters, other than gas space heaters in compliance with NFPA 54, shall not be used. [101:28.5.2.2; 101:29.5.2.2]

#### **20.8.2.7 Integrated Fire and Life Safety Protection Systems.**

In new hotels and dormitories, integrated fire protection and life safety systems shall be tested in accordance with 13.1.3.1. [101:28.7.8; 101:29.7.8.1]

#### **20.8.3.4.3**

New interior floor finish shall comply with 12.5.89.1 or 12.5.89.2, as applicable. [101:28.3.3.3]

#### **20.8.3.5 Interior Floor Finish (Existing Nonsprinklered Buildings).**

In nonsprinklered buildings, newly installed interior floor finish in exits and exit access corridors shall be not less than Class II in accordance with 12.5.89. [101:29.3.3.3]

#### **20.9.2.3 Inspection of Door Openings.**

Door openings shall be inspected in accordance with 7.2.1.145 of NFPA 101 14.5.10. [101:30.7.3; 101:31.7.3]

#### **20.9.2.4 Integrated Fire Protection and Life Safety Systems.**

In new high-rise apartment buildings, integrated fire protection and life safety systems shall be tested in accordance with 13.1.3.1. [101:30.7.4; 101:31.7.4.1]

#### **20.9.3.4.3**

New interior floor finish shall comply with 12.5.89.1 or 12.5.89.2, as applicable. [101:30.3.3.3]

#### **20.9.3.5 Existing Interior Floor Finish.**

In buildings utilizing Option 1 or Option 2, as defined in 31.1.1.1 of NFPA 101, newly installed interior floor finish in exits and exit access corridors shall be not less than Class II in accordance with 12.5.89.

[101:31.3.3.3]

### **20.10.3.3.2**

Newly installed interior floor finish shall comply with 12.5.89.1 or 12.5.89.2, as applicable.

[101:26.3.3.3.2]

### **20.12.2.5 Inspection of Door Openings.**

Door openings shall be inspected in accordance with [7.2.1.145 of NFPA 10114.5.10](#). [101:36.7.7; 101:37.7.7]

### **20.12.2.6 Integrated Fire Protection and Life Safety Systems.**

~~In new apartment buildings, i~~ntegrated fire protection and life safety systems shall be tested in accordance with 13.1.3.1. [101:36.7.8; 101:37.7.8.1]

### **20.12.3.3.3**

New interior floor finish shall comply with 12.5.89.1 or 12.5.89.2, as applicable. [101:36.3.3.3.3]

### **20.13.2.3 Portable Fire Extinguisher Training.**

Designated employees of business occupancies shall be periodically instructed in the use of portable fire extinguishers. [101:38.7.3; 101:39.7.3]

### **20.13.2.5 Inspection of Door Openings.**

Door openings shall be inspected in accordance with [7.2.1.145 of NFPA 10114.5.10](#).

[101:38.7.7;101:39.7.7]

### **20.13.3.2.1**

Interior wall and ceiling finish materials complying with Section 12.5 shall be Class A or Class B in exits and in exit access corridors. [101:38.3.3.2.1; 101:39.3.3.2.1]

### **20.13.3.3.8-**

New interior floor finish shall comply with 12.5.89.1 or 12.5.89.2, as applicable. [101:38.3.3.3.3]

### **20.14.3.1 Inspection of Door Openings.**

Door openings shall be inspected in accordance with [7.2.1.145 of NFPA 10114.5.10](#). [101:40.7.3]

### **20.14.3.2 Integrated Fire Protection and Life Safety Systems.**

Integrated fire protection and life safety systems shall be tested in accordance with 13.1.3.1.

[101:40.7.4.1]

### **20.14.4.3.2**

Interior floor finish in areas other than those specified in 20.14.4.3.1 shall not be required to comply with 12.5.89. [101:40.3.3.3.2]

### **20.15.3.1 Inspection of Door Openings.**

Door openings shall be inspected in accordance with [7.2.1.145 of NFPA 101](#) [14.5.10](#). [101:42.9.3]

### **20.15.3.2 Integrated Fire Protection and Life Safety Systems.**

Integrated fire protection and life safety systems shall be tested in accordance with 13.1.3.[1](#).  
[101:42.9.4.[1](#)]

### **20.15.4.3.2**

Interior floor finish in areas other than those specified in 20.15.4.3.1 shall not be required to comply with 12.5.[89](#). [101:42.3.3.3.2]

### **21.1.4.2.4**

Where dwarf, or "smash," egress doors are provided in doors that accommodate aircraft, such doors shall be permitted for compliance with 21.1.4.2.1 through 21.1.4.2.3. [101:40.6.2.4]

### **21.1.4.4**

Dead ends shall not exceed 50 ft (15 m) for other than high-high-hazard contents areas and shall not be permitted for high-high-hazard contents areas. [101:40.6.4]

### **21.1.5.1.4**

Where dwarf, or "smash," egress doors are provided in doors that accommodate aircraft, such doors shall be permitted for compliance with 21.1.5.1.1, 21.1.5.1.2, and 21.1.5.1.3. [101:42.6.1.4]

### **21.1.5.3**

Dead ends shall not exceed 50 ft (15 m) for other than high-high-hazard contents areas and shall not be permitted for high-high-hazard contents areas. [101:42.6.3]

### **25.1.4.1**

Where required by the provisions of Chapters 11 through 43 in-of NFPA 101, occupancies with storage and handling of hazardous materials shall comply with the following codes unless otherwise modified by other provisions of NFPA 101: Chapter 66 for flammable and combustible liquids, NFPA 54, Chapter 66 for compressed gases and cryogenic fluids, Chapter 69 for liquefied petroleum gases and liquefied natural gases, NFPA 400, and NFPA 495. [101:8.7.3.1]

### **A.25.1.4.2**

NFPA 58 permits the use of portable butane-fueled appliances in restaurants and in attended commercial food catering operations where fueled by a maximum of two 10 oz (0.28 kg) LP-Gas capacity, nonrefillable butane containers with a water capacity not in excess of 1.08 lb (0.4 kg) per container. Containers are required to be directly connected to the appliance, and manifolding of containers is not permitted. Storage of cylinders is also limited to 24 containers, with an additional 24 permitted where protected by a 2-hour fire-fire-resistance-rated barrier. (See 4.1.3 of NFPA 101 and

Annex C of NFPA 101 for referenced documents on hazardous materials.) [101:A.8.7.3.2]

### **25.3.1.1**

Where grandstand seating without backs is used indoors, rows of seats shall be spaced not less than 22 in. (560 mm) back-to-back. [101:12.4.109.2.1]

### **25.3.1.2**

The depth of footboards and seat boards in grandstands shall be not less than 9 in. (230 mm); where the same level is not used for both seat foundations and footrests, footrests independent of seats shall be provided. [101:12.4.109.2.2]

### **25.3.1.3**

Seats and footrests of grandstands shall be supported securely and fastened in such a manner that they cannot be displaced inadvertently. [101:12.4.109.2.3]

### **25.3.1.4**

Individual seats or chairs shall be permitted only if secured in rows in an approved manner, unless seats do not exceed 16 in number and are located on level floors and within railed-in enclosures, such as boxes. [101:12.4.109.2.4]

### **25.3.1.5**

The maximum number of seats permitted between the farthest seat in an aisle in grandstands and bleachers shall not exceed that shown in Table 25.3.1.5. [101:12.4.109.2.5]

13Table 25.3.1.5 Maximum Number of Seats Between Farthest Seat and an Aisle

Application	Outdoors	Indoors
Grandstands	11	6
Bleachers [See 132.2.5.86.1.2 of NFPA 101]	20	9

[101:Table 12.4.109.2.5]

### **25.3.2.1**

An outdoor wood grandstand shall be erected within not less than two-thirds of its height and, in no case, within not less than 10 ft (3050 mm) of a building, unless otherwise permitted by one of the following:

- (1) The distance requirement shall not apply to buildings having minimum 1-hour fire-resistance-rated construction with openings protected against the fire exposure hazard created by the grandstand.
- (2) The distance requirement shall not apply where a wall having minimum 1-hour fire-resistance-rated construction separates the grandstand from the building.

[101:12.4.109.3.1]

### **25.3.2.2**

An outdoor wood grandstand unit shall not exceed 10,000 ft<sup>2</sup> (929 m<sup>2</sup>) in finished ground level area or 200 ft (61 m) in length, and all of the following requirements also shall apply:

- (1) Grandstand units of the maximum size shall be placed not less than 20 ft (6100 mm) apart or shall be separated by walls having a minimum 1-hour fire resistance rating.
- (2) The number of grandstand units erected in any one group shall not exceed three.
- (3) Each group of grandstand units shall be separated from any other group by a wall having minimum 2-hour ~~fire-fire-resistance-rated~~ construction extending 24 in. (610 mm) above the seat platforms or by an open space of not less than 50 ft (15 m).

[101:12.4.109.3.2]

### **25.3.2.3**

The finished ground level area or length required by 25.3.2.2 shall be permitted to be doubled where one of the following criteria is met:

- (1) Where the grandstand is constructed entirely of labeled fire-retardant-treated wood that has passed the standard rain test, ASTM D2898, *Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing*
- (2) Where the grandstand is constructed of members conforming to dimensions for heavy timber construction [Type IV (2HH)]

[101:12.4.109.3.3]

### **25.3.2.4**

The highest level of seat platforms above the finished ground level or the surface at the front of any wood grandstand shall not exceed 20 ft (6100 mm). [101:12.4.109.3.4]

### **25.3.2.5**

The highest level of seat platforms above the finished ground level, or the surface at the front of a portable grandstand within a tent or membrane structure, shall not exceed 12 ft (3660 mm).

[101:12.4.109.3.5]

### **25.3.2.6**

The height requirements specified in 25.3.2.4 and 25.3.2.5 shall be permitted to be doubled where constructed entirely of labeled fire-retardant-treated wood that has passed the standard rain test, ASTM D2898, *Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing*, or where constructed of members conforming to dimensions for heavy timber construction [Type IV (2HH)]. [101:12.4.109.3.6]

### **25.3.3.1**

Portable grandstands shall conform to the requirements of Section 25.3 for grandstands and the requirements of 25.3.3.2 through 25.3.3.7. [101:12.4.109.4.1]

### **25.3.3.2**

Portable grandstands shall be self-contained and shall have within them all necessary parts to withstand and restrain all forces that might be developed during human occupancy. [101:12.4.109.4.2]

### **25.3.3.3**

Portable grandstands shall be designed and manufactured so that, if any structural members essential to the strength and stability of the structure have been omitted during erection, the presence of unused connection fittings shall make the omissions self-evident. [101:12.4.109.4.3]

### **25.3.3.4**

Portable grandstand construction shall be skillfully accomplished to produce the strength required by the design. [101:12.4.109.4.4]

### **25.3.3.5**

Portable grandstands shall be provided with base plates, sills, floor runners, or sleepers of such area that the permitted bearing capacity of the supporting material is not exceeded. [101:12.4.109.4.5]

### **25.3.3.6**

Where a portable grandstand rests directly on a base of such character that it is incapable of supporting the load without appreciable settlement, mud sills of suitable material, having sufficient area to prevent undue or dangerous settlement, shall be installed under base plates, runners, or sleepers.

[101:12.4.109.4.6]

### **25.3.3.7**

All bearing surfaces of portable grandstands shall be in contact with each other. [101:12.4.109.4.7]

## **25.3.4 Spaces Underneath Grandstands.**

Spaces underneath a grandstand shall be kept free of flammable or combustible materials, unless protected by an approved, supervised automatic sprinkler system in accordance with Section 13.3 or unless otherwise permitted by one of the following:

- (1) This requirement shall not apply to accessory uses of 300 ft<sup>2</sup> (28 m<sup>2</sup>) or less, such as ticket booths, toilet facilities, or concession booths where constructed of noncombustible or fire-resistant construction in otherwise nonsprinklered facilities.
- (2) This requirement shall not apply to rooms that are enclosed in not less than 1-hour fire-resistance-rated construction and are less than 1000 ft<sup>2</sup> (93 m<sup>2</sup>) in otherwise nonsprinklered facilities.

[101:12.4.109.5]

## **25.3.5 Guards and Railings.**

### **25.3.5.1**

Railings or guards not less than 42 in. (1065 mm) above the aisle surface or footrest or not less than 36 in. (915 mm) vertically above the center of the seat or seat board surface, whichever is adjacent, shall be provided along those portions of the backs and ends of all grandstands where the seats are more than 48 in. (1220 mm) above the floor or the finished ground level. [101:12.4.109.6.1]

### **25.3.5.2**

The requirement of 25.3.5.1 shall not apply where an adjacent wall or fence affords equivalent safeguard. [101:12.4.109.6.2]

### **25.3.5.3**

Where the front footrest of any grandstand is more than 24 in. (610 mm) above the floor, railings or guards not less than 33 in. (825 mm) above such footrests shall be provided. [101:12.4.109.6.3]

### **25.3.5.4**

The railings required by 25.3.5.3 shall be permitted to be not less than 26 in. (660 mm) high in grandstands or where the front row of seats includes backrests. [101:12.4.109.6.4]

### **25.3.5.5**

Cross aisles located within the seating area shall be provided with rails not less than 26 in. (660 mm) high along the front edge of the cross aisle. [101:12.4.109.6.5]

### **25.3.5.6**

The railings specified by 25.3.5.5 shall not be required where the backs of the seats in front of the cross aisle project 24 in. (610 mm) or more above the surface of the cross aisle. [101:12.4.109.6.6]

### **25.3.5.7**

Vertical openings between guardrails and footboards or seat boards shall be provided with intermediate construction so that a 4 in. (100 mm) diameter sphere cannot pass through the opening.

[101:12.4.109.6.7]

### **25.3.5.8**

An opening between the seat board and footboard located more than 30 in. (760 mm) above the finished ground level shall be provided with intermediate construction so that a 4 in. (100 mm) diameter sphere cannot pass through the opening. [101:12.4.109.6.8]

### **25.4.1.1**

The horizontal distance of seats, measured back-to-back, shall be not less than 22 in. (560 mm) for seats without backs, and all of the following requirements shall also apply:

- (1) There shall be a space of not less than 12 in. (305 mm) between the back of each seat and the front of each seat immediately behind it.
- (2) If seats are of the chair type, the 12 in. (305 mm) dimension shall be measured to the front edge of the rear seat in its normal unoccupied position.
- (3) All measurements shall be taken between plumb lines.

[101:12.4.110.2.1]

### **25.4.1.2**

The depth of footboards (footrests) and seat boards in folding and telescopic seating shall be not less

than 9 in. (230 mm). [101:12.4.110.2.2]

#### **25.4.1.3**

Where the same level is not used for both seat foundations and footrests, footrests independent of seats shall be provided. [101:12.4.110.2.3]

#### **25.4.1.4**

Individual chair-type seats shall be permitted in folding and telescopic seating only if firmly secured in groups of not less than three. [101:12.4.110.2.4]

#### **25.4.1.5**

The maximum number of seats permitted between the farthest seat in an aisle in folding and telescopic seating shall not exceed that shown in Table 25.3.1.5. [101:12.4.110.2.5]

#### **25.4.2.1**

Railings or guards not less than 42 in. (1065 mm) above the aisle surface or footrest, or not less than 36 in. (915 mm) vertically above the center of the seat or seat board surface, whichever is adjacent, shall be provided along those portions of the backs and ends of all folding and telescopic seating where the seats are more than 48 in. (1220 mm) above the floor or the finished ground level. [101:12.4.110.3.1]

#### **25.4.2.2**

The requirement of 25.4.2.1 shall not apply where an adjacent wall or fence affords equivalent safeguard. [101:12.4.110.3.2]

#### **25.4.2.3**

Where the front footrest of folding or telescopic seating is more than 24 in. (610 mm) above the floor, railings or guards not less than 33 in. (825 mm) above such footrests shall be provided.  
[101:12.4.110.3.3]

#### **25.4.2.4**

The railings required by 25.4.2.3 shall be permitted to be not less than 26 in. (660 mm) high where the front row of seats includes backrests. [101:12.4.110.3.4]

#### **25.4.2.5**

Cross aisles located within the seating area shall be provided with rails not less than 26 in. (660 mm) high along the front edge of the cross aisle. [101:12.4.110.3.5]

#### **25.4.2.6**

The railings specified by 25.4.2.5 shall not be required where the backs of the seats in front of the cross aisle project 24 in. (610 mm) or more above the surface of the cross aisle. [101:12.4.110.3.6]

#### **25.4.2.7**

Vertical openings between guardrails and footboards or seat boards shall be provided with intermediate construction so that a 4 in. (100 mm) diameter sphere cannot pass through the opening.

[101:12.4.110.3.7]

#### **25.4.2.8**

An opening between the seat board and footboard located more than 30 in. (760 mm) above the finished ground level shall be provided with intermediate construction so that a 4 in. (100 mm) diameter sphere cannot pass through the opening. [101:12.4.110.3.8]

#### **25.4.3.2**

Maintenance and operation of folding and telescopic seating shall be the responsibility of the owner or his or her duly authorized representative and shall include all of the following:

- (1) During operation of the folding and telescopic seats, the opening and closing shall be supervised by responsible personnel who shall ensure that the operation is in accordance with the manufacturer's instructions.
- (2) Only attachments specifically approved by the manufacturer for the specific installation shall be attached to the seating.
- (3) An annual inspection and required maintenance of each grandstand shall be performed to ensure safe conditions.
  - At least biennially, the inspection shall be performed by a professional engineer, registered architect, or individual certified by the manufacturer.

[101:12.7.11.2]

#### **25.5.1.2 Testing.**

Testing of membrane materials for compliance with the requirements of Section 25.5 for use of the categories of noncombustible and limited-combustible materials shall be performed on weathered-membrane material as defined in 3.3.179.81.5 of NFPA 101. [101:11.9.1.3]

#### **25.5.3.2 Pressurization (Inflation) System.**

The pressurization system shall consist of one or more operating blower units. The system shall include automatic control of auxiliary blower units to maintain the required operating pressure. Such equipment shall meet the following requirements:

- (1) Blowers shall be powered by continuous-rated motors at the maximum power required.
- (2) Blowers shall have personnel protection, such as inlet screens and belt guards.
- (3) Blower systems shall be weather protected.
- (4) Blower systems shall be equipped with backdraft check dampers.
- (5) Not less than two blower units shall be provided, each of which has capacity to maintain full inflation pressure with normal leakage.
- (6) ~~The b~~Blowers shall be designed to be incapable of overpressurization.
- (7) The auxiliary blower unit(s) shall operate automatically if there is any loss of internal pressure or if an operating blower unit becomes inoperative.
- (8) The design inflation pressure and the capacity of each blower system shall be certified by a professional engineer.

[101:11.9.3.2]

### A.25.5.3.3.1

The requirements of 25.5.3.3.1 can be considered as a Class 4, Type 60<sub>u</sub> system per NFPA 110.

[101:A.11.9.3.3.1]

### 25.6.1.3 Roof Covering Classification.

Roof membranes shall have a roof covering classification, as required by the applicable building codes, when tested in accordance with ASTM E108, *Standard Test Methods for Fire Tests of Roof Coverings*, or UL 790, *Test Methods for Fire Tests of Roof Coverings* or UL 790. [101:11.10.1.4]

### 25.6.5.2 Pressurization (Inflation) System.

The pressurization system shall consist of one or more operating blower units. The system shall include automatic control of auxiliary blower units to maintain the required operating pressure. Such equipment shall meet the following requirements:

- (1) Blowers shall be powered by continuous-rated motors at the maximum power required.
- (2) Blowers shall have personnel protection, such as inlet screens and belt guards.
- (3) Blower systems shall be weather protected.
- (4) Blower systems shall be equipped with backdraft check dampers.
- (5) Not less than two blower units shall be provided, each of which has capacity to maintain full inflation pressure with normal leakage.
- (6) The~~b~~blowers shall be designed to be incapable of overpressurization.
- (7) The auxiliary blower unit(s) shall operate automatically if there is any loss of internal pressure or if an operating blower unit becomes inoperative.
- (8) The design inflation pressure and the capacity of each blower system shall be certified by a professional engineer.

[101:11.10.5.2]

## 60.5.2

Where permitted by Chapters 11 through 43 of NFPA 101<sub>u</sub> alcohol-based hand-rub dispensers shall be permitted provided they meet all of the following criteria:

- (1) The maximum individual dispenser fluid capacity shall be as follows:
  - (a) 0.32 gal (1.2 L) for dispensers in corridors and areas open to corridors
  - (b) 0.53 gal (2.0 L) for dispensers in rooms or suites of rooms separated from corridors
- (2) Where aerosol containers are used, the maximum capacity of the aerosol dispenser shall be 18 oz. (0.51 kg) and shall be limited to Level 1 aerosols as defined in NFPA 30B.
- (3) Dispensers shall be separated from each other by horizontal spacing of not less than 48 in. (1220 mm).
- (4) Not more than an aggregate 10 gal (37.8 L) of alcohol-based hand-rub solution or 1135 oz (32.2 kg) of Level 1 aerosols, or a combination of liquids and Level 1 aerosols not to exceed, in total, the equivalent of 10 gal (37.8 L) or 1135 oz (32.2 kg<sub>7</sub>), shall be in use outside of a storage cabinet in a single smoke compartment or fire compartment or story, whichever is less in area. One dispenser complying with 60.5.2(1) per room and located in that room shall not be included in the aggregated quantity.

- (5) Storage of quantities greater than 5 gal (18.9 L) in a single smoke compartment or fire compartment or story, whichever is less in area, shall meet the requirements of NFPA 30.
- (6) Dispensers shall not be installed in the following locations:
  - (a) Above an ignition source for a horizontal distance of 1 in. (25 mm) to each side of the ignition source
  - (b) To the side of an ignition source within a 1 in. (25 mm) horizontal distance from the ignition source
  - (c) Beneath an ignition source within a 1 in. (25 mm) vertical distance from the ignition source
- (7) Dispensers installed directly over carpeted floors shall be permitted only in sprinklered areas of the building.
- (8) The alcohol-based hand-rub solution shall not exceed 95 percent alcohol content by volume.
- (9) Operation of the dispenser shall comply with the following criteria:
  - (a) The dispenser shall not release its contents except when the dispenser is activated, either manually or automatically by touch-free activation.
  - (b) Any activation of the dispenser shall only occur when an object is placed within 4 in. (100 mm) of the sensing device.
  - (c) An object placed within the activation zone and left in place shall not cause more than one activation.
  - (d) The dispenser shall not dispense more solution than the amount required for hand hygiene consistent with label instructions.
  - (e) The dispenser shall be designed, constructed, and operated in a manner that ensures accidental or malicious activation of the dispensing device is minimized.
  - (f) The dispenser shall be tested in accordance with the manufacturer's care and use instructions each time a new refill is installed.

[101:8.7.3.3]

#### **F.1.2.3 ANSI Publications.**

[ANSI/BHMA A156.41, Standard for Door Hardware Single Motion to Egress, 2017.](#)

#### **F.1.2.8 ASTM Publications.**

[ASTM F2291, Standard Practice for Design of Amusement Rides or Devices, 2019](#)

[SFPE Guide to Human Behavior in Fire, 2018](#)

#### **F.1.2.15 FM Publications.**

[FM Approval 6921, Approval Standard for Containers for Combustible Waste, 2004.](#)

#### **F.1.2.16 FPRF Publications.**

[Fire Protection Research Foundation, Optimizing Fire Alarm Notification for High Risk Groups: Waking Effectiveness of Alarms \(Auditory, Visual and Tactile\) for Adults Who Are Hard of Hearing, 2007.](#)

[Fire Protection Research Foundation, Optimizing Fire Alarm Notification for High Risk Groups: Waking Effectiveness of Alarms \(Auditory, Visual and Tactile\) for the Alcohol Impaired, 2007.](#)

### **F.3 References for Extracts in Informational Sections.**

NFPA 101®, *Life Safety Code®*, [2018-2021](#) edition.



## Public Input No. 79-NFPA 1-2021 [ Global Input ]

See attached Tentative Interim Amendment No. 21-8 (Log No. 1498) on various NFPA 5000 extracts.  
This TIA was issued and approved for incorporation into the document.

### Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
TIA_1_21_8.pdf	NFPA 1 TIA No. 21-8 (Log No. 1498)	

### Statement of Problem and Substantiation for Public Input

NOTE: This public input originates from Tentative Interim Amendment No. 21-8 (Log No. 1498) issued by the Standard Council on August 11, 2020 and per the NFPA Regs., needs to be reconsidered by the Technical Committee for the next edition of the document.

Substantiation: The current text of NFPA 1 contains extracts from the last published edition of NFPA 5000 but not what is most currently available which is the 2021 Edition. This TIA updates the extracted language from NFPA 5000 in NFPA 1 and makes other adjustments as necessary for the changes to the updated extract text.

Emergency Nature: The standard contains an error or an omission that was overlooked during the regular revision process. The second draft report was not available during the NFPA 1 2nd draft report. Therefore, to ensure accuracy in the extract updates, the updates were done after the second draft report for the source document was posted. By waiting to update the extracts the final product in NFPA 1 will be more closely aligned to what is in the source document and ensures the most up to date information is contained in NFPA 1.

### Submitter Information Verification

**Submitter Full Name:** TC ON FCC\_HAZ

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**City:**

**State:**

**Zip:**

**Submittal Date:** Mon Feb 15 11:36:18 EST 2021

**Committee:** FCC-FUN

### Committee Statement

**Resolution:** This item has been previously balloted by the technical committee.



Tentative Interim Amendment

# NFPA® 1

## *Fire Code*

### 2021 Edition

**Reference:** Various NFPA 5000 Extracts  
**TIA 21-8**  
(SC 20-8-21 / TIA Log #1498)

**Note:** Text of the TIA was issued and approved for incorporation into the document prior to printing.

1. *Revise the following paragraphs to read as follows:*

**2.3.18 UL Publications.**

UL 1479, *Fire Tests of Through-Penetration Firestops*, 2015.

**2.4 References for Extracts in Mandatory Sections.**

NFPA 5000®, *Building Construction and Safety Code*®, 2018-2021 edition.

**3.3.3 Addition.** An increase in the building area, aggregate floor area, building height, or number of stories of a structure. (BLD-FUN) [5000: 2021<sup>18</sup>]

**3.3.23 Basement.** Any story of a building wholly or partly below grade plane that is not considered the first story above grade plane. (See also 3.3.289.1 in NFPA 5000®, First Story Above Grade Plane.) (BLD-FUN) [5000: 2021<sup>18</sup>]

**3.3.30.6 \*High-Rise Building.** A building where the floor of an occupiable story is greater than 75 ft (23 m) above the lowest level of fire department vehicle access. [5000: 2021<sup>18</sup>]

**A.3.3.30.6 High-Rise Building.** It is the intent of this definition that, in determining the level from which the highest occupiable floor is to be measured, the enforcing agency should exercise reasonable judgment, including consideration of overall accessibility to the building by fire department personnel and vehicular equipment. Where a building is situated on a sloping terrain and there is building access on more than one level, the enforcing agency might select the level that provides the most logical and adequate fire department access. [5000: 2021<sup>18</sup>]

**3.3.53 Cleanroom.** A room in which the concentration of airborne particles is controlled to specified limits, including areas below the raised floor and above the ceiling grid if these areas are part of the air path and within the rated construction. [5000: 2021<sup>18</sup>]

**3.3.94 Dispensing.** The pouring or transferring of a material from a container, tank, or similar vessel whereby vapors, dusts, fumes, mists, or gases could be liberated to the atmosphere. [5000: 2021<sup>18</sup>]

**3.3.100\* Dwelling Unit.** One or more rooms arranged for complete, independent housekeeping purposes, with space for eating, living, and sleeping; facilities for cooking; and provisions for sanitation. [5000: 2021<sup>18</sup>]

**A.303.100 Dwelling Unit.** It is not the intent of the Code that the list of spaces in the definition of the term dwelling unit to be all inclusive. It is the intent of the Code that the list of spaces is a minimal set of criteria that

must be provided to be considered a dwelling unit and, therefore, the dwelling unit can contain other spaces that are typical to a single-family dwelling. [5000: 2021]

**3.3.115\* Explosive Material.** A chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion.(BLD-IND) [5000: 2021+8]

**A.3.3.115 Explosive Material.** The term *explosive material* includes, but is not limited to, dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord, igniters, and Display Fireworks<sub>a</sub> 1.3G (Class B, Special). The term *explosive* includes any material determined to be within the scope of Title 18, United States Code, Chapter 40, and also includes any material classified as an explosive, other than Consumer Fireworks 1.4G (Class C, Common), by the Hazardous Materials Regulations of the U.S. Department of Transportation (DOT) in 49 CFR. [5000: 2021+8]

The former classification system used by the DOT included the terms *high explosive* and *low explosive*, as further defined in A.3.3.4086.3.2 of *NFPA 5000®*. These terms remain in use by the U.S. Bureau of Alcohol, Tobacco, and Firearms, and/or Explosives. Explosive materials classified as hazard Class 1 are further defined under the current system applied by DOT. Compatibility group letters are used in concert with division numbers to specify further limitations on each division noted. For example, the letter G (as in 1.4G) identifies substances or articles that contain a pyrotechnic substance and similar materials. UN/DOT Class 1 Explosives are defined as follows:

- (1) Division 1.1 explosives are explosives that are a mass explosion hazard, which is a hazard that instantaneously affects almost the entire load.
- (2) Division 1.2 explosives are explosives that are a projection hazard but not a mass explosion hazard.
- (3) Division 1.3 explosives are explosives that are a fire hazard and either a minor blast hazard or a minor projection hazard, or both, but not a mass explosion hazard.
- (4) Division 1.4 explosives are explosives that pose a minor explosion hazard and meet both of the following criteria:
  - (a) The explosive effects are largely confined to the package, and no projection of fragments of appreciable size or range is to be expected.
  - (b) An external fire cannot cause virtually instantaneous explosion of almost the entire contents of the package.
- (5) Division 1.5 explosives are very insensitive explosives that are comprised of substances that are a mass explosion hazard, but are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport.
- (6) Division 1.6 explosives are extremely insensitive articles that are not a mass explosion hazard, that are comprised of articles that contain only extremely insensitive detonating substances, and that demonstrate a negligible probability of accidental initiation or propagation.

[5000, 2021+8]

**3.3.140.1\* Gross Floor Area.** The floor area within the inside perimeter of the outside walls, or the outside walls and fire walls of a building, or outside and/or inside walls that bound an occupancy or incidental use area of the building under consideration with no deductions for hallways, stairs, closets, thickness of interior walls, columns, elevator and building services shafts, or other features, but excluding floor openings associated with atriums and communicating spaces.(BLD-MEA) [5000: 2021+8]

**A.3.3.140.1 Gross Floor Area.** Where the term *floor area* is used, it should be understood to be gross floor area, unless otherwise specified. [5000: 2021+8]

**3.3.140.2 Net Floor Area.** The floor area within the inside perimeter of the outside walls, or the outside walls and fire walls of the a building, or outside and/or inside walls that bound an occupancy or incidental use area requiring the occupant load to be calculated using net floor area under consideration with deductions for hallways, stairs, closets, shafts, thickness of interior walls, columns, or and other features.(BLD-MEA) [5000: 2021+8]

**3.3.144 Garage.** A building or portion of a building in which one or more self-propelled vehicles carrying volatile flammable liquid for fuel or power are kept for use, sale, storage, rental, repair, exhibition, or demonstrating purposes, and all that portion of a building that is on or below the floor or floors in which such vehicles are kept and that is not separated therefrom by suitable cutoffs.(BLD-IND) [5000: 2021+8]

**A.3.3.152 Hazard of Contents.** Hazardous materials are materials that present physical or health hazards and are regulated by the *Code*. The categories of materials classified as physical hazards, health hazards, or both have been established in concert with those categories identified by OSHA in 29 CFR that are used by preparers of Material Safety Data Sheets (MSDS). In some cases, the hazard categories are further subdivided into classes that have long been established by NFPA standards. For example, while OSHA recognizes flammable liquids as a broad class, including those that are combustible, such liquids are further categorized by building and fire codes with respect to degree of hazard under the system of classification used by NFPA to include Class I, Class II, and Class III liquids. They are further subdivided within these classes to Class IA, Class IB, and so forth. A similar approach is used for materials in other categories where there are subcategories of hazard established by existing NFPA standards, including oxidizers, unstable reactives, organic peroxides, water reactives, and others. [5000:A.6.3.22018]

Under the classification system used by OSHA, a hazardous material can have one or more physical or health hazards in categories not currently regulated by the *Code*; for example, irritants, sensitizers, radioactive materials, etiological agents, and others. This is not to say that these materials are not hazardous materials, but rather that the *Code* does not provide specific regulation for the hazard category represented. [5000:A.6.3.25000, 2018]

The *Code* defines contents as either high hazard, low hazard, or ordinary hazard. The category of high hazard, which includes hazardous materials, is subdivided into groups in which the hazards of the groups are comparable, for example, high hazard Level 1 through Level 5 that is, high hazard Level 1-5. (See also A.34.1.1 of NFPA 5000®.) [5000:A.6.3.25000, 2018]

**3.3.152.1.2 High Hazard Level 2 Contents.** High hazard Level 2 contents shall include materials that present a deflagration hazard or a hazard from accelerated burning including, but not limited to, the following: (1) Class I, Class II, or Class III-A flammable or combustible liquids that are used or stored in normally open containers or systems, or in closed containers or systems at gauge pressures of more than 15 psi (103 kPa); (2) Combustible dusts stored, used, or generated in a manner creating a severe fire or explosion hazard; (3) Flammable gases and flammable cryogenic liquids; (4) Class I organic peroxides; (5) Class 3 solid or liquid oxidizers that are used or stored in normally open containers or systems, or in closed containers or systems at gauge pressures of more than 15 psi (103 kPa); (6) Nondetonable pyrophoric materials; (7) Class 3 nondetonable unstable (reactive) materials; (8) Class 3 water-reactive materials. [5000:6.3.2.4.3]

**3.3.152.1.3 High Hazard Level 3 Contents.** High hazard Level 3 contents shall include materials that readily support combustion or present a physical hazard including, but not limited to, the following: (1) Level 2 and Level 3 aerosols; (2) Class I, Class II, or Class III-A flammable or combustible liquids that are used or stored in normally closed containers or systems at gauge pressures of less than 15 psi (103 kPa); (3) Flammable solids, other than dusts classified as high hazard Level 2, stored, used, or generated in a manner creating a high fire hazard; (4) Class II and Class III organic peroxides; (5) Class 2 solid or liquid oxidizers; (6) Class 3 solid or liquid oxidizers that are used or stored in normally closed containers or systems at gauge pressures of less than 15 psi (103 kPa); (7) Oxidizing gases and oxidizing cryogenic liquids; (8) Class 2 unstable (reactive) materials; (9) Class 2 water-reactive materials. [5000:6.3.2.4.4]

**3.3.152.1.4 High Hazard Level 4 Contents.** High hazard Level 4 contents shall include materials that are acute health hazards including, but not limited to, the following: (1) Corrosives; (2) Highly toxic materials; (3) Toxic materials. [5000:6.3.2.4.5]

**3.3.152.1.5 High Hazard Level 5 Contents.** High hazard Level 5 contents shall include hazardous production materials (HPM) used in the fabrication of semiconductors or semiconductor research and development. [5000:6.3.2.4.6]

**3.3.173.1\* Ceiling Limit.** The maximum concentration of an airborne contaminant to which one can be exposed. (BLD-MEA) [5000: 202118]

**A.3.3.173.1 Ceiling Limit.** The ceiling limits utilized are to be those published in 29 CFR 1910.1000. [5000: 202118]

**3.3.174 Limited-Combustible (Material).** See 4.5.10. [5000: 202118]

**3.3.175 Liquid.** A material that has a melting point that is equal to or less than 68°F (20°C) and a boiling point that is greater than 68°F (20°C) and at 14.7 psia (101.3 kPa). When not otherwise identified, the term liquid shall mean both flammable and combustible liquids. (BLD-IND) [5000: 202118]

**3.3.184.5 Hazardous Production Material (HPM).** A solid, liquid, or gas associated with semiconductor manufacturing that has a degree-of-hazard rating of 3 or 4 in health, flammability, instability, or water reactivity in accordance with NFPA 704 and that is used directly in research, laboratory, or production processes that have as their end product materials that are not hazardous. [5000: 202148]

**3.3.174.10 Limited-Combustible (Material).** See 4.5.10. [5000:202148]

**3.3.184.11 Noncombustible Material.** See 4.5.9. [5000: 202148]

**A.3.3.196.15 Industrial Occupancy.**

For laboratories within the scope of NFPA 45, the occupancies are defined in NFPA 45, Section 3.3, as follows:

- (1) Noninstructional labs are considered industrial.
- (2) Labs within the scope of NFPA 99 are considered health care.
- (3) Instructional labs for grades 12 and below are considered educational.
- (4) Labs for grades above grade 12 and Class D labs are business occupancies.

[5000, 202148]

**3.3.196.31.1 \*Mini-Storage Building.**

A storage occupancy partitioned into individual storage units, ~~with a majority of the individual units not greater than 750 ft<sup>2</sup> in area~~, that are rented or leased for the purposes of storing personal or business items where ~~a majority of the individual storage units are not greater than 750 ft<sup>2</sup> (70 m<sup>2</sup>)~~. [5000: 2021] all of the following apply: (1) the storage units are separated from each other by less than a 1 hour fire resistance rated barrier, (2) the owner of the facility does not have unrestricted access to the storage units, and (3) the items being stored are concealed from view from outside the storage unit.

**A.3.3.196.31.1 Mini-Storage Building.** Mini-storage buildings are typically designed to accommodate relatively small transient tenants who are often private individuals or persons who own small businesses and need additional storage space that is generally very small in area to accommodate their short-term storage needs. This definition is not intended to apply to large warehouse buildings designed to be rented or leased to relatively large multiple tenants who are generally storing their wares in conjunction with their businesses. Garage units that are primarily intended for vehicular storage as part of a multifamily development are not intended to be classified as mini-storage buildings. [5000: 202148]

**3.3.227 Quality Assurance.** The procedures conducted by the registered design professionals (RDPs) responsible for design and the registered design professionals responsible for inspection that provide evidence and documentation to the RDPs, the owner, and the AHJ that the work is being constructed in accordance with the approved construction documents. [5000: 202148]

**3.3.228 Quality Assurance Program.** A predefined set of observations, special inspections, tests, and other procedures that provide an independent record to the owner, AHJ, and RDP responsible for design that the construction is in general conformance with the approved construction documents. [5000: 202148]

**3.3.233 Registered Design Professional (RDP).** An individual who is registered or licensed to practice his/her respective design profession as defined by the statutory requirements of the professional registration laws of the state or jurisdiction in which the project is to be constructed. [5000: 202148]

**3.3.250 \*Smoke Barrier.** A continuous membrane, or a membrane with discontinuities created by protected openings, where such membrane is designed and constructed to restrict the movement of smoke. [5000: 202148]

**A.3.3.250 Smoke Barrier.** A smoke barrier, such as a wall, floor, or ceiling assembly, might be aligned vertically or horizontally. A smoke barrier might or might not have a fire resistance rating. Application of smoke barrier criteria where required elsewhere in the *Code* should be in accordance with Section 12.9. [5000: 2021]

**3.3.256 Solid Material.** A material that has a melting point, decomposes, or sublimes at a temperature greater than 68°F (20°C). [5000: 202148]

**3.3.267 Story.** The portion of a building located between the upper surface of a floor and the upper surface of the floor or roof next above. [5000: 202148]

**3.3.270 Structural Element.** The columns and girders, beams, trusses, joists, braced frames, moment-resistant frames, and vertical and lateral resisting elements, and other framing members that are designed to carry any portion of the dead or live load and lateral forces, that are essential to the stability of the building or structure. [5000: 202148]

**3.4.2.1 Sensitivity Analysis.** An analysis performed to determine the degree to which a predicted output will vary given a specified change in an input parameter, usually in relation to models. [5000: 202148]

**3.4.5 \*Design Specification.** A building characteristic and other conditions that are under the control of the design team. [5000: 202148]

**A.3.4.5 Design Specification.** Design specifications include both hardware and human factors, such as the conditions produced by maintenance and training. For purposes of performance-based design, the design specifications of interest are those that affect the ability of the building to meet the stated goals and objectives. [5000: 202148]

**3.4.10 \*Fuel Load.** The total quantity of combustible contents of a building, space, or fire area. [5000: 202148]

**A.3.4.10 Fuel Load.** Fuel load includes interior finish and trim. [5000: 202148]

#### **4.5.9 Noncombustible Material.**

**4.5.9.1** A material that complies with any one of the following shall be considered a noncombustible material:

- (1) \* The material, in the form in which it is used, and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat.
- (2) The material is reported as passing ASTM E136, *Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C* ~~for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C~~.
- (3) The material is reported as complying with the pass/fail criteria of ASTM E136 when tested in accordance with the test method and procedure in ASTM E2652, *Standard Test Method for Assessing Combustibility of Materials Using a Tube Furnace with a Cone-shaped Airflow Stabilizer, at 750°C* ~~Behavior of Materials in a Tube Furnace with a Cone-shaped Airflow Stabilizer, at 750 Degrees C~~.

[5000:7.1.4.1.1]

#### **4.5.10\* Limited-Combustible Material.**

A material shall be considered a limited-combustible material where both one of the following is met:

- (1) The condition of 4.5.10.1 and 4.5.10.2, and the conditions of either 4.5.10.3 or 4.5.10.4, shall e met.
- (2) The conditions of 4.5.10.5 shall be met ~~conditions of 4.5.10.1, and 4.5.10.2, and the conditions of either 4.5.10.3 or 4.5.10.4, are met.~~

[5000:7.1.4.2]

**4.5.10.1** The material does not comply with the requirements for a noncombustible material in accordance with 4.5.9. [5000:7.1.4.2.1(1)]

**4.5.10.2** The material, in the form in which it is used, exhibits a potential heat value not exceeding 3500 Btu/lb (8141 kJ/kg) where when tested in accordance with NFPA 259. [5000:7.1.4.2.2(2)]

**4.5.10.3** The material shall have~~has~~ a structural base of ~~a~~ noncombustible material with a surfacing not exceeding a thickness of  $1/8$  in. (3.2 mm) where the surfacing exhibits a flame spread index not greater than 50 when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or UL 723, *Test for Surface Burning Characteristics of Building Materials*. [5000:7.1.4.2.3(3)]

**4.5.10.4** The material ~~is~~shall be composed of materials which,that in the form and thickness used, neither exhibit a flame spread index greater than 25 nor exhibit evidence of continued progressive combustion when tested in accordance with ASTM E84 or UL 723, and are of such composition that all surfaces that would be exposed by cutting through the material on any plane would neither exhibit a flame spread index greater than 25 nor exhibit evidence of continued progressive combustion when tested in accordance with ASTM E84 or UL 723.

[5000:7.1.4.2(4)]

**4.5.10.5** Materials shall be ~~An alternate approach for a material to be~~ considered ~~a limited~~ combustible materials ~~is where the material is~~ tested in accordance with ASTM E2965, *Standard Test Method for Determination of Low Levels of Heat Release Rate for Materials and Products Using an Oxygen Combustion Consumption Calorimeter*, at an incident heat flux of 75 kW/m<sup>2</sup> for a 20-minute exposure, ~~and both the following conditions are met:~~  
1) ~~The peak heat release rate~~ ~~does shall~~ not exceed 150 kW/m<sup>2</sup> for longer than 10 seconds, ~~and~~  
2) ~~The total heat released~~ ~~does shall~~ not exceed 8 MJ/m<sup>2</sup>.

**5000:7.1.4.2.53]**

**4.5.10.6** Where the term *limited-combustible* is used in this Code, it shall also include the term *noncombustible*.  
**[5000:7.1.4.2.64]**

**12.3.2 \*Quality Assurance for Penetrations and Joints.** ~~In new buildings three stories or greater in height, a~~ quality assurance program for the installation of devices and systems installed to protect penetrations ~~s~~ and joints shall be prepared and monitored by the RDP responsible for design. Inspections of firestop systems and fire-resistant joint systems shall be in accordance with 12.3.2.1 and 12.3.2.2. **[5000:40.9]**

**12.3.2.1** Inspection of firestop systems of the types tested in accordance with ASTM E814, *Standard Test Method for Fire Tests of Through Penetration Firestop Systems-Stop*s, or ~~UL 1479, Fire Tests of Through Penetration Firestops~~, shall be conducted in accordance with ASTM E2174, *Standard Practice for On-Site Inspection of Installed Fire-Stop*s. **[5000:40.9.1]**

**12.3.2.2** Inspection of fire-resistant joint systems of the types tested in accordance with ASTM E1966, *Standard Test Method for Fire-Resistive Joint Systems*, or UL 2079, *Tests for Fire Resistance of Buildings Joint Systems*, shall be conducted in accordance with ASTM E2393, *Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers*. **[5000:40.9.2]**

### **13.3.2.27 \*New Storage Occupancies.**

**13.3.2.27.4 Mini-Storage Building.** An automatic sprinkler system shall be installed throughout all mini-storage buildings greater than 2500 ft<sup>2</sup> (232 m<sup>2</sup>) and where any of the individual storage units are separated by less than a 1-hour fire - resistance-rated barrier. **[5000:30.3.45.3]**

**13.3.2.27.5 Bulk Storage of Tires.** Buildings and structures where the volume for the storage of tires exceeds 20,000 ft<sup>3</sup> (566 m<sup>3</sup>) shall be equipped throughout with an approved automatic fire sprinkler system.  
**[5000:30.3.45.2]**

**A.18.4.5.3.1** Table A.18.4.5.3.1 provides a comparison of the types of construction for various model building codes. **[5000:A.7.2.1.1]**

**Table A.18.4.5.3.1 Cross-Reference of Building Construction Types**

<b>NFPA 5000</b>	<b>I (442)</b>	<b>I (332)</b>	<b>II (222)</b>	<b>II (111)</b>	<b>II (000)</b>	<b>III (211)</b>	<b>III (200)</b>	<b>IV (2HH)</b>	<b>V (111)</b>	<b>V (000)</b>
UBC	—	I FR	II FR	II 1 hr	II N	III 1 hr	III N	IV HT	V 1 hr	V N
B/NBC	1A	1B	2A	2B	2C	3A	3B	4	5A	5B
SBC	I	II	—	IV 1 hr	IV UNP	V 1 hr	V UNP	III	VI 1 hr	VI UNP
IBC	—	IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB

UBC: *Uniform Building Code*.

FR: Fire rated.

N: Nonsprinklered.

HT: Heavy timber.

B/NBC: *National Building Code*.

SBC: *Standard Building Code*.

UNP: Unprotected.

IBC: *International Building Code*.

**[5000:Table A.7.2.1.1]**

**25.1.6.2** An enclosed area shall be protected by an approved sprinkler system in accordance with Section 13.3,

unless such an area is one of the following:

- (1) Enclosed stadiums, arenas, and similar structures
- (2) Press boxes of less than 1000 ft<sup>2</sup> (93 m<sup>2</sup>)
- (3) Storage facilities of less than 1000 ft<sup>2</sup> (93 m<sup>2</sup>), if enclosed with minimum 1-hour fire-resistance-rated construction
- (4) Enclosed areas underneath grandstands or bleachers that comply with 16.4.910.5 of NFPA 5000

[5000:32.3.5.3]

**25.1.6.3 Portable Fire Extinguishers.** Portable fire extinguishers shall be installed in assembly occupancies in accordance with Section 13.6, unless otherwise permitted by one of the following:

- (1) The requirement of 25.1.6.3 shall not apply to seating areas.
- (2) The requirement of 25.1.6.3 shall not apply to floor areas used for contests, performances, or entertainment.
- (3) The requirement of 25.1.6.3 shall not apply to outside assembly occupancy areas.
- (4) Portable extinguishers shall be permitted to be located in secure locations accessible to staff.

[5000:16.3.5.3]

**60.1.2 Subjects Not Regulated.** Buildings, and portions thereof, containing high-hazard contents limited to any of the following shall not be required to comply with this chapter:

- (1) Flammable and combustible (ignitable) liquids associated with application of flammable finishes and complying with Chapter 43.
- (2) Flammable and combustible (ignitable) liquids associated with wholesale and retail sales and storage in mercantile occupancies and complying with Chapter 66
- (3) Class IIIA and Class IIIB combustible liquid solvents in closed systems employing listed cleaning equipment complying with Chapter 24
- (4) Refrigerants and refrigerant oil contained within closed-cycle refrigeration systems complying with Chapter 53 and the building code
- (5) Flammable and combustible (ignitable) liquid beverages in liquor stores and distributors without bulk storage
- (6) High-hazard contents stored or used in farm buildings or similar occupancies for on-premises agricultural use
- (7) Corrosive materials in stationary batteries utilized for facility emergency power, uninterrupted power supply, or similar purposes, provided that the batteries are provided with safety venting caps and ventilation is provided in accordance with Chapter 52
- (8) Corrosive materials displayed in original packaging in mercantile occupancies and intended for personal or household use or as building materials
- (9) Aerosol products in storage or mercantile occupancies and complying with Chapter 61
- (10) Flammable and combustible (ignitable) liquids storage tank buildings meeting the requirements of Chapter 24 of NFPA 30
- (11) Flammable and combustible (ignitable) liquids storage tank vaults meeting the requirements of Chapter 25 of NFPA 30
- (12) Installation of fuel gas distribution systems and associated equipment in accordance with Section 11.4 and Chapter 69
- (12)(13) Flammable and combustible (ignitable) liquids process buildings meeting the requirements of Chapter 17 of NFPA 30
- (13) Installation of fuel gas distribution systems and associated equipment in accordance with Section 11.4 and Chapter 69

[5000:34.1.1.2]

### F.3 References for Extracts in Informational Sections.

NFPA 5000®, *Building Construction and Safety Code®*, 2018-2021 edition.

**Issue Date:** August 11, 2020

**Effective Date:** August 31, 2020

(Note: For further information on NFPA Codes and Standards, please see [www.nfpa.org/docinfo](http://www.nfpa.org/docinfo))

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NATIONAL FIRE PROTECTION ASSOCIATION



## Public Input No. 41-NFPA 1-2021 [ New Section after 1.3.6.3 ]

**1.3.6.3.1 Permits shall not be approved for operational permits, alterations, renovations, new construction or repairs for building or properties with violations of the Code, except where the permit is to correct violations.**

### Statement of Problem and Substantiation for Public Input

There are jurisdictions where permits are given for renovations etc. which fighting to get them to correct code violations. No where in the code does it give guidance to the ahj on how to handle this issue, without a written policy on how to address it leaves the ahj trying to explain.

### Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Wed Jan 13 12:36:31 EST 2021

**Committee:** FCC-FUN

### Committee Statement

**Resolution:** This does not allow the AHJ to make a subjective judgement pertaining to the degree of a violation. This would prohibit an AHJ from issuing any permits if there is any violations in the building, even if they are completely unrelated to the permit requested. This public input would potentially be good material for an annex note.



## Public Input No. 141-NFPA 1-2021 [ Section No. 1.7.7 ]

### 1.7.7 Inspection.

#### 1.7.7.1\*

The AHJ shall be authorized to inspect, at all reasonable times, any building or premises for dangerous or hazardous conditions or materials as set forth in this *Code*.

#### 1.7.7.2

To the full extent permitted by law, any AHJ engaged in fire prevention and inspection work shall be authorized at all reasonable times to enter and examine any building, structure, marine vessel, vehicle, or premises for the purpose of making fire safety inspections.

#### 1.7.7.3

Before entering, the AHJ shall obtain the consent of the occupant thereof or obtain a court warrant authorizing entry for the purpose of inspection except in those instances where an emergency exists.

#### 1.7.7.4

As used in 1.7.7.3, emergency shall mean circumstances that the AHJ knows, or has reason to believe, exist and that can constitute imminent danger.

#### 1.7.7.5

Persons authorized to enter and inspect buildings, structures, marine vessels, vehicles, and premises as herein set forth shall be identified by credentials issued by the governing authority.

#### 1.7.7.6

Inspections performed remotely shall be conducted in accordance with NFPA 915, Standard for Remote Inspections.

ADD: NFPA 915 Standard for Remote Inspections to Chapter 2 references.

## Statement of Problem and Substantiation for Public Input

This standard will include an alternate methodology to conduct inspections. If an AHJ approves the use of remote inspections, this standard provides the requirements to conduct them. Add to Chapter 2 for reference, provided related public input to 1.7.7.6 is approved.

## Submitter Information Verification

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Apr 01 11:50:45 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** CI-54-NFPA 1-2021

**Statement:** The committee would like to include reference to NFPA 915 for remote inspections, however the document is currently a draft document. The committee will reconsider adding reference to NFPA 915 at second draft based on availability of a first or second draft of the document.

NFPA 915 will include an alternate methodology to conduct inspections. If an AHJ approves the use of remote inspections, this standard provides the requirements to conduct them. Add to Chapter 2 for reference, provided related public input to 1.7.7.6 is approved.



## Public Input No. 147-NFPA 1-2021 [ New Section after 1.7.7.5 ]

1.7.7.6 Building, fire suppression system, fire alarm system and other code related inspections may be delayed or suspended as permitted by the AHJ due to national, regional or locally declared disasters.

### Statement of Problem and Substantiation for Public Input

International pandemics and natural disasters have openly demonstrated a need for flexibility to accomplish prescriptive inspection services. Building owners do not want to allow outside personnel into their premises. Alarm and suppression companies cannot access contractual work due to business closures or their own manpower shortages to perform the work. This language empowers the AHJ to implement discretionary changes in prescriptive inspection requirements to ensure the safety of the public and be sensitive to the circumstances causing the deferment or suspension of inspections. Providing this authority within the model code will memorialize this discretionary authority which may provide liability protection to AHJ's, owners, and contractors where such inspections are not conducted during a disaster.

### Submitter Information Verification

**Submitter Full Name:** Anthony Apfelbeck

**Organization:** Altamonte Springs Building and Fire Safety Department

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Apr 01 12:30:37 EDT 2021

**Committee:** FCC-FUN

### Committee Statement

**Resolution:** FR-56-NFPA 1-2021

**Statement:** The committee modified the original PI to make it mandatory and to clarify that all types of AHJ inspections are included including all fire protection system, fire and life safety systems, and that this is only for AHJ-related inspections. It was also changed to address that not only are inspections permitted to be delayed but modified, which will permit for modifications such as virtual inspections.

International pandemics and natural disasters have openly demonstrated a need for flexibility to accomplish prescriptive inspection services. Building owners do not want to allow outside personnel into their premises. This language empowers the AHJ to implement discretionary changes in prescriptive inspection requirements to ensure the safety of the public and be sensitive to the circumstances causing the deferment or suspension of inspections. Providing this authority within the model code will memorialize this discretionary authority which may provide liability protection to AHJ's and owners where such inspections are not conducted during a disaster.



## Public Input No. 34-NFPA 1-2021 [ Section No. 1.7.8.3 ]

### 1.7.8.3\*

Where such hazardous conditions exist, abatement actions by the AHJ shall include the authority to order the immediate disconnection of or reconnection of utilities to a structure or property.

## Statement of Problem and Substantiation for Public Input

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## Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<a href="#">Public Input No. 35-NFPA 1-2021 [Section No. 1.7.16.2]</a>	

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Tue Jan 12 07:21:20 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** [FR-58-NFPA 1-2021](#)

**Statement:** It can be necessary for safety for the AHJ to have the ability to reconnect utilities. This will allow the AHJ to permit the reconnection of utilities at their discretion.



## Public Input No. 36-NFPA 1-2021 [ Section No. 1.7.12 ]

### 1.7.12 Plans and Specifications.

#### 1.7.12.1

The AHJ shall have the authority to require plans and specifications to ensure compliance with applicable codes and standards.

#### 1.7.12.2

Plans shall be submitted to the AHJ prior to construction unless otherwise permitted by 1.7.12.4.

#### 1.7.12.3

The construction documents for each phase shall be complete in themselves, so that review and inspection can properly be made. Preliminary plans of the total building shall be submitted with the construction documents, and with sufficient detail, so that proper evaluation can be made. Areas and items not included in the phase to be permitted shall be shown as not included. [5000:1.7.6.3.3.3]

#### 1.7.12.4

The AHJ is authorized to exempt detached one- and two-family dwellings and accessory structures from the submittal of plans and permit requirements in 1.7.12.8.

#### 1.7.12.5

Plans shall be submitted to the AHJ prior to the change of occupancy of any existing building.

#### 1.7.12.6

Plans shall be submitted to the AHJ prior to the alteration of the means of egress or fire protection systems of any existing building.

#### 1.7.12.7

Plans shall be submitted to the AHJ for other conditions as deemed necessary by the AHJ to determine compliance with the applicable codes and standards.

#### 1.7.12.8

The AHJ shall be authorized to require permits for conditions listed in 1.7.12.2, 1.7.12.5, and 1.7.12.6, unless otherwise permitted by 1.7.12.9.

#### 1.7.12.9 –

~~The AHJ is authorized to exempt detached one- and two-family dwellings and accessory structures from the permit requirement of 1.7.12.8.~~

#### 1.7.12.10

No construction work shall proceed until the AHJ has reviewed the plans for compliance with the applicable codes and standards and the applicable permits have been issued.

## Statement of Problem and Substantiation for Public Input

Removes redundant language and states it in one requirement.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Tue Jan 12 07:27:10 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-60-NFPA 1-2021

**Statement:** Removes redundant language and states it in one requirement.



## Public Input No. 35-NFPA 1-2021 [ Section No. 1.7.16.2 ]

### 1.7.16.2

When, in the opinion of the AHJ, an imminent danger exists, the AHJ shall be authorized to order the immediate disconnection of or reconnection of utilities to a structure or property.

## Statement of Problem and Substantiation for Public Input

The abatement may require that utilities be reconnected. An example would be a property owner that disconnects electricity to a building that requires a fire alarm system, the ahj should have the authority to require electricity be restored immediately.

## Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<a href="#">Public Input No. 34-NFPA 1-2021 [Section No. 1.7.8.3]</a>	

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Tue Jan 12 07:25:21 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** [FR-59-NFPA 1-2021](#)

**Statement:** It can be necessary for safety for the AHJ to have the ability to reconnect utilities. This will allow the AHJ to permit the reconnection of utilities at their discretion.



## Public Input No. 1-NFPA 1-2020 [ New Section after 1.9.4 ]

### Insert a new 1.10 and renumber remaining:

#### 1.10 Pre-Incident Planning

1.10.1 The Fire Department and the AHJ are authorized to conduct Pre-Incident Planning activities in accordance with NFPA 1620, Standard for Pre-Incident Planning.

1.10.2 An owner or tenant shall provide the Fire Department and the AHJ access to properties in order to conduct pre-incident planning activities.

1.10.3 An owner or tenant shall provide the Fire Department and the AHJ access to documents necessary to conduct pre-incident planning activities.

1.10.4 An owner or tenant shall provide the Fire Department and the AHJ with after-hours emergency contact phone numbers for owner and tenant representatives that can respond to provide access and with knowledge of building systems.

## Statement of Problem and Substantiation for Public Input

Pre-Incident Planning activities are a key component to effective and safe fire department responses. NFPA 1 does not currently provide any authority to AHJs or the Fire Department to conduct pre-incident planning activities or collect the data required to create pre-incident plans in compliance with NFPA 1620. This PI would ensure that AHJs and Fire Departments have the legal authority to conduct pre-incident plans under the fire code and collect the data necessary per NFPA 1620.

## Related Public Inputs for This Document

### Related Input

[Public Input No. 53-NFPA 1-2021 \[New Section after 3.3.221\]](#)

[Public Input No. 53-NFPA 1-2021 \[New Section after 3.3.221\]](#)

### Relationship

Definition extracted for term.

## Submitter Information Verification

**Submitter Full Name:** Anthony Apfelbeck

**Organization:** Altamonte Springs Building/Fire Safety Department

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Nov 26 10:08:33 EST 2020

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** [FR-61-NFPA 1-2021](#)

**Statement:** The original public input was modified to only provide reference to NFPA 1620. Additional review of NFPA 1620 is required to determine if the removed items in this PI are covered within NFPA 1620.

This FR adds reference to NFPA 1620, Standard for Pre-Incident Planning, 2020.

Pre-Incident Planning activities are a key component to effective and safe fire department responses. NFPA 1 does not currently provide any authority to AHJs or the Fire Department to conduct pre-incident planning activities or collect the data required to create pre-incident plans in compliance with NFPA 1620. This PI would ensure that AHJs and Fire Departments have the legal authority to conduct pre-incident plans under the fire code and collect the data necessary per NFPA 1620.



## Public Input No. 2-NFPA 1-2020 [ Section No. 1.11.1.1 ]

### 1.11.1.1 –

Documents requested from a property owner for fire protection systems with deficiencies shall be maintained by the AHJ.

## Statement of Problem and Substantiation for Public Input

See PI 43 which contains the justification for the relocation and the new text in Chapter 13.

## Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<a href="#">Public Input No. 43-NFPA 1-2021 [New Section after 13.1.6]</a>	Relocation of Text
<a href="#">Public Input No. 43-NFPA 1-2021 [New Section after 13.1.6]</a>	

## Submitter Information Verification

**Submitter Full Name:** Anthony Apfelbeck

**Organization:** Altamonte Springs Building and Fire Safety Department

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Sat Nov 28 13:07:28 EST 2020

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** [FR-63-NFPA 1-2021](#)

**Statement:** The AHJ should have a responsibility to retain a record of documentation requested from a property owner, not just documentation pertaining to fire protection systems with deficiencies. The committee expanded the requirement to include all other types of documentation requested by the AHJ. The retention of documents should be in accordance with the AHJ's document retention policy.

FUN recommends that OCP resolve PI-43.



## Public Input No. 37-NFPA 1-2021 [ Section No. 1.11.4.2 ]

### 1.11.4.2

The fire department shall report its incident record data, collected in accordance with 1.11.4, to the recognized state agency responsible for collecting such data.

## Statement of Problem and Substantiation for Public Input

State is specific to the US, others use this document. It could be changed to state/national.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Tue Jan 12 07:29:54 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** [FR-64-NFPA 1-2021](#)

**Statement:** State is a US-specific term. Additionally, there may be other agencies responsible for collecting such data, and the inclusion of "state" is unnecessarily limiting.



## Public Input No. 40-NFPA 1-2021 [ New Section after 1.12.6.14 ]

1.12.6.15 Permit Fees. The AHJ shall be authorized to establish a schedule of fees.

### Statement of Problem and Substantiation for Public Input

This was originally in 1.17 and is better located in this section.

### Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<a href="#">Public Input No. 39-NFPA 1-2021 [Section No. 1.17]</a>	
<a href="#">Public Input No. 39-NFPA 1-2021 [Section No. 1.17]</a>	

### Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Tue Jan 12 08:00:46 EST 2021

**Committee:** FCC-FUN

### Committee Statement

**Resolution:** [FR-65-NFPA 1-2021](#)

**Statement:** The TC does not wish to relocate these requirements as this would limit the AHJ to collecting fees for only permitting. The revised language will allow the AHJ to collect fees for additional activities which may not relate to permits, this is consistent with the current A.1.17.



## Public Input No. 128-NFPA 1-2021 [ Section No. 1.12.8 ]

**1.12.8**

Permits shall be required in accordance with Table 1.12.8(a) through Table 1.12.8(d).

Table 1.12.8(a) Permit Requirements

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference Section Number</u>
Additive manufacturing	To conduct industrial additive manufacturing operations	39.1.2
Aerosol products	To store or handle an aggregate quantity of Level 2 or Level 3 aerosol products in excess of 500 lb (226.8 kg)	61.1.2
Aircraft fuel servicing	To provide aircraft fuel servicing	42.10.1.2
Aircraft hangars	For servicing or repairing aircraft	21.1.1
Aircraft refueling vehicles	To operate aircraft refueling vehicles	42.10.1.2
Airport terminal buildings	For construction and alteration	21.2.2.1
Ammonium nitrate	For storage	Chapter 74
Amusement parks	For construction, alteration, or operation of amusement park fire protection safety features	10.15.1
Asbestos removal	For the removal of asbestos	16.8.2
Automatic fire suppression systems	For installation, modification, or removal from service of any automatic fire suppression system*	13.1.1.1; 50.4.2
Automobile wrecking yards	To operate automobile wrecking yards	22.2
Automotive fuel servicing	To provide automotive fuel servicing	42.2.2.1; 42.11.2.2.4; 42.11.3.1
<u>Battery systems</u> <u>Stationary standby batteries</u>	To install or operate stationary lead-acid battery systems having or nickel-cadmium batteries having an electrolyte capacity of more than 100 gal (378.5 L) in sprinklered buildings or 50 gal (189.3 L) in nonsprinklered buildings	52.2
Candles, open flames, and portable cooking	To use in connection with assembly areas, dining areas of restaurants, or drinking establishments	17.3.2; 20.1.1.1
Carnivals and fairs	To conduct a carnival or fair	10.15.1
Cellulose nitrate film	To store, handle, use, or display	20.15.7.2
Cellulose nitrate plastic	To store or handle more than 25 lb (11.3 kg)	43.1.1.4



<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u>
		<u>Section Number</u>
	jurisdiction	
Drycleaning plants	To engage in business of drycleaning or to change to a more hazardous cleaning solvent	24.2
Dust-producing operations	To operate a grain elevator, flour mill, starch mill, feed mill, or plant pulverizing aluminum, coal, cocoa, magnesium, spices, sugar, or other similar combustible material	40.2
Energy storage systems, including battery stationary storage systems and including capacitor energy storage systems	To install and operate energy storage systems exceeding Table 52.2. 1 and Table 52.3 of NFPA 855 .4	52.1.2 3
Exhibit and trade shows	For operation of all exhibits and trade shows held within a jurisdiction	20.1.5.5.1
Explosives	1. Manufacture, sell, dispose, purchase, storage, use, possess, or transport of explosives within the jurisdiction	65.9.2
		2. For additional permit requirements for blasting operations, see 65.9.2
Fire alarm and detection systems and related equipment	For installation, modification, or removal from service of any fire alarm and detection systems and related equipment*	13.1.1.1
Fire apparatus access roads	For the construction of a fire apparatus access road	18.1.2
Fire hydrants and water-control valves	To use a fire hydrant or operate a water-control valve intended for fire suppression purposes	13.1.1.1
Fire pumps and related equipment	For installation of, modification to, or removal from service of any fire pumps, jockey pumps, controllers, and generators*	13.1.1.1
Flame effects	Use of flame effects before an audience	65.4.2
Flammable and combustible liquids	1. To use or operate, repair, or modify a pipeline for the on-site transportation of flammable or combustible liquids	66.1.5

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u>
		<u>Section Number</u>
		2. To store, handle, or use Class I liquids in excess of 5 gal (18.9 L) in a building or in excess of 10 gal (37.9 L) outside of a building
		<i>Exception to item (2): A permit is not required for the following:</i>
		(a) <i>The storage or use of Class I liquids in the fuel tank of a motor vehicle, aircraft, motorboat, mobile power plant, or mobile heating plant unless such storage in the opinion of the chief would cause an unsafe condition</i>
		(b) <i>The storage or use of paints, oils, varnishes, or similar flammable mixtures when such liquids are stored for maintenance, painting, or similar purposes for a period of not more than 30 days</i>
		3. To store, handle, or use Class II or Class III-A liquids in excess of 25 gal (94.6 L) in a building or in excess of 60 gal (227.1 L) outside a building
		<i>Exception to item (3): Fuel oil used in connection with oil-burning equipment</i>
		4. To remove Class I or Class II liquids from an underground storage tank used for fueling motor vehicles by any means other than the approved, stationary on-site pumps normally used for dispensing purposes
		5. To install, construct, alter, or operate tank vehicles, equipment, tanks, plants, terminals, wells, fuel-dispensing stations, refineries, distilleries, and similar facilities where flammable and combustible liquids are produced, processed, transported, stored, dispensed, or used
		6. To install, alter, clean, repair, line with a protective coating, remove, abandon, place temporarily out of service, or otherwise dispose of a flammable or combustible liquid

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
		tank
	7. To change the type of contents stored in a flammable or combustible liquid tank to a material other than those for which the tank was designed and constructed	
Fruit ripening	To operate a fruit-ripening process	63.1.2
General storage	To store materials indoors or outdoors, representing a broad range of combustibles, including plastics, rubber tires, and roll paper	34.1.2
Grandstands, bleachers, and folding and telescopic seating	For construction, location, erection, or placement of grandstands, bleachers, and folding and telescopic seating	25.1.2
Hazardous materials	1. To store, transport on site, dispense, use, or handle hazardous materials in excess of the amounts listed in Table 1.12.8(d)  2. To install, repair, abandon, remove, place temporarily out of service, close, or substantially modify a storage facility or other area regulated by Chapter 60 when the hazardous materials in use or storage exceed the amounts listed in Table 1.12.8(d)	Chapter 60
High-piled combustible storage	To use any building or portion thereof as a high-piled storage area exceeding 500 ft <sup>2</sup> (46.45 m <sup>2</sup> )	20.15.8.2
High-powered rocketry	For the manufacture, sale, and use of high-powered rocketry	65.8.2; 65.7.2
Hot work operations	To conduct hot work	17.3.2; 41.1.5; 41.3.4
Industrial ovens and furnaces	For operation of industrial ovens and furnaces covered by Chapter 51	51.1.2
Laboratories	For construction, alteration, or operation	26.3
Liquefied petroleum gases	1. To store, use, handle, or dispense LP-Gas of 125 gal (0.5 m <sup>3</sup> ) (water capacity) aggregate capacity or greater  2. To install or modify LP-Gas systems	42.11.2.2.4  69.1.2

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u>
		<u>Section Number</u>
Liquid- or gas-fueled vehicles	To display, compete, or demonstrate liquid- or gas-fueled vehicles or equipment in assembly buildings	20.1.5.5.1
Lumberyards and woodworking plants	For storage of lumber exceeding 100,000 board ft	31.2
Cannabis growing, processing, or extraction facilities	For the construction, alteration, or operation of a cannabis growing, processing, or extraction facility	38.2
Marine craft fuel servicing	To provide marine craft fuel servicing	42.9.1.4
Means of egress	For the modification of a means of egress system in an existing building	1.7.11.6
Membrane structures, tents, and canopies — permanent	For construction, location, erection, or placement	25.1.2
Membrane structures, tents, and canopies — temporary	To erect or operate an air-supported temporary membrane structure or tent having an area in excess of 200 ft <sup>2</sup> (18.6 m <sup>2</sup> ) or a canopy in excess of 400 ft <sup>2</sup> (37.2 m <sup>2</sup> ) <i>Exception: Temporary membrane structures, tents, or canopy structures used exclusively for camping.</i>	25.1.2
Mobile cooking operations	To conduct mobile cooking operations	50.7
Motion picture and television production studio soundstages and approved production facilities	To design, construct, operate, and maintain soundstages and approved production facilities used in motion picture and television industry productions	32.2
Oil- and gas-fueled heating appliances	To install oil- and gas-fired heating appliances	11.5.1.8
On-demand mobile fueling	To conduct on-demand mobile fueling operations	42.12
Open burning	1. To conduct open burning	10.11.1 2. For additional permit requirements for open burning, see 10.11.1
Open fires	1. For kindling or maintaining an open fire	10.11.1 2. For additional permit requirements for open fires, see 10.11.4†

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Organic coatings	For operation and maintenance of a facility that manufactures organic coatings	43.1.1.4
Organic peroxide formulations	To store, transport on site, use, or handle materials in excess of amounts listed in Tables 1.12.8(c) and (d)	Chapter 75
Outside storage of tires	To store more than 500 tires outside	33.1.2
Oxidizers	To store, transport on site, use, or handle materials in excess of amounts listed in Tables 1.12.8(c) and (d)	Chapter 70
Parade floats	To use a parade float for public performance, presentation, spectacle, entertainment, or parade	10.17.1
Places of assembly	To operate a place of assembly	10.15.1; 20.1.1.1
Pyrotechnic articles	For the manufacture, storage, sale, or use of pyrotechnic articles within the jurisdiction	65.2.3; 65.3.3; 65.5.2
Pyrotechnics before a proximate audience	For the display and use of pyrotechnic materials before a proximate audience	65.3.3
Pyroxylin plastics	For storage, handling, assembly, or manufacture of pyroxylin plastics	43.1.1.4
Private fire hydrants	For installation, modification, or removal from service of any private fire hydrants	13.1.1.1
Refrigeration equipment	To install or operate a mechanical refrigeration unit or system regulated by this Code	53.1.3
Repair garages and service stations	For operation of service stations and repair garages	30.1.1.3; 30.2.1.1
Rocketry manufacturing	For the manufacture of model rocket motors	65.7.2
Rooftop heliports	For construction, modification, or operation of a rooftop heliport	21.3.2.1
Solvent extraction	For storage, use, and handling	44.3
Spraying or dipping of flammable finish	For installation or modification of any spray room, spray booth, or preparation work station, or to conduct a spraying or dipping operation	43.1.1.4

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
	utilizing flammable or combustible liquids or powder coating	
Standpipe systems	For installation, modification, or removal from service of any standpipe system*	13.1.1.1
Special outdoor events	For the location and operation of special outdoor events	10.15.1
Tar kettles	To place a tar kettle, a permit must be obtained prior to the placement of a tar kettle	16.7.1.2; 17.3.2
Tire storage	To use an open area or portion thereof to store tires in excess of 500 tires	33.1.2; 34.1.2
Torch-applied roofing operation	For the use of a torch for application of roofing materials	16.6.1
Water supply system for fire flow	For the construction of a water supply system for fire flow	18.1.2
Wildland-fire-prone areas	For use of hazardous areas within fire-prone areas	17.3.2
Wood products	To store wood chips, hogged material, wood by-products, lumber, or plywood in excess of 200 ft <sup>3</sup> (5.7 m <sup>3</sup> )	31.2

\*Maintenance performed in accordance with this *Code* is not considered a modification and does not require a permit.

†Cooking and recreational fires are exempt and do not require a permit.

Table 1.12.8(b) Permit Amounts for Compressed Gases

<u>Type of Gas</u>	<u>Amount*</u>	
	<u>ft<sup>3</sup></u>	<u>m<sup>3</sup></u>
Corrosive	200	0.57
Flammable	200	0.57
Highly toxic		Any amount
Inert and simple asphyxiant	6000	169.9
Oxidizing (including oxygen)	504	14.3
Pyrophoric		Any amount
Toxic		Any amount
Unstable (reactive)		Any amount

Note: See Chapters 41, 42, 60, 63, and 69 for additional requirements and exceptions.

\*Cubic feet measured at normal temperature and pressure.

Table 1.12.8(c) Permit Amounts for Cryogens

<u>Type of Cryogen</u>	<u>Inside Building</u>	<u>Outside Building</u>
------------------------	------------------------	-------------------------

	<u>(gal)</u>	<u>(gal)</u>
Corrosive	Over 1	Over 1
Flammable	Over 1	60
Toxic/highly toxic	Over 1	Over 1
Nonflammable	60	500
Oxidizer (includes oxygen)	10	50

Note: See Chapter 63.

Table 1.12.8(d) Permit Amounts for Hazardous Materials

<u>Type of Material</u>	<u>Amount</u>	
	<u>U.S. Unit</u>	<u>Metric Unit</u>
Cellulose nitrate	25 lb	11.3 kg
Combustible fiber	100 ft <sup>3</sup>	2.8 m <sup>3</sup>
Combustible liquids		See Table 1.12.8(a)
Corrosive gases		See Table 1.12.8(b)
Corrosive liquids	55 gal	208 L
Corrosive solids	500 lb	227 kg
Cryogens		See Table 1.12.8(c)
Display fireworks (1.3G)		Any amount
Explosives		Any amount
Flammable gases		See Table 1.12.8(b)
Flammable liquids		See Table 1.12.8(a)
Flammable solids	100 lb	45.4 kg
Highly toxic gases		See Table 1.12.8(b)
Highly toxic liquids		Any amount
Highly toxic solids		Any amount
LP-Gas		See Table 1.12.8(b)
Nitrate film (cellulose)		Any amount
Organic peroxides:		See Table 1.12.8(a)
Class I		Any amount
Class II		Any amount
Class III	10 lb	4.5 kg
Class IV	20 lb	9 kg
Class V		Not required
Unclassified detonable		Any amount
Oxidizing gases		See Table 1.12.8(b)
Oxidizing liquids:		See Table 1.12.8(a)
Class 4		Any amount
Class 3	1 gal	3.8 L
Class 2	10 gal	38 L
Class 1	55 gal	208 L
Oxidizing solids:		See Table 1.12.8(a)
Class 4		Any amount
Class 3	10 lb	4.5 kg

<u>Type of Material</u>	<u>U.S. Unit</u>	<u>Amount</u>
		<u>Metric Unit</u>
Class 2	100 lb	45 kg
Class 1	500 lb	227 kg
Pyrophoric gases		See Table 1.12.8(b)
Pyrophoric liquids		Any amount
Pyrophoric solids		Any amount
Toxic gases		See Table 1.12.8(b)
Toxic liquids	10 gal	38 L
Toxic solids	100 lb	45 kg
Unstable (reactive) gases		See Table 1.12.8(b)
Unstable (reactive) liquids:		
Class 4		Any amount
Class 3		Any amount
Class 2	5 gal	19 L
Class 1	10 gal	38 L
Unstable (reactive) solids:		
Class 4		Any amount
Class 3		Any amount
Class 2	50 lb	22.7 kg
Class 1	100 lb	45 kg
Water reactive liquids:		
Class 3		Any amount
Class 2	5 gal	19 L
Class 1	10 gal	38 L
Water reactive solids:		
Class 3		Any amount
Class 2	50 lb	22.7 kg
Class 1	100 lb	45 kg

Note: See Chapter 60 for additional requirements and exceptions.

## Statement of Problem and Substantiation for Public Input

The references to chapter 52 are not correct as stated. This PI corrects the references and updates the to clarify the distinction between ESS and Stationary Standby Batteries.

## Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<a href="#">Public Input No. 126-NFPA 1-2021 [Chapter 52]</a>	Contains requirements and permitting information for ESS and Stationary Standby Battery Systems
<a href="#">Public Input No. 127-NFPA 1-2021 [New Section after 3.3.268]</a>	Adds definition
<a href="#">Public Input No. 126-NFPA 1-2021 [Chapter 52]</a>	
<a href="#">Public Input No. 127-NFPA 1-2021 [New Section after 3.3.268]</a>	

## Submitter Information Verification

**Submitter Full Name:** Richard Kluge  
**Organization:** Ericsson  
**Affiliation:** Alliance for Telecommunications Industry Solutions (ATIS)  
**Street Address:**  
**City:**  
**State:**  
**Zip:**  
**Submittal Date:** Tue Mar 30 20:27:55 EDT 2021  
**Committee:** FCC-FUN

## Committee Statement

**Resolution:** CI-69-NFPA 1-2021

**Statement:** The TC does not want to take any action until it is clear that these changes will not be in conflict with changes made by the HAZ committee. Due to outstanding PIs and CIs it was determined that this PI should be reconsidered at second draft.



## Public Input No. 32-NFPA 1-2020 [ Section No. 1.12.8 ]

**1.12.8**

Permits shall be required in accordance with Table 1.12.8(a) through Table 1.12.8(d).

Table 1.12.8(a) Permit Requirements

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Additive manufacturing	To conduct industrial additive manufacturing operations	39.1.2
Aerosol products	To store or handle an aggregate quantity of Level 2 or Level 3 aerosol products in excess of 500 lb (226.8 kg)	61.1.2
Aircraft fuel servicing	To provide aircraft fuel servicing	42.10.1.2
Aircraft hangars	For servicing or repairing aircraft	21.1.1
Aircraft refueling vehicles	To operate aircraft refueling vehicles	42.10.1.2
Airport terminal buildings	For construction and alteration	21.2.2.1
Ammonium nitrate	For storage	Chapter 74
Amusement parks	For construction, alteration, or operation of amusement park fire protection safety features	10.15.1
Asbestos removal	For the removal of asbestos	16.8.2
Automatic fire suppression systems	For installation, modification, or removal from service of any automatic fire suppression system*	13.1.1.1; 50.4.2
Automobile wrecking yards	To operate automobile wrecking yards	22.2
Automotive fuel servicing	To provide automotive fuel servicing	42.2.2.1; 42.11.2.2.4; 42.11.3.1
Battery systems	To install or operate stationary lead-acid battery systems having an electrolyte capacity of more than 100 gal (378.5 L) in sprinklered buildings or 50 gal (189.3 L) in nonsprinklered buildings	52.2
Candles, open flames, and portable cooking	To use in connection with assembly areas, dining areas of restaurants, or drinking establishments	17.3.2; 20.1.1.1
Carnivals and fairs	To conduct a carnival or fair	10.15.1
Cellulose nitrate film	To store, handle, use, or display	20.15.7.2
Cellulose nitrate plastic	To store or handle more than 25 lb (11.3 kg)	43.1.1.4

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Change of occupancy	For the change of occupancy classification of an existing building	1.7.11.5
Cleanrooms	For construction, alteration, or operation	23.3
Combustible fibers	For storage or handling of combustible fibers greater than 100 ft <sup>3</sup> (2.8 m <sup>3</sup> )	45.1.3
Combustible material storage	To store more than 2500 ft <sup>3</sup> (70.8 m <sup>3</sup> ) gross volume	10.19.2; 19.1.1; 31.2
Commercial rubbish-handling operation	To operate	19.1.1
Compressed gases	1. To store, use, or handle compressed gases in excess of the amounts listed in Table 1.12.8(b)  2. When the compressed gases in use or storage exceed the amounts listed in Table 1.12.8(b), a permit is required to install, repair damage to, abandon, remove, place temporarily out of service, close, or substantially modify a compressed gas system  3. For additional permit requirements for compressed gases facility closures, see 63.1.2	63.1.2
Construction	For the construction of a building or structure	1.7.11.8
Covered mall buildings	Annual requirement for facilities that utilize mall area for exhibits or displays with four conditions	20.1.5.5.1
Crop maze	To operate a crop maze	10.14.11.1
Cryogens	To produce, store, or handle cryogens in excess of amounts listed in Table 1.12.8(c)	63.1.2  <i>Exception: Where federal or state regulations apply or for fuel systems of a vehicle.</i>
Cutting and welding operation	For operations within a jurisdiction	41.1.5; 41.3.2.2; 41.3.2.2.2
Display fireworks (1.3G)	For possession, transportation, storage, manufacture, sale, handling, and discharge of display fireworks within the jurisdiction	65.2.3; 65.5.2

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Drycleaning plants	To engage in business of drycleaning or to change to a more hazardous cleaning solvent	24.2
Dust-producing operations	To operate a grain elevator, flour mill, starch mill, feed mill, or plant pulverizing aluminum, coal, cocoa, magnesium, spices, sugar, or other similar combustible material	40.2
Energy storage systems, including battery stationary storage systems and capacitor energy storage systems	To install and operate energy storage systems exceeding Table 52.2.1 and Table 52.3.1	52.1.2
Exhibit and trade shows	For operation of all exhibits and trade shows held within a jurisdiction	20.1.5.5.1
Explosives	1. Manufacture, sell, dispose, purchase, storage, use, possess, or transport of explosives within the jurisdiction  -  -  -  -	65.9.2  2. For additional permit requirements for blasting operations, see 65.9.2
Fire alarm and detection systems and related equipment	For installation, modification, or removal from service of any fire alarm and detection systems and related equipment*	13.1.1.1
Fire apparatus access roads	For the construction of a fire apparatus access road	18.1.2
Fire hydrants and water-control valves	To use a fire hydrant or operate a water-control valve intended for fire suppression purposes	13.1.1.1
Fire pumps and related equipment	For installation of, modification to, or removal from service of any fire pumps, jockey pumps, controllers, and generators*	13.1.1.1
Flame effects	Use of flame effects before an audience	65.4.2
Flammable and combustible liquids	1. To use or operate, repair, or modify a pipeline for the on-site transportation of flammable or combustible liquids  -  -	66.1.5  2. To store, handle, or use Class I liquids in excess of 5 gal (18.9 L) in a building or in excess of 10 gal (37.9 L) outside of a building

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
		<i>Exception to item (2): A permit is not required for the following:</i>
		<i>(a) The storage or use of Class I liquids in the fuel tank of a motor vehicle, aircraft, motorboat, mobile power plant, or mobile heating plant unless such storage in the opinion of the chief would cause an unsafe condition</i>
		<i>(b) The storage or use of paints, oils, varnishes, or similar flammable mixtures when such liquids are stored for maintenance, painting, or similar purposes for a period of not more than 30 days</i>
		<i>3. To store, handle, or use Class II or Class III-A liquids in excess of 25 gal (94.6 L) in a building or in excess of 60 gal (227.1 L) outside a building</i>
		<i>Exception to item (3): Fuel oil used in connection with oil-burning equipment</i>
		<i>4. To remove Class I or Class II liquids from an underground storage tank used for fueling motor vehicles by any means other than the approved, stationary on-site pumps normally used for dispensing purposes</i>
		<i>5. To install, construct, alter, or operate tank vehicles, equipment, tanks, plants, terminals, wells, fuel-dispensing stations, refineries, distilleries, and similar facilities where flammable and combustible liquids are produced, processed, transported, stored, dispensed, or used</i>
		<i>6. To install, alter, clean, repair, line with a protective coating, remove, abandon, place temporarily out of service, or otherwise dispose of a flammable or combustible liquid tank</i>
		<i>7. To change the type of contents stored in a flammable or combustible liquid tank to a material other than those for which the tank was designed and constructed</i>
Fruit ripening	To operate a fruit-ripening process	63.1.2

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
General storage	To store materials indoors or outdoors, representing a broad range of combustibles, including plastics, rubber tires, and roll paper	34.1.2
Grandstands, bleachers, and folding and telescopic seating	For construction, location, erection, or placement of grandstands, bleachers, and folding and telescopic seating	25.1.2
Hazardous materials	1. To store, transport on site, dispense, use, or handle hazardous materials in excess of the amounts listed in Table 1.12.8(d)  -  -  -	Chapter 60  2. To install, repair, abandon, remove, place temporarily out of service, close, or substantially modify a storage facility or other area regulated by Chapter 60 when the hazardous materials in use or storage exceed the amounts listed in Table 1.12.8(d)
High-piled combustible storage	To use any building or portion thereof as a high-piled storage area exceeding 500 ft <sup>2</sup> (46.45 m <sup>2</sup> )	20.15.8.2
High-powered rocketry	For the manufacture, sale, and use of high-powered rocketry	65.8.2; 65.7.2
Hot work operations	To conduct hot work	17.3.2; 41.1.5; 41.3.4
Industrial ovens and furnaces	For operation of industrial ovens and furnaces covered by Chapter 51	51.1.2
Laboratories	For construction, alteration, or operation	26.3
Liquefied petroleum gases	1. To store, use, handle, or dispense LP-Gas of 125 gal (0.5 m <sup>3</sup> ) (water capacity) aggregate capacity or greater  -  -	42.11.2.2.4  2. To install or modify LP-Gas systems
Liquid- or gas-fueled vehicles	To display, compete, or demonstrate liquid- or gas-fueled vehicles or equipment in assembly buildings	20.1.5.5.1
Lumberyards and woodworking plants	For storage of lumber exceeding 100,000 board ft	31.2
Cannabis growing, processing, or extraction facilities	For the construction, alteration, or operation of a cannabis growing, processing, or extraction facility	38.2



<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Oxidizers	To store, transport on site, use, or handle materials in excess of amounts listed in Tables 1.12.8(c) and (d)	Chapter 70
Parade floats	To use a parade float for public performance, presentation, spectacle, entertainment, or parade	10.17.1
Places of assembly	To operate a place of assembly	10.15.1; 20.1.1.1
Pyrotechnic articles	For the manufacture, storage, sale, or use of pyrotechnic articles within the jurisdiction	65.2.3; 65.3.3; 65.5.2
Pyrotechnics before a proximate audience	For the display and use of pyrotechnic materials before a proximate audience	65.3.3
Pyroxylin plastics	For storage, handling, assembly, or manufacture of pyroxylin plastics	43.1.1.4
Private fire hydrants	For installation, modification, or removal from service of any private fire hydrants	13.1.1.1
Refrigeration equipment	To install or operate a mechanical refrigeration unit or system regulated by this Code	53.1.3
Repair garages and service stations	For operation of service stations and repair garages	30.1.1.3; 30.2.1.1
Rocketry manufacturing	For the manufacture of model rocket motors	65.7.2
Rooftop heliports	For construction, modification, or operation of a rooftop heliport	21.3.2.1
Solvent extraction	For storage, use, and handling	44.3
Spraying or dipping of flammable finish	For installation or modification of any spray room, spray booth, or preparation work station, or to conduct a spraying or dipping operation utilizing flammable or combustible liquids or powder coating	43.1.1.4
Standpipe systems	For installation, modification, or removal from service of any standpipe system*	13.1.1.1
Special outdoor events	For the location and operation of special outdoor events	10.15.1
Tar kettles	To place a tar kettle, a permit must be obtained prior to the placement of a tar kettle	16.7.1.2; 17.3.2

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Tire storage	To use an open area or portion thereof to store tires in excess of 500 tires	33.1.2; 34.1.2
Torch-applied roofing operation	For the use of a torch for application of roofing materials	16.6.1
Water supply system for fire flow	For the construction of a water supply system for fire flow	18.1.2
Wildland-fire-prone areas	For use of hazardous areas within fire-prone areas	17.3.2
Wood products	To store wood chips, hogged material, wood by-products, lumber, or plywood in excess of 200 ft <sup>3</sup> (5.7 m <sup>3</sup> )	31.2

\*Maintenance performed in accordance with this *Code* is not considered a modification and does not require a permit.

†Cooking and recreational fires are exempt and do not require a permit.

Table 1.12.8(b) Permit Amounts for Compressed Gases

<u>Type of Gas</u>	<u>Amount*</u>	
	<u>ft<sup>3</sup></u>	<u>m<sup>3</sup></u>
Corrosive	200	0.57
Flammable	200	0.57
Highly toxic		Any amount
Inert and simple asphyxiant	6000	169.9
Oxidizing (including oxygen)	504	14.3
Pyrophoric		Any amount
Toxic		Any amount
Unstable (reactive)		Any amount

Note: See Chapters 41, 42, 60, 63, and 69 for additional requirements and exceptions.

\*Cubic feet measured at normal temperature and pressure.

Table 1.12.8(c) Permit Amounts for Cryogens

<u>Type of Cryogen</u>	<u>Inside Building</u>	<u>Outside Building</u>
	<u>(gal)</u>	<u>(gal)</u>
Corrosive	Over 1	Over 1
Flammable	Over 1	60
Toxic/highly toxic	Over 1	Over 1
Nonflammable	60	500
Oxidizer (includes oxygen)	10	50

Note: See Chapter 63.

Table 1.12.8(d) Permit Amounts for Hazardous Materials

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Tire storage	To use an open area or portion thereof to store tires in excess of 500 tires	33.1.2; 34.1.2
Torch-applied roofing operation	For the use of a torch for application of roofing materials	16.6.1
Water supply system for fire flow	For the construction of a water supply system for fire flow	18.1.2
Wildland-fire-prone areas	For use of hazardous areas within fire-prone areas	17.3.2
Wood products	To store wood chips, hogged material, wood by-products, lumber, or plywood in excess of 200 ft <sup>3</sup> (5.7 m <sup>3</sup> )	31.2

Type of Material	U.S. Unit	Metric Unit
Cellulose nitrate	25 lb	11.3 kg
Combustible fiber	100 ft <sup>3</sup>	2.8 m <sup>3</sup>
Combustible liquids		See Table 1.12.8(a)
Corrosive gases		See Table 1.12.8(b)
Corrosive liquids	55 gal	208 L
Corrosive solids	500 lb	227 kg
Cryogens		See Table 1.12.8(c)
Display fireworks (1.3G)		Any amount
Explosives		Any amount
Flammable gases		See Table 1.12.8(b)
Flammable liquids		See Table 1.12.8(a)
Flammable solids	100 lb	45.4 kg
Highly toxic gases		See Table 1.12.8(b)
Highly toxic liquids		Any amount
Highly toxic solids		Any amount
LP-Gas		See Table 1.12.8(b)
Nitrate film (cellulose)		Any amount
Organic peroxides:		See Table 1.12.8(a)
Class I		Any amount
Class II		Any amount
Class III	10 lb	4.5 kg
Class IV	20 lb	9 kg
Class V		Not required
Unclassified detonable		Any amount
Oxidizing gases		See Table 1.12.8(b)
Oxidizing liquids:		See Table 1.12.8(a)
Class 4		Any amount
Class 3	1 gal	3.8 L
Class 2	10 gal	38 L
Class 1	55 gal	208 L
Oxidizing solids:		See Table 1.12.8(a)
Class 4		Any amount
Class 3	10 lb	4.5 kg
Class 2	100 lb	45 kg
Class 1	500 lb	227 kg
Pyrophoric gases		See Table 1.12.8(b)
Pyrophoric liquids		Any amount
Pyrophoric solids		Any amount
Toxic gases		See Table 1.12.8(b)
Toxic liquids	10 gal	38 L
Toxic solids	100 lb	45 kg
Unstable (reactive) gases		See Table 1.12.8(b)
Unstable (reactive) liquids:	-	

Class 4	Any amount	
Class 3	Any amount	
Class 2	5 gal	19 L
Class 1	10 gal	38 L
Unstable (reactive) solids:	-	
Class 4	Any amount	
Class 3	Any amount	
Class 2	50 lb	22.7 kg
Class 1	100 lb	45 kg
Water reactive liquids:	-	
Class 3	Any amount	
Class 2	5 gal	19 L
Class 1	10 gal	38 L
Water reactive solids:	-	
Class 3	Any amount	
Class 2	50 lb	22.7 kg
Class 1	100 lb	45 kg

Note: See Chapter 60 for additional requirements and exceptions.

Under compressed gases add:

4. CO Beverage systems operation

5. Large and small insulated liquid co systems location and operation

## Statement of Problem and Substantiation for Public Input

These hazards should require a permit.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Dec 31 09:09:12 EST 2020

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-70-NFPA 1-2021

**Statement:** This change was made to align with permitting requirements in 63.9.2 to include insulated CO<sub>2</sub> system permitting requirements in Table 1.12.8(a). The language in the PI was not consistent with language in 63.9.2 or permitting requirements for CO<sub>2</sub> systems in Chapter 63.



## Public Input No. 4-NFPA 1-2020 [ Section No. 1.12.8 ]

Add the following to the table:

In-Building Emergency Responder Communications Enhancement Systems To install  
and operate an in-building emergency responder communication enhancement system  
11.10. 1

**1.12.8**

Permits shall be required in accordance with Table 1.12.8(a) through Table 1.12.8(d).

Table 1.12.8(a) Permit Requirements

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Additive manufacturing	To conduct industrial additive manufacturing operations	39.1.2
Aerosol products	To store or handle an aggregate quantity of Level 2 or Level 3 aerosol products in excess of 500 lb (226.8 kg)	61.1.2
Aircraft fuel servicing	To provide aircraft fuel servicing	42.10.1.2
Aircraft hangars	For servicing or repairing aircraft	21.1.1
Aircraft refueling vehicles	To operate aircraft refueling vehicles	42.10.1.2
Airport terminal buildings	For construction and alteration	21.2.2.1
Ammonium nitrate	For storage	Chapter 74
Amusement parks	For construction, alteration, or operation of amusement park fire protection safety features	10.15.1
Asbestos removal	For the removal of asbestos	16.8.2
Automatic fire suppression systems	For installation, modification, or removal from service of any automatic fire suppression system*	13.1.1.1; 50.4.2
Automobile wrecking yards	To operate automobile wrecking yards	22.2
Automotive fuel servicing	To provide automotive fuel servicing	42.2.2.1; 42.11.2.2.4; 42.11.3.1
Battery systems	To install or operate stationary lead-acid battery systems having an electrolyte capacity of more than 100 gal (378.5 L) in sprinklered buildings or 50 gal (189.3 L) in nonsprinklered buildings	52.2
Candles, open flames, and portable cooking	To use in connection with assembly areas, dining areas of restaurants, or drinking establishments	17.3.2; 20.1.1.1
Carnivals and fairs	To conduct a carnival or fair	10.15.1
Cellulose nitrate film	To store, handle, use, or display	20.15.7.2

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Cellulose nitrate plastic	To store or handle more than 25 lb (11.3 kg)	43.1.1.4
Change of occupancy	For the change of occupancy classification of an existing building	1.7.11.5
Cleanrooms	For construction, alteration, or operation	23.3
Combustible fibers	For storage or handling of combustible fibers greater than 100 ft <sup>3</sup> (2.8 m <sup>3</sup> )	45.1.3
Combustible material storage	To store more than 2500 ft <sup>3</sup> (70.8 m <sup>3</sup> ) gross volume	10.19.2; 19.1.1; 31.2
Commercial rubbish-handling operation	To operate	19.1.1
Compressed gases	1. To store, use, or handle compressed gases in excess of the amounts listed in Table 1.12.8(b)  -  -  -	63.1.2  2. When the compressed gases in use or storage exceed the amounts listed in Table 1.12.8(b), a permit is required to install, repair damage to, abandon, remove, place temporarily out of service, close, or substantially modify a compressed gas system  3. For additional permit requirements for compressed gases facility closures, see 63.1.2
Construction	For the construction of a building or structure	1.7.11.8
Covered mall buildings	Annual requirement for facilities that utilize mall area for exhibits or displays with four conditions	20.1.5.5.1
Crop maze	To operate a crop maze	10.14.11.1
Cryogens	To produce, store, or handle cryogens in excess of amounts listed in Table 1.12.8(c)  -	63.1.2  <i>Exception: Where federal or state regulations apply or for fuel systems of a vehicle.</i>
Cutting and welding operation	For operations within a jurisdiction	41.1.5; 41.3.2.2; 41.3.2.2.2
Display fireworks (1.3G)	For possession, transportation, storage, manufacture, sale, handling, and discharge of display fireworks within the jurisdiction	65.2.3; 65.5.2

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u>
		<u>Section Number</u>
Drycleaning plants	To engage in business of drycleaning or to change to a more hazardous cleaning solvent	24.2
Dust-producing operations	To operate a grain elevator, flour mill, starch mill, feed mill, or plant pulverizing aluminum, coal, cocoa, magnesium, spices, sugar, or other similar combustible material	40.2
Energy storage systems, including battery stationary storage systems and capacitor energy storage systems	To install and operate energy storage systems exceeding Table 52.2.1 and Table 52.3.1	52.1.2
Exhibit and trade shows	For operation of all exhibits and trade shows held within a jurisdiction	20.1.5.5.1
Explosives	1. Manufacture, sell, dispose, purchase, storage, use, possess, or transport of explosives within the jurisdiction	65.9.2
	2. For additional permit requirements for blasting operations, see 65.9.2	
Fire alarm and detection systems and related equipment	For installation, modification, or removal from service of any fire alarm and detection systems and related equipment*	13.1.1.1
Fire apparatus access roads	For the construction of a fire apparatus access road	18.1.2
Fire hydrants and water-control valves	To use a fire hydrant or operate a water-control valve intended for fire suppression purposes	13.1.1.1
Fire pumps and related equipment	For installation of, modification to, or removal from service of any fire pumps, jockey pumps, controllers, and generators*	13.1.1.1
Flame effects	Use of flame effects before an audience	65.4.2
Flammable and combustible liquids	1. To use or operate, repair, or modify a pipeline for the on-site transportation of flammable or combustible liquids	66.1.5
	2. To store, handle, or use Class I liquids in excess of 5 gal (18.9 L) in a building or in excess of 10 gal (37.9 L) outside of a building	

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u>
		<p><u>Section Number</u></p> <p><i>Exception to item (2): A permit is not required for the following:</i></p> <p>(a) <i>The storage or use of Class I liquids in the fuel tank of a motor vehicle, aircraft, motorboat, mobile power plant, or mobile heating plant unless such storage in the opinion of the chief would cause an unsafe condition</i></p> <p>(b) <i>The storage or use of paints, oils, varnishes, or similar flammable mixtures when such liquids are stored for maintenance, painting, or similar purposes for a period of not more than 30 days</i></p> <p>3. To store, handle, or use Class II or Class III-A liquids in excess of 25 gal (94.6 L) in a building or in excess of 60 gal (227.1 L) outside a building</p> <p><i>Exception to item (3): Fuel oil used in connection with oil-burning equipment</i></p> <p>4. To remove Class I or Class II liquids from an underground storage tank used for fueling motor vehicles by any means other than the approved, stationary on-site pumps normally used for dispensing purposes</p> <p>5. To install, construct, alter, or operate tank vehicles, equipment, tanks, plants, terminals, wells, fuel-dispensing stations, refineries, distilleries, and similar facilities where flammable and combustible liquids are produced, processed, transported, stored, dispensed, or used</p> <p>6. To install, alter, clean, repair, line with a protective coating, remove, abandon, place temporarily out of service, or otherwise dispose of a flammable or combustible liquid tank</p> <p>7. To change the type of contents stored in a flammable or combustible liquid tank to a material other than those for which the tank was designed and constructed</p>
Fruit ripening	To operate a fruit-ripening process	63.1.2

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
General storage	To store materials indoors or outdoors, representing a broad range of combustibles, including plastics, rubber tires, and roll paper	34.1.2
Grandstands, bleachers, and folding and telescopic seating	For construction, location, erection, or placement of grandstands, bleachers, and folding and telescopic seating	25.1.2
Hazardous materials	1. To store, transport on site, dispense, use, or handle hazardous materials in excess of the amounts listed in Table 1.12.8(d)  -  -  -	Chapter 60  2. To install, repair, abandon, remove, place temporarily out of service, close, or substantially modify a storage facility or other area regulated by Chapter 60 when the hazardous materials in use or storage exceed the amounts listed in Table 1.12.8(d)
High-piled combustible storage	To use any building or portion thereof as a high-piled storage area exceeding 500 ft <sup>2</sup> (46.45 m <sup>2</sup> )	20.15.8.2
High-powered rocketry	For the manufacture, sale, and use of high-powered rocketry	65.8.2; 65.7.2
Hot work operations	To conduct hot work	17.3.2; 41.1.5; 41.3.4
Industrial ovens and furnaces	For operation of industrial ovens and furnaces covered by Chapter 51	51.1.2
Laboratories	For construction, alteration, or operation	26.3
Liquefied petroleum gases	1. To store, use, handle, or dispense LP-Gas of 125 gal (0.5 m <sup>3</sup> ) (water capacity) aggregate capacity or greater  -  -	42.11.2.2.4  2. To install or modify LP-Gas systems
Liquid- or gas-fueled vehicles	To display, compete, or demonstrate liquid- or gas-fueled vehicles or equipment in assembly buildings	20.1.5.5.1
Lumberyards and woodworking plants	For storage of lumber exceeding 100,000 board ft	31.2
Cannabis growing, processing, or extraction facilities	For the construction, alteration, or operation of a cannabis growing, processing, or extraction facility	38.2



<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Oxidizers	To store, transport on site, use, or handle materials in excess of amounts listed in Tables 1.12.8(c) and (d)	Chapter 70
Parade floats	To use a parade float for public performance, presentation, spectacle, entertainment, or parade	10.17.1
Places of assembly	To operate a place of assembly	10.15.1; 20.1.1.1
Pyrotechnic articles	For the manufacture, storage, sale, or use of pyrotechnic articles within the jurisdiction	65.2.3; 65.3.3; 65.5.2
Pyrotechnics before a proximate audience	For the display and use of pyrotechnic materials before a proximate audience	65.3.3
Pyroxylin plastics	For storage, handling, assembly, or manufacture of pyroxylin plastics	43.1.1.4
Private fire hydrants	For installation, modification, or removal from service of any private fire hydrants	13.1.1.1
Refrigeration equipment	To install or operate a mechanical refrigeration unit or system regulated by this Code	53.1.3
Repair garages and service stations	For operation of service stations and repair garages	30.1.1.3; 30.2.1.1
Rocketry manufacturing	For the manufacture of model rocket motors	65.7.2
Rooftop heliports	For construction, modification, or operation of a rooftop heliport	21.3.2.1
Solvent extraction	For storage, use, and handling	44.3
Spraying or dipping of flammable finish	For installation or modification of any spray room, spray booth, or preparation work station, or to conduct a spraying or dipping operation utilizing flammable or combustible liquids or powder coating	43.1.1.4
Standpipe systems	For installation, modification, or removal from service of any standpipe system*	13.1.1.1
Special outdoor events	For the location and operation of special outdoor events	10.15.1
Tar kettles	To place a tar kettle, a permit must be obtained prior to the placement of a tar kettle	16.7.1.2; 17.3.2

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Tire storage	To use an open area or portion thereof to store tires in excess of 500 tires	33.1.2; 34.1.2
Torch-applied roofing operation	For the use of a torch for application of roofing materials	16.6.1
Water supply system for fire flow	For the construction of a water supply system for fire flow	18.1.2
Wildland-fire-prone areas	For use of hazardous areas within fire-prone areas	17.3.2
Wood products	To store wood chips, hogged material, wood by-products, lumber, or plywood in excess of 200 ft <sup>3</sup> (5.7 m <sup>3</sup> )	31.2

\*Maintenance performed in accordance with this *Code* is not considered a modification and does not require a permit.

†Cooking and recreational fires are exempt and do not require a permit.

Table 1.12.8(b) Permit Amounts for Compressed Gases

<u>Type of Gas</u>	<u>Amount*</u>	
	<u>ft<sup>3</sup></u>	<u>m<sup>3</sup></u>
Corrosive	200	0.57
Flammable	200	0.57
Highly toxic		Any amount
Inert and simple asphyxiant	6000	169.9
Oxidizing (including oxygen)	504	14.3
Pyrophoric		Any amount
Toxic		Any amount
Unstable (reactive)		Any amount

Note: See Chapters 41, 42, 60, 63, and 69 for additional requirements and exceptions.

\*Cubic feet measured at normal temperature and pressure.

Table 1.12.8(c) Permit Amounts for Cryogens

<u>Type of Cryogen</u>	<u>Inside Building</u>	<u>Outside Building</u>
	<u>(gal)</u>	<u>(gal)</u>
Corrosive	Over 1	Over 1
Flammable	Over 1	60
Toxic/highly toxic	Over 1	Over 1
Nonflammable	60	500
Oxidizer (includes oxygen)	10	50

Note: See Chapter 63.

Table 1.12.8(d) Permit Amounts for Hazardous Materials

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Tire storage	To use an open area or portion thereof to store tires in excess of 500 tires	33.1.2; 34.1.2
Torch-applied roofing operation	For the use of a torch for application of roofing materials	16.6.1
Water supply system for fire flow	For the construction of a water supply system for fire flow	18.1.2
Wildland-fire-prone areas	For use of hazardous areas within fire-prone areas	17.3.2
Wood products	To store wood chips, hogged material, wood by-products, lumber, or plywood in excess of 200 ft <sup>3</sup> (5.7 m <sup>3</sup> )	31.2

<u>Type of Material</u>	<u>U.S. Unit</u>	<u>Metric Unit</u>
Cellulose nitrate	25 lb	11.3 kg
Combustible fiber	100 ft <sup>3</sup>	2.8 m <sup>3</sup>
Combustible liquids		See Table 1.12.8(a)
Corrosive gases		See Table 1.12.8(b)
Corrosive liquids	55 gal	208 L
Corrosive solids	500 lb	227 kg
Cryogens		See Table 1.12.8(c)
Display fireworks (1.3G)		Any amount
Explosives		Any amount
Flammable gases		See Table 1.12.8(b)
Flammable liquids		See Table 1.12.8(a)
Flammable solids	100 lb	45.4 kg
Highly toxic gases		See Table 1.12.8(b)
Highly toxic liquids		Any amount
Highly toxic solids		Any amount
LP-Gas		See Table 1.12.8(b)
Nitrate film (cellulose)		Any amount
Organic peroxides:		See Table 1.12.8(a)
Class I		Any amount
Class II		Any amount
Class III	10 lb	4.5 kg
Class IV	20 lb	9 kg
Class V		Not required
Unclassified detonable		Any amount
Oxidizing gases		See Table 1.12.8(b)
Oxidizing liquids:		See Table 1.12.8(a)
Class 4		Any amount
Class 3	1 gal	3.8 L
Class 2	10 gal	38 L
Class 1	55 gal	208 L
Oxidizing solids:		See Table 1.12.8(a)
Class 4		Any amount
Class 3	10 lb	4.5 kg
Class 2	100 lb	45 kg
Class 1	500 lb	227 kg
Pyrophoric gases		See Table 1.12.8(b)
Pyrophoric liquids		Any amount
Pyrophoric solids		Any amount
Toxic gases		See Table 1.12.8(b)
Toxic liquids	10 gal	38 L
Toxic solids	100 lb	45 kg
Unstable (reactive) gases		See Table 1.12.8(b)
Unstable (reactive) liquids:	-	

Class 4	Any amount	
Class 3	Any amount	
Class 2	5 gal	19 L
Class 1	10 gal	38 L
Unstable (reactive) solids:	-	
Class 4	Any amount	
Class 3	Any amount	
Class 2	50 lb	22.7 kg
Class 1	100 lb	45 kg
Water reactive liquids:	-	
Class 3	Any amount	
Class 2	5 gal	19 L
Class 1	10 gal	38 L
Water reactive solids:	-	
Class 3	Any amount	
Class 2	50 lb	22.7 kg
Class 1	100 lb	45 kg

Note: See Chapter 60 for additional requirements and exceptions.

## Statement of Problem and Substantiation for Public Input

Section 11.10.1 references section 1.12 but there is no listing of in-building radio communication systems listed in table 1.12.8(a).

## Submitter Information Verification

**Submitter Full Name:** Anthony Apfelbeck

**Organization:** Altamonte Springs Building and Fire Safety Department

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Dec 17 10:23:34 EST 2020

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-71-NFPA 1-2021

**Statement:** Section 11.10.1 provides reference to Table 1.12.8(a), but there are currently no requirements for in-building emergency communication systems in Table 1.12.8.(a), this provides reference to these systems to close the cross-reference loop.



## Public Input No. 95-NFPA 1-2021 [ Section No. 1.12.8 ]

**1.12.8**

Permits shall be required in accordance with Table 1.12.8(a) through Table 1.12.8(d).

Table 1.12.8(a) Permit Requirements

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Additive manufacturing	To conduct industrial additive manufacturing operations	39 46 .1.2
Aerosol products	To store or handle an aggregate quantity of Level 2 or Level 3 aerosol products in excess of 500 lb (226.8 kg)	61.1.2
Aircraft fuel servicing	To provide aircraft fuel servicing	42.10.1.2
Aircraft hangars	For servicing or repairing aircraft	21.1.1
Aircraft refueling vehicles	To operate aircraft refueling vehicles	42.10.1.2
Airport terminal buildings	For construction and alteration	21.2.2.1
Ammonium nitrate	For storage	Chapter 74
Amusement parks	For construction, alteration, or operation of amusement park fire protection safety features	10.15.1
Asbestos removal	For the removal of asbestos	16.8.2
Automatic fire suppression systems	For installation, modification, or removal from service of any automatic fire suppression system*	13.1.1.1; 50.4.2
Automobile wrecking yards	To operate automobile wrecking yards	22.2
Automotive fuel servicing	To provide automotive fuel servicing	42.2.2.1; 42.11.2.2.4; 42.11.3.1
Battery systems	To install or operate stationary lead-acid battery systems having an electrolyte capacity of more than 100 gal (378.5 L) in sprinklered buildings or 50 gal (189.3 L) in nonsprinklered buildings	52.2
Candles, open flames, and portable cooking	To use in connection with assembly areas, dining areas of restaurants, or drinking establishments	17.3.2; 20.1.1.1
Carnivals and fairs	To conduct a carnival or fair	10.15.1
Cellulose nitrate film	To store, handle, use, or display	20.15.7.2
Cellulose nitrate plastic	To store or handle more than 25 lb (11.3 kg)	43.1.1.4

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Change of occupancy	For the change of occupancy classification of an existing building	1.7.11.5
Cleanrooms	For construction, alteration, or operation	23.3
Combustible fibers	For storage or handling of combustible fibers greater than 100 ft <sup>3</sup> (2.8 m <sup>3</sup> )	45.1.3
Combustible material storage	To store more than 2500 ft <sup>3</sup> (70.8 m <sup>3</sup> ) gross volume	10.19.2; 19.1.1; 31.2
Commercial rubbish-handling operation	To operate	19.1.1
Compressed gases	1. To store, use, or handle compressed gases in excess of the amounts listed in Table 1.12.8(b)  2. When the compressed gases in use or storage exceed the amounts listed in Table 1.12.8(b), a permit is required to install, repair damage to, abandon, remove, place temporarily out of service, close, or substantially modify a compressed gas system  3. For additional permit requirements for compressed gases facility closures, see 63.1.2	63.1.2
Construction	For the construction of a building or structure	1.7.11.8
Covered mall buildings	Annual requirement for facilities that utilize mall area for exhibits or displays with four conditions	20.1.5.5.1
Crop maze	To operate a crop maze	10.14.11.1
Cryogens	To produce, store, or handle cryogens in excess of amounts listed in Table 1.12.8(c)	63.1.2  <i>Exception: Where federal or state regulations apply or for fuel systems of a vehicle.</i>
Cutting and welding operation	For operations within a jurisdiction	41.1.5; 41.3.2.2; 41.3.2.2.2
Display fireworks (1.3G)	For possession, transportation, storage, manufacture, sale, handling, and discharge of display fireworks within the jurisdiction	65.2.3; 65.5.2

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u>
		<u>Section Number</u>
Drycleaning plants	To engage in business of drycleaning or to change to a more hazardous cleaning solvent	24.2
Dust-producing operations	To operate a grain elevator, flour mill, starch mill, feed mill, or plant pulverizing aluminum, coal, cocoa, magnesium, spices, sugar, or other similar combustible material	40.2
Energy storage systems, including battery stationary storage systems and capacitor energy storage systems	To install and operate energy storage systems exceeding Table 52.2.1 and Table 52.3.1	52.1.2
Exhibit and trade shows	For operation of all exhibits and trade shows held within a jurisdiction	20.1.5.5.1
Explosives	1. Manufacture, sell, dispose, purchase, storage, use, possess, or transport of explosives within the jurisdiction	65.9.2
		2. For additional permit requirements for blasting operations, see 65.9.2
Fire alarm and detection systems and related equipment	For installation, modification, or removal from service of any fire alarm and detection systems and related equipment*	13.1.1.1
Fire apparatus access roads	For the construction of a fire apparatus access road	18.1.2
Fire hydrants and water-control valves	To use a fire hydrant or operate a water-control valve intended for fire suppression purposes	13.1.1.1
Fire pumps and related equipment	For installation of, modification to, or removal from service of any fire pumps, jockey pumps, controllers, and generators*	13.1.1.1
Flame effects	Use of flame effects before an audience	65.4.2
Flammable and combustible liquids	1. To use or operate, repair, or modify a pipeline for the on-site transportation of flammable or combustible liquids	66.1.5
		2. To store, handle, or use Class I liquids in excess of 5 gal (18.9 L) in a building or in excess of 10 gal (37.9 L) outside of a building

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u>
		<p><u>Section Number</u></p> <p><i>Exception to item (2): A permit is not required for the following:</i></p> <p>(a) <i>The storage or use of Class I liquids in the fuel tank of a motor vehicle, aircraft, motorboat, mobile power plant, or mobile heating plant unless such storage in the opinion of the chief would cause an unsafe condition</i></p> <p>(b) <i>The storage or use of paints, oils, varnishes, or similar flammable mixtures when such liquids are stored for maintenance, painting, or similar purposes for a period of not more than 30 days</i></p> <p>3. To store, handle, or use Class II or Class III-A liquids in excess of 25 gal (94.6 L) in a building or in excess of 60 gal (227.1 L) outside a building</p> <p><i>Exception to item (3): Fuel oil used in connection with oil-burning equipment</i></p> <p>4. To remove Class I or Class II liquids from an underground storage tank used for fueling motor vehicles by any means other than the approved, stationary on-site pumps normally used for dispensing purposes</p> <p>5. To install, construct, alter, or operate tank vehicles, equipment, tanks, plants, terminals, wells, fuel-dispensing stations, refineries, distilleries, and similar facilities where flammable and combustible liquids are produced, processed, transported, stored, dispensed, or used</p> <p>6. To install, alter, clean, repair, line with a protective coating, remove, abandon, place temporarily out of service, or otherwise dispose of a flammable or combustible liquid tank</p> <p>7. To change the type of contents stored in a flammable or combustible liquid tank to a material other than those for which the tank was designed and constructed</p>
Fruit ripening	To operate a fruit-ripening process	63.1.2

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
General storage	To store materials indoors or outdoors, representing a broad range of combustibles, including plastics, rubber tires, and roll paper	34.1.2
Grandstands, bleachers, and folding and telescopic seating	For construction, location, erection, or placement of grandstands, bleachers, and folding and telescopic seating	25.1.2
Hazardous materials	1. To store, transport on site, dispense, use, or handle hazardous materials in excess of the amounts listed in Table 1.12.8(d)  -  -  -	Chapter 60  2. To install, repair, abandon, remove, place temporarily out of service, close, or substantially modify a storage facility or other area regulated by Chapter 60 when the hazardous materials in use or storage exceed the amounts listed in Table 1.12.8(d)
High-piled combustible storage	To use any building or portion thereof as a high-piled storage area exceeding 500 ft <sup>2</sup> (46.45 m <sup>2</sup> )	20.15.8.2
High-powered rocketry	For the manufacture, sale, and use of high-powered rocketry	65.8.2; 65.7.2
Hot work operations	To conduct hot work	17.3.2; 41.1.5; 41.3.4
Industrial ovens and furnaces	For operation of industrial ovens and furnaces covered by Chapter 51	51.1.2
Laboratories	For construction, alteration, or operation	26.3
Liquefied petroleum gases	1. To store, use, handle, or dispense LP-Gas of 125 gal (0.5 m <sup>3</sup> ) (water capacity) aggregate capacity or greater  -  -	42.11.2.2.4  2. To install or modify LP-Gas systems
Liquid- or gas-fueled vehicles	To display, compete, or demonstrate liquid- or gas-fueled vehicles or equipment in assembly buildings	20.1.5.5.1
Lumberyards and woodworking plants	For storage of lumber exceeding 100,000 board ft	31.2
Cannabis growing, processing, or extraction facilities	For the construction, alteration, or operation of a cannabis growing, processing, or extraction facility	38.2

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Marine craft fuel servicing	To provide marine craft fuel servicing	42.9.1.4
Means of egress	For the modification of a means of egress system in an existing building	1.7.11.6
Membrane structures, tents, and canopies — permanent	For construction, location, erection, or placement	25.1.2
Membrane structures, tents, and canopies — temporary	To erect or operate an air-supported temporary membrane structure or tent having an area in excess of 200 ft <sup>2</sup> (18.6 m <sup>2</sup> ) or a canopy in excess of 400 ft <sup>2</sup> (37.2 m <sup>2</sup> ) <i>Exception: Temporary membrane structures, tents, or canopy structures used exclusively for camping.</i>	25.1.2
Mobile cooking operations	To conduct mobile cooking operations	50.7
Motion picture and television production studio soundstages and approved production facilities	To design, construct, operate, and maintain soundstages and approved production facilities used in motion picture and television industry productions	32.2
Oil- and gas-fueled heating appliances	To install oil- and gas-fired heating appliances	11.5.1.8
On-demand mobile fueling	To conduct on-demand mobile fueling operations	42.12
Open burning	1. To conduct open burning	10.11.1
	- 2. For additional permit requirements for open burning, see 10.11.1	
Open fires	1. For kindling or maintaining an open fire	10.11.1
	- 2. For additional permit requirements for open fires, see 10.11.4†	
Organic coatings	For operation and maintenance of a facility that manufactures organic coatings	43.1.1.4
Organic peroxide formulations	To store, transport on site, use, or handle materials in excess of amounts listed in Tables 1.12.8(c) and (d)	Chapter 75
Outside storage of tires	To store more than 500 tires outside	33.1.2

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u> <u>Section Number</u>
Oxidizers	To store, transport on site, use, or handle materials in excess of amounts listed in Tables 1.12.8(c) and (d)	Chapter 70
Parade floats	To use a parade float for public performance, presentation, spectacle, entertainment, or parade	10.17.1
Places of assembly	To operate a place of assembly	10.15.1; 20.1.1.1
Pyrotechnic articles	For the manufacture, storage, sale, or use of pyrotechnic articles within the jurisdiction	65.2.3; 65.3.3; 65.5.2
Pyrotechnics before a proximate audience	For the display and use of pyrotechnic materials before a proximate audience	65.3.3
Pyroxylin plastics	For storage, handling, assembly, or manufacture of pyroxylin plastics	43.1.1.4
Private fire hydrants	For installation, modification, or removal from service of any private fire hydrants	13.1.1.1
Refrigeration equipment	To install or operate a mechanical refrigeration unit or system regulated by this Code	53.1.3
Repair garages and service stations	For operation of service stations and repair garages	30.1.1.3; 30.2.1.1
Rocketry manufacturing	For the manufacture of model rocket motors	65.7.2
Rooftop heliports	For construction, modification, or operation of a rooftop heliport	21.3.2.1
Solvent extraction	For storage, use, and handling	44.3
Spraying or dipping of flammable finish	For installation or modification of any spray room, spray booth, or preparation work station, or to conduct a spraying or dipping operation utilizing flammable or combustible liquids or powder coating	43.1.1.4
Standpipe systems	For installation, modification, or removal from service of any standpipe system*	13.1.1.1
Special outdoor events	For the location and operation of special outdoor events	10.15.1
Tar kettles	To place a tar kettle, a permit must be obtained prior to the placement of a tar kettle	16.7.1.2; 17.3.2

<u>Operations and Materials</u>	<u>Permit Required</u>	<u>Cross Reference</u>
		<u>Section Number</u>
Tire storage	To use an open area or portion thereof to store tires in excess of 500 tires	33.1.2; 34.1.2
Torch-applied roofing operation	For the use of a torch for application of roofing materials	16.6.1
Water supply system for fire flow	For the construction of a water supply system for fire flow	18.1.2
Wildland-fire-prone areas	For use of hazardous areas within fire-prone areas	17.3.2
Wood products	To store wood chips, hogged material, wood by-products, lumber, or plywood in excess of 200 ft <sup>3</sup> (5.7 m <sup>3</sup> )	31.2

\*Maintenance performed in accordance with this *Code* is not considered a modification and does not require a permit.

†Cooking and recreational fires are exempt and do not require a permit.

Table 1.12.8(b) Permit Amounts for Compressed Gases

<u>Type of Gas</u>	<u>Amount*</u>	
	<u>ft<sup>3</sup></u>	<u>m<sup>3</sup></u>
Corrosive	200	0.57
Flammable	200	0.57
Highly toxic		Any amount
Inert and simple asphyxiant	6000	169.9
Oxidizing (including oxygen)	504	14.3
Pyrophoric		Any amount
Toxic		Any amount
Unstable (reactive)		Any amount

Note: See Chapters 41, 42, 60, 63, and 69 for additional requirements and exceptions.

\*Cubic feet measured at normal temperature and pressure.

Table 1.12.8(c) Permit Amounts for Cryogens

<u>Type of Cryogen</u>	<u>Inside Building</u>	<u>Outside Building</u>
	<u>(gal)</u>	<u>(gal)</u>
Corrosive	Over 1	Over 1
Flammable	Over 1	60
Toxic/highly toxic	Over 1	Over 1
Nonflammable	60	500
Oxidizer (includes oxygen)	10	50

Note: See Chapter 63.

Table 1.12.8(d) Permit Amounts for Hazardous Materials

<u>Amount</u>
=

<u>Type of Material</u>	<u>U.S. Unit</u>	<u>Metric Unit</u>
Cellulose nitrate	25 lb	11.3 kg
Combustible fiber	100 ft <sup>3</sup>	2.8 m <sup>3</sup>
Combustible liquids		See Table 1.12.8(a)
Corrosive gases		See Table 1.12.8(b)
Corrosive liquids	55 gal	208 L
Corrosive solids	500 lb	227 kg
Cryogens		See Table 1.12.8(c)
Display fireworks (1.3G)		Any amount
Explosives		Any amount
Flammable gases		See Table 1.12.8(b)
Flammable liquids		See Table 1.12.8(a)
Flammable solids	100 lb	45.4 kg
Highly toxic gases		See Table 1.12.8(b)
Highly toxic liquids		Any amount
Highly toxic solids		Any amount
LP-Gas		See Table 1.12.8(b)
Nitrate film (cellulose)		Any amount
Organic peroxides:		See Table 1.12.8(a)
Class I		Any amount
Class II		Any amount
Class III	10 lb	4.5 kg
Class IV	20 lb	9 kg
Class V		Not required
Unclassified detonable		Any amount
Oxidizing gases		See Table 1.12.8(b)
Oxidizing liquids:		See Table 1.12.8(a)
Class 4		Any amount
Class 3	1 gal	3.8 L
Class 2	10 gal	38 L
Class 1	55 gal	208 L
Oxidizing solids:		See Table 1.12.8(a)
Class 4		Any amount
Class 3	10 lb	4.5 kg
Class 2	100 lb	45 kg
Class 1	500 lb	227 kg
Pyrophoric gases		See Table 1.12.8(b)
Pyrophoric liquids		Any amount
Pyrophoric solids		Any amount
Toxic gases		See Table 1.12.8(b)
Toxic liquids	10 gal	38 L
Toxic solids	100 lb	45 kg
Unstable (reactive) gases		See Table 1.12.8(b)
Unstable (reactive) liquids:	-	

Class 4	Any amount	
Class 3	Any amount	
Class 2	5 gal	19 L
Class 1	10 gal	38 L
Unstable (reactive) solids:	-	
Class 4	Any amount	
Class 3	Any amount	
Class 2	50 lb	22.7 kg
Class 1	100 lb	45 kg
Water reactive liquids:	-	
Class 3	Any amount	
Class 2	5 gal	19 L
Class 1	10 gal	38 L
Water reactive solids:	-	
Class 3	Any amount	
Class 2	50 lb	22.7 kg
Class 1	100 lb	45 kg

Note: See Chapter 60 for additional requirements and exceptions.

## Statement of Problem and Substantiation for Public Input

The correct reference is to chapter 46.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Feb 25 07:43:12 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-72-NFPA 1-2021

**Statement:** This corrects the cross reference to the correct chapter.



## Public Input No. 39-NFPA 1-2021 [ Section No. 1.17 ]

### 1.17\* – Permit Fees.

The AHJ shall be authorized to establish a schedule of fees.

## Statement of Problem and Substantiation for Public Input

This section is titled permit fees, as a user or ahj i would not look in this section. It is better placed in 1.12.

## Related Public Inputs for This Document

### Related Input

[Public Input No. 40-NFPA 1-2021 \[New Section after 1.12.6.14\]](#)

[Public Input No. 40-NFPA 1-2021 \[New Section after 1.12.6.14\]](#)

### Relationship

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

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**Zip:**

**Submittal Date:** Tue Jan 12 07:58:48 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** [FR-65-NFPA 1-2021](#)

**Statement:** The TC does not wish to relocate these requirements as this would limit the AHJ to collecting fees for only permitting. The revised language will allow the AHJ to collect fees for additional activities which may not relate to permits, this is consistent with the current A.1.17.



## Public Input No. 131-NFPA 1-2021 [ Section No. 2.3.19 ]

**2.3.19** UL Publications.

Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

UL 8, *Water Based Agent Fire Extinguishers*, 2016, revised 2020.

UL 9, *Fire Tests of Window Assemblies*, 2009, revised 2020.

UL 10B, *Fire Tests of Door Assemblies*, 2008, revised 2020.

UL 10C, *Positive Pressure Fire Tests of Door Assemblies*, 2016.

UL 25, *Meters for Flammable and Combustible Liquids and LP-Gas*, 2016.

UL 30, *Metal Safety Cans*, 1995, revised 2019.

UL 38, *Manual Signaling Boxes for Fire Alarm Systems*, 2008.

UL 58, *Steel Underground Tanks for Flammable and Combustible Liquids*, 2018, revised 2020.

UL 79, *Power-Operated Pumps for Petroleum Dispensing Products*, 2016, revised 2020.

UL 79A, *Power-Operated Pumps for Gasoline and Gasoline/Ethanol Blends with Nominal Ethanol Concentrations up to 85 Percent (E0–E85)*, 2015- (2016), revised 2020.

UL 80, *Steel Tanks for Oil Burner Fuels and Other Combustible Liquids*, 2007, revised 2019.

UL 87A, *Power-Operated Dispensing Devices for Gasoline and Gasoline/Ethanol Blends with Nominal Ethanol Concentrations up to 85 Percent (E0–E85)*, 2015- (2019), revised 2020.

UL 142, *Steel Aboveground Tanks for Flammable and Combustible Liquids*, 2019, revised 2021.

UL 142A, *Safety for Special Purpose Aboveground Tanks for Specific Flammable or Combustible Liquids*, 2018 2021.

UL 147A, *Nonrefillable (Disposable) Type Fuel Gas Cylinder Assemblies*, 2018, revised 2019.

UL 147B, *Nonrefillable (Disposable) Type Metal Container Assemblies for Butane*, 2016, revised 2019.

UL 154, *Carbon Dioxide Fire Extinguishers*, 2005, revised 2019.

UL 162, *Safety for Foam Equipment and Liquid Concentrates*, 2018.

UL 197, *Commercial Electric Cooking Appliances*, 2010, revised 2020.

UL 263, *Fire Tests of Building Construction and Materials*, 2011, revised 2020.

UL 294, *Access Control System Units*, 2018.

UL 296A, *Waste Oil-Burning Air-Heating Appliances*, 2018.

UL 299, *Dry Chemical Fire Extinguishers*, 2012.

UL 300 CAN/UL/ULC 300, *Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment*, 2019.

UL 305, *Safety Panic Hardware*, 2012.

CAN/ UL 325, *Door, Drapery, Gate, Louver, and Window Operators and Systems*, 2017 2020.

UL 330A, *Outline of Investigation for Hose and Hose Assemblies for Use with Dispensing Devices Dispensing Gasoline and Gasoline/Ethanol Blends with Nominal Ethanol Concentrations up to 85 Percent (E0–E85)*, 2018, revisewd 2020.

UL 340, *Test for Comparative Flammability of Liquids*, 2017.

UL 499, *Electric Heating Appliances*, 2014, revised 2016.

UL 555, *Fire Dampers*, 2006, revised 2020.

UL 555S, *Smoke Dampers*, 2014, revised 2021.

UL 567 CAN/UL/ULC 567, *Emergency Breakaway Fittings, Swivel Connectors and Pipe Connection Fittings for Petroleum Products and LP-Gas*, 2014 2021.

UL 567A, *Emergency Breakaway Fittings, Swivel Connectors and Pipe-Connection Fittings for*

- Gasoline/Ethanol Blends with Nominal Ethanol Concentrations up to 85 Percent (E0–E85), 2015 (2019).*
- UL 626, *Water Fire Extinguishers*, 2005.
- UL 647, *Unvented Kerosene-Fired Room Heaters and Portable Heaters*, 1993.
- UL 710B, *Recirculating Exhaust Systems*, 2011, *revised 2019*.
- UL 711, *Rating and Fire Testing of Fire Extinguishers*, 2018.
- UL 723, *Test for Surface Burning Characteristics of Building Materials*, 2018.
- UL 790, *Test Methods for Fire Tests of Roof Coverings*, 2004, *revised 2018*.
- UL 842 CAN/UL/ULC 842, *Valves for Flammable Fluids*, 2007, 10th edition, 2015.
- UL 842A, *Valves for Gasoline and Gasoline/Ethanol Blends with Nominal Ethanol Concentrations up to 85 Percent (E0–E85)*, 2015 (2019).
- UL 900, *Air Filter Units*, 2015.
- UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III Division 1, Hazardous (Classified) Locations*, 2013, *revised 2019*.
- UL 924, *Emergency Lighting and Power Equipment*, 2016, *revised 2020*.
- UL 971, *Nonmetallic Underground Piping for Flammable Liquids*, 1995.
- UL 1037, *Antitheft Alarms and Devices*, 2016.
- UL 1040, *Fire Test of Insulated Wall Construction*, 1996.
- UL 1278, *Movable and Wall- or Ceiling-Hung Electric Room Heaters*, 2014, *revised 2018 2020*.
- UL 1313, *Nonmetallic Safety Cans for Petroleum Products*, 2015.
- UL 1315, *Metal Waste Paper Containers*, 2017.
- UL 1316 CAN/UL/ULC 1316, *Fibre Reinforced Underground Storage Tanks for Flammable and Combustible Liquids*, 2018.
- UL 1363, *Relocatable Power Taps*, 2018.
- UL 1363A, *Outline of Investigation for Special Purpose Relocatable Power Taps*, 2010.
- UL 1369, *Above Ground Piping for Flammable and Combustible Liquids*, 2018.
- UL 1479, *Fire Tests of Penetration Firestops*, 2015.
- UL 1484, *Residential Gas Detectors*, 2016, *revised 2017*.
- UL 1564, *Industrial Battery Chargers*, 2015, *revised 2020*.
- UL 1573, *Stage and Studio Luminaires and Connector Strips*, 2003, *revised 2019*.
- UL 1640, *Portable Power-Distribution Equipment*, 2016, *revised 2020*.
- UL 1715, *Fire Test of Interior Finish Material*, 1997.
- UL 1803, *Factory Follow-up on Third Party Certified Portable Fire Extinguishers*, 2012.
- CAN/ UL 1973, Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications*, 2018.
- UL 1975, *Fire Tests for Foamed Plastics Used for Decorative Purposes*, 2006.
- UL 1994, *Luminous Egress Path Marking Systems*, 2015, *revised 2020*.
- UL 2011, *Outline of Investigation for Machinery*, 2019 *2020*.
- UL 2034, *Single and Multiple Station Carbon Monoxide Alarms*, 2017, *revised 2018*.
- UL 2075, *Gas and Vapor Detectors and Sensors*, 2013, *revised 2018*.
- UL 2079, *Tests for Fire Resistance of Building Joint Systems*, 2015, *revised 2020*.
- UL 2080, *Fire Resistant Tanks for Flammable and Combustible Liquids*, 2000.

UL 2085, *Protected Aboveground Tanks for Flammable and Combustible Liquids*, 1997.

UL 2129, *Halocarbon Clean Agent Fire Extinguishers*, 2017.

UL 2208, *Solvent Distillation Units*, 2010, revised 2020.

UL 2245, *Below-Grade Vaults for Flammable Liquid Storage Tanks*, 2006.

CAN/ UL/ULC 2258, *Aboveground Nonmetallic Tanks for Fuel Oil and Other Combustible Liquids*, 2018.

UL 2358, *Outline of Investigation for Fire Tests of Pre-Lit Artificial Seasonal Use Trees and Other Seasonal Decorative Items*, 2013.

UL 2368, *Fire Exposure Testing of Rigid Nonmetallic and Composite Nonmetallic Intermediate Bulk Containers for Flammable and Combustible Liquids*, 2012.

CAN/ UL 2524, *In-building 2-Way Emergency Radio Communication Enhancement Systems*, 2019.

UL 2586 CAN/UL/ULC 2586, *Hose Nozzle Valves*, 2011 2021.

UL 3400, *Outline of Investigation for Additive Manufacturing Facility Safety Management*, 2017.

UL 2586A, *Hose Nozzle Valves for Gasoline and Gasoline/Ethanol Blends with Nominal Ethanol Concentrations up to 85 Percent (E0–E85)*, 2015 (2019).

CAN/ UL 9540, *Energy Storage Systems and Equipment*, 2016 2020.

UL 60950-1, *Information Technology Equipment — Safety — Part 1: General Requirements*, 2007, revised 2019.

UL 62368-1, *Audio/Video, Information and Communication Technology Equipment — Part 1: Safety Requirements*, 2014 2019.

## Statement of Problem and Substantiation for Public Input

This is an update of the UL reference standards used in Chapter 2 of NFPA 1.

## Submitter Information Verification

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Wed Mar 31 13:53:38 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** Reference documents will be updated at second draft. See CI-37.



## Public Input No. 132-NFPA 1-2021 [ Section No. 2.3.20 ]

### 2.3.20 ULC Publications.

ULC Standards, 171 Nepean Street, Suite 400, Ottawa, ON K2P 0B4, Canada.

CAN/ULC-S503, *Carbon-Dioxide Fire Extinguishers, 2005* 2018.

CAN/ULC-S504, *Dry Chemical Fire Extinguishers, 2012* 2018.

CAN/ULC-S507, *Water Fire Extinguishers, 2005* 2018.

CAN/ULC-S508, *Rating and Testing of Fire Extinguishers, 2018*.

CAN/ULC-S512, *Halogenated Agent Hand and Wheeled Fire Extinguishers, 2005*.

CAN/ULC-S554, *Water Based Agent Fire Extinguishers, 2016*.

CAN/ULC-S566, *Halocarbon Clean Agent Fire Extinguishers, 2017*.

## Statement of Problem and Substantiation for Public Input

This is an update of the CAN/ULC reference standards used in Chapter 2 of NFPA 1.

## Submitter Information Verification

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Wed Mar 31 14:11:27 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** Reference documents will be updated at second draft. See CI-37.



## Public Input No. 158-NFPA 1-2021 [ New Section after 3.3 ]

### 3.3.XXX Modular Room

An occupiable prefabricated structure, consisting of walls and a ceiling, with or without an integrated floor, designed and intended for use as an office or privacy space, which may include integral electrical wiring, ventilation, and furnishings.

### 3.3.XXX Sleep Pod

A modular room that is designed and used for sleeping purposes.

## Statement of Problem and Substantiation for Public Input

These definitions in chapter 3 are part of a new section proposed for chapter 10. Upon approval from the TC, please add them to chapter 3.

## Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<a href="#">Public Input No. 159-NFPA 1-2021 [New Section after 10.20.1.5]</a>	

## Submitter Information Verification

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Apr 01 14:49:57 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** [CI-108-NFPA 1-2021](#)

**Statement:** Modular rooms and sleep pods are becoming increasingly popular, and are showing up in a variety of different occupancies. This proposal provides a means for AHJs to approve these installations and allow the use of these prefabricated structures.

This proposal treats modular rooms and sleep pods, such as those shown in the attached pictures, as products that can be installed in a building, and not as building construction, while not losing applicable code requirements. The proposal covers:

Section 10.21.1 places limitations on the size of modular rooms and sleep pods that are more appropriate for listed products. Modular rooms and sleep pods that exceed these size limitations will not fall under Section 10.21, and will be addressed with other fire, building and life safety code requirements, including those regulating internal wiring, lighting, and other construction.

Section 10.21.2 - The UL 962 listing covers the fabrication and safety of the modular room. UL 962 includes requirements for insulation, finish materials, internal wiring, lighting, ventilation, and other construction features. Markings are to be provided on the listed products to document the interior finish and foamed plastics ratings, such as the ASTM E84 (UL 723) and UL 1975.

Section 10.21.3 allows the AHJ to approve the installation locations, to make sure the means of egress is not compromised and other code requirements are not adversely impacted.

Section 10.21.4 addresses potential tripping hazards, and is based on Section 3.1.3, Item D in ICC ES AC519, "Enclosed Booths for Installation Inside New and Existing Buildings".

Section 10.21.5 includes additional requirements that are applicable to sleep pods, a type of modular room that are showing up in occupancies such as airports and office buildings. The proposal provides protection for these products by requiring the room or space in which they are installed to be provided with fire suppression and fire detection, smoke alarms in the units, and addresses multiple sleep pod installations.

These come in a variety of forms. For some examples see these links:  
<https://www.sleepinginairports.net/blog/airport-sleeping-pods.htm>

<https://www.aviationpros.com/airports/press-release/12339876/dubai-airports-airport-sleep-lounge-sleep-n-fly-opens-at-dxb>

<https://www.flightcentre.com.au/travel-news/destinations/airport-sleeping-options>

<https://www.pinterest.com/pin/340584790540317201/>

<https://dickinsonstatenews.com/dickinson-state-is-making-life-a-little-easier-for-parents-of-young-children/>



## Public Input No. 160-NFPA 1-2021 [ New Section after 3.3 ]

**3.3.XXX Micromobility Device, Powered \*** Motorized bicycles, motorized scooters and other personal transportation devices powered by lithium-ion or lithium metal batteries.

**A.3.3.XXX Micromobility Device, Powered.** These devices are not intended to include motor vehicles that are required to be registered with the Department of Motor Vehicles for the state or jurisdiction.

### Statement of Problem and Substantiation for Public Input

These definitions relate to the new powered micromobility device section being proposed.

### Submitter Information Verification

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Apr 01 14:57:24 EDT 2021

**Committee:** FCC-FUN

### Committee Statement

**Resolution:** CI-109-NFPA 1-2021

**Statement:** The committee recognizes the potential hazards of micromobility devices but has additional concerns regarding these devices. A task group has been formed to address the following additional concerns: what types of devices are included and excluded from the definitions such as motorized grocery carts (review referenced standards), requirements for means of egress restrictions, address NFPA manual of style issues.

There has been a significant increase in the use of lithium battery powered micromobility devices & portable power packs in the past few years. The improper charging of these devices, especially those that have not been listed to an appropriate safety standard, has resulted in numerous fire incidents involving thermal runaway of the lithium-ion batteries. This proposal sets reasonable safety requirements to mitigate the hazards associated with the charging of these lithium battery powered devices.

The threshold for this section is the charging of more than five powered micromobility device and/or portable power packs. This section does not regulate the charging of a few individually owned devices for personal use. It does cover facilities where a much larger number of powered micromobility devices are charged. It also covers charging in and within 10 ft. of buildings or structures.

Increased use of these devices commercially has created a cottage industry of individuals being compensated for charging large numbers of these devices overnight.

The proper use of listed powered micromobility devices, portable power packs, and compatible chargers will reduce the fire incidents that have occurred with nonlisted or incompatible charging arrangements.

Add UL 2272 and UL 2849 to chapter 2 references provided the TC approves the proposal.



## Public Input No. 53-NFPA 1-2021 [ New Section after 3.3.221 ]

### Insert and renumber the remaining:

3.3.221 Pre-Incident Plan. A document developed by gathering general and detailed data that is used by responding personnel in effectively managing emergencies for the protection of occupants, responding personnel, property, and the environment.

## Statement of Problem and Substantiation for Public Input

The definition is extracted from NFPA 1620 and is PI #1.

## Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<a href="#">Public Input No. 1-NFPA 1-2020 [New Section after 1.9.4]</a>	
<a href="#">Public Input No. 1-NFPA 1-2020 [New Section after 1.9.4]</a>	

## Submitter Information Verification

**Submitter Full Name:** Anthony Apfelbeck

**Organization:** Altamonte Springs Building and Fire Safety Department

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Mon Feb 08 11:01:22 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** [FR-62-NFPA 1-2021](#)

**Statement:** The definition is extracted from NFPA 1620 and the term was added in FR-61.

FCC-FUN requests that the FCC-AAC assigns this definition of FCC-FUN.



## Public Input No. 119-NFPA 1-2021 [ New Section after 4.5.8.7 ]

### TITLE OF NEW CONTENT

NFPA 1

4.5.8.8\*

Where approved, remote inspections shall be permitted in accordance with NFPA 915.

A.4.5.8.8

While remote inspection methodologies have existed for several years, recent world events and technological improvements have elevated interest in both its current application and future potential. NFPA 915, Standard for Remote Inspections, provides both mandatory requirements and enhanced guidance on this topic. Jurisdictions, building owners and other interested parties should carefully consider potential uses of remote inspection to ensure that those performed are comparable to, or exceed that, of a traditional in-person inspection.

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### Statement of Problem and Substantiation for Public Input

4.5.8.8\*

Remote inspections shall be permitted where approved by the authority having jurisdiction.

A.4.5.8.8

While remote inspection methodologies have existed for several years, recent world events and technological improvements have elevated interest in both its current application and future potential. NFPA 915, Standard for Remote Inspections, provides both mandatory requirements and enhanced guidance on this topic. Jurisdictions, building owners and other interested parties should carefully consider potential uses of remote inspection to ensure that those performed are comparable to, or exceed that, of a traditional in-person inspection.

### Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 120-NFPA 1-2021 [New Section after A.4.5.8.5]</u>	

### Submitter Information Verification

**Submitter Full Name:** Jim Muir

**Organization:** Clark County, Washington Building Safety

**Affiliation:** Chair NFPA 915 Committee

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Tue Mar 30 17:31:00 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** CI-55-NFPA 1-2021

**Statement:** The committee would like review the possibility of adding references to NFPA 915, but at the time of the first draft meeting the document was not available. The committee will reconsider these PIs at second draft based on the availability of the NFPA 915 document.



## Public Input No. 114-NFPA 1-2021 [ New Section after 10.2 ]

### TITLE OF NEW CONTENT

Type your content here ...

PI to add FLSD to 10.2 sections & new annex section to A.10.2.1

### 10.2 Owner/Occupant Responsibilities.

#### 10.2.1 \*

The owner, operator, facilities fire and life safety director, or occupant shall be responsible for compliance with this Code.

##### A.10.2.1

NFPA 1082 provide s the profession al qualifications for facilities fire and life safety directors.

#### 10.2.2

The owner, operator, facilities fire and life safety director, or occupant of a building shall notify the AHJ prior to a change of occupancy as specified in 4.5.7 and 10.3.4.

#### 10.2.3

The AHJ shall be permitted to require the owner, operator, facilities fire and life safety director, or occupant to provide tests or test reports, without expense to the AHJ, as proof of compliance with the intent of this Code.

#### 10.2.4

The owner, operator, facilities fire and life safety director, or occupant of a building that is deemed unsafe by the AHJ shall abate, through corrective action approved by the AHJ, the condition causing the building to be unsafe either by repair, rehabilitation, demolition, or other corrective action approved by the AHJ.

#### 10.2.5

The owner, operator, facilities fire and life safety director, or occupant, or any person in control of a building or premises shall keep records of all maintenance, inspections, and testing of fire protection systems, fire alarm systems, smoke control systems, emergency evacuation and relocation drills, emergency action plans, emergency power, elevators, and other equipment as required by the AHJ.

## Statement of Problem and Substantiation for Public Input

The NFPA Technical Committee on Building Fire and Life Safety directors have drafted a new standard, NFPA 1082, Standard for Facilities Fire and Life Safety Director Professional Qualifications. This newly formed title plays an important role in the fire and life safety of buildings including the maintenance and continued operation of building fire and life safety systems. In buildings with a facilities fire and life safety director, they will manage multiple aspects of building fire and life safety and work closely with the AHJ to ensure the safety of building occupants and emergency responders during both daily operations and all-hazard emergencies.

This public input has been submitted by a task group formed by the Building Fire and Life Safety Directors technical committee.

## Submitter Information Verification

**Submitter Full Name:** Barry Greive

**Organization:** Target Corporation

**Affiliation:** Target Corporation

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Mar 25 11:59:48 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** This section is specific to owner/occupant responsibility and could potentially water down the responsibilities of the owner. The facilities fire and life safety director may not have the authority to solicit resources to make changes to comply with this section. Section 10.5 or 10.8 might be a more appropriate location to include responsibilities for the FLSD.



## Public Input No. 45-NFPA 1-2021 [ Section No. 10.4.4 ]

### 10.4.4

For non-fire incidents, persons shall not fail to comply with actions required by an emergency action plan when a mass notification or other emergency notification signal or message is activated.

## Statement of Problem and Substantiation for Public Input

Some mass notification systems send a message through email, text or voice included to make sure they take action when a message is received.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Mon Feb 08 10:15:39 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** The definition of signal in NFPA 72 would include a message and all notification means outlined in the submitter's substantiation, multiple of which are extracted into NFPA 1. The addition of the word message is redundant and unnecessary.



## Public Input No. 46-NFPA 1-2021 [ Section No. 10.8 ]

move to after 10.5.

### **10.8** Emergency Action Plans.

#### **10.8.1** Where Required.

Emergency action plans shall be provided for high-rise, health care, ambulatory health care, residential board and care, assembly, day-care centers, special amusement buildings, hotels and dormitories, detention and correctional occupancies, educational, underground and windowless structures, facilities storing or handling materials covered by Chapter 60, or where required by the AHJ.

#### **10.8.2** Plan Requirements.

##### **10.8.2.1\***

Emergency action plans shall include the following:

- (1) Procedures for reporting of emergencies
- (2) Occupant and staff response to emergencies
- (3)\* Evacuation, relocation and shelter-in-place procedures appropriate to the building, its occupancy, emergencies, and hazards
- (4) Appropriateness of the use of elevators
- (5) Design and conduct of fire drills
- (6) Type and coverage of building fire protection systems
- (7) Other items required by the AHJ

[101:4.8.2.1]

##### **10.8.2.2**

Emergency action plans shall be submitted to the AHJ for review when required by the AHJ.

##### **10.8.2.3\***

Emergency action plans shall be reviewed and updated as required by the AHJ. [101:4.8.2.3]

## **Statement of Problem and Substantiation for Public Input**

10.8 should be moved to after 10.5 fire drills. it is currently located after tampering with fp equip and reporting fires. Fire drills and emergency action plans go hand in hand.

## **Submitter Information Verification**

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Mon Feb 08 10:18:04 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-67-NFPA 1-2021

**Statement:** The committee believes that this section was more appropriate as 10.4 and this move aligns with the submitter's original intent of locating emergency action plans adjacent to similar topics.



## Public Input No. 113-NFPA 1-2021 [ New Section after 10.8.1 ]

### TITLE OF NEW CONTENT

Type your content here ...

### [ NEW ] 10.8.2

For facilities over 500 occupants, emergency action plans shall be permitted to comply with NFPA 2800.

## Statement of Problem and Substantiation for Public Input

Statement: The NFPA Technical Committee on Building Fire and Life Safety directors have drafted a new standard, NFPA 2800, Standard on Facility Emergency Action Plans. This new standard incorporates and expands on the criteria in section 10.8.2 for emergency action plans. It meets the minimum requirements for emergency action plans in 10.8.2. It is a comprehensive standard that addresses risk assessment, emergency response, occupant communication, post-event analysis, training, drills, exercises, education, and documentation. This language will allow for the use of NFPA 2800 in lieu of meeting the prescriptive requirements in 10.8.2.1, while not mandating the use of the document.

This public input has been submitted by a task group formed by the Building Fire and Life Safety Directors technical committee.

## Submitter Information Verification

**Submitter Full Name:** Barry Greive

**Organization:** Target Corporation

**Affiliation:** Target Corporation

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Mar 25 11:51:26 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** This PI should be addressed in NFPA 101. The committee does not feel comfortable adding reference to a document that is not published.



## Public Input No. 108-NFPA 1-2021 [ Section No. 10.10.6 ]

### 10.10.6 Cooking Equipment.

#### 10.10.6.1

**Fuel Fired Appliances.** For other than one- and two-family dwellings, no hibachi, grill, or other similar devices used using a solid, gas or liquid fuel for cooking, heating, or any other purpose shall be used or kindled on any balcony, under any overhanging portion, or within 10 ft (3 m) of any structure.

**10.10.6.2 Electric Appliances:** In residential occupancies, electrically powered hibachi, grills, or other similar devices listed and labeled in accordance with UL 1026, Standard for Household Electric Cooking and Food Serving Appliances, operated in accordance with its listing and the manufacturer's instructions shall be permitted to be used on any balcony.

#### 10.10.6.3

For other than one-and two-family dwellings, no hibachi, grill, or other similar devices used for cooking shall be stored on a balcony.

#### **10.10.6.3 4\* –**

Listed equipment permanently installed in accordance with its listing, applicable codes, and manufacturer's instructions shall be permitted.

## Statement of Problem and Substantiation for Public Input

This proposal will allow the use of electric powered grills on balconies of buildings other than one- and two-family dwellings. The code has prohibited all grills from balconies in these locations, and the ban on solid, gas, or liquid fueled grills is understood. Listed electric grills offer significant fire safety advantages, specifically no fuel storage, the significant electrical safety features that are required to obtain listing to UL 1026, and the specific non-electrical fire safety required for barbecue grills included in the standard.

It is understood that the prohibition of all grills on balconies has created a difficult situation for code enforcers. Apartment dwellers, like residents of single-family homes, like to grill outdoors in warmer weather. Requiring someone to remove a balcony grill creates an adversarial position that is difficult for both the code enforcer and resident. Unfortunately, there is currently no option the code enforcer can offer. This was addressed in a state that adopts NFPA 1 (Florida) by allowing small electric grills on balconies via a state amendment. Another state (New Hampshire) allows grills on balconies of multi-family buildings.

UL 1026 addresses both the electrical safety and fire safety of electric outdoor grills. The specific fire safety provisions are found in sections 19 (over temperature protection), 41.1.5 (grease container temperature limits), 41.2.3.1 (hamburger testing) and 55.2.4 (specific tests for barbecue grills) including 55.2.4.1 (flare up test). These provisions contemplate fire safety on balconies for these listed electric grills.

## Submitter Information Verification

**Submitter Full Name:** Theodore Lemoff

**Organization:** TLemoff Engineering

**Affiliation:** Char-Broil

**Street Address:**

**City:****State:****Zip:****Submittal Date:** Fri Mar 12 10:39:27 EST 2021**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-68-NFPA 1-2021

**Statement:** This proposal will allow the use of electric powered grills on balconies of buildings other than one- and two-family dwellings. The code has prohibited all grills from balconies in these locations, and the ban on solid, gas, or liquid fueled grills is understood. Listed electric grills offer significant fire safety advantages, specifically no fuel storage, the significant electrical safety features that are required to obtain listing to UL 1026, and the specific non-electrical fire safety required for barbecue grills included in the standard.

It is understood that the prohibition of all grills on balconies has created a difficult situation for code enforcers. Apartment dwellers, like residents of single-family homes, like to grill outdoors in warmer weather. Requiring someone to remove a balcony grill creates an adversarial position that is difficult for both the code enforcer and resident. Unfortunately, there is currently no option the code enforcer can offer. This was addressed in a state that adopts NFPA 1 (Florida) by allowing small electric grills on balconies via a state amendment. Another state (New Hampshire) allows grills on balconies of multi-family buildings.

UL 1026 addresses both the electrical safety and fire safety of electric outdoor grills. The specific fire safety provisions are found in sections 19 (over temperature protection), 41.1.5 (grease container temperature limits), 41.2.3.1 (hamburger testing) and 55.2.4 (specific tests for barbecue grills) including 55.2.4.1 (flare up test). These provisions contemplate fire safety on balconies for these listed electric grills.

Some committee members expressed concerns regarding sprinkler protection, size limitations of grills, ventilation, balcony openness, and allowance for use on spaces in 10.10.16.1.



## Public Input No. 47-NFPA 1-2021 [ Sections 10.11.1.7, 10.11.1.8 ]

**Move to after 10.11.1.2 and renumber the remaining Sections 10.11.1.7, 10.11.1.8**

### **10.11.1.7 3**

Address numbers shall contrast with their background.

### **10.11.1.8 4**

Address numbers shall be arabic numerals or alphabet letters.

## Statement of Problem and Substantiation for Public Input

Moving to after 10.11.1.2 places all the requirements for signs in one place not separated.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Mon Feb 08 10:21:36 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-104-NFPA 1-2021

**Statement:** Moving to after 10.11.1.2 places all the requirements for signs in one place not separated.



## Public Input No. 48-NFPA 1-2021 [ Sections 10.11.3.3, 10.11.3.4 ]

### Sections 10.11.3.3, 10.11.3.4

#### **10.11.3.3 \*** – Stairway Tread Marking.

Where new contrasting marking is applied to stairs, such marking shall comply with all of the following:

- (1) The marking shall include a continuous strip as a coating on, or as a material integral with, the full width of the leading edge of each tread.
- (2) The marking shall include a continuous strip as a coating on, or as a material integral with, the full width of the leading edge of each landing nosing.
- (3) The marking strip width, measured horizontally from the leading vertical edge of the nosing, shall be consistent at all nosings.
- (4) The marking strip width shall be 1 in. to 2 in. (25 mm to 51 mm).

[ 101 : 7.2.2.5.4.3 ]

#### **10.11.3.4 \*** –

Where new contrast marking is provided for stairway handrails, it shall be applied to, or be part of, at least the upper surface of the handrail; have a minimum width of  $\frac{1}{2}$  in. (13 mm); and extend the full length of each handrail. After marking, the handrail shall comply with 7.2.2.4.5 of NFPA 101. Where handrails or handrail extensions bend or turn corners, the stripe shall be permitted to have a gap of not more than 4 in. (100 mm). [ 101 : 7.2.2.5.4.4 ]

## Statement of Problem and Substantiation for Public Input

These sections from 101 are when contrasting markings are required, currently no occupancies require and it does not with this section on stairwell markings. It applies to new construction if needed would be picked up by ref to 101 and building code if needed.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Mon Feb 08 10:25:01 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-105-NFPA 1-2021

**Statement:** These sections from 101 are when contrasting markings are required, currently no occupancies require and it does not with this section on stairwell markings. It applies to new construction if needed would be picked up by ref to 101 and building code if needed.





## Public Input No. 49-NFPA 1-2021 [ Section No. 10.14.9 ]

### 10.14.9 Cooking.

Concession stands utilized for cooking shall have a minimum of 10 ft (3 m) of clearance ~~on two sides~~ from other concession stands and shall not be located within 10 ft (3 m) of amusement rides or devices.

## Statement of Problem and Substantiation for Public Input

I am trying to fix the current language which states minimum 10ft clearance on two sides, which two sides could it be front and back? Needs better clarification on where the min 10 should be.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Mon Feb 08 10:30:24 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** This PI would result in a technical change to the requirements which would have unintended consequences which would not allow concession stands to be placed adjacent to each other. It also does not address the proximity of concession stands to other structures or hazards. It restricts the arrangement of concessions stands that are currently permitted under the previous editions, such as concessions stands that are aligned in a row.



## Public Input No. 93-NFPA 1-2021 [ New Section after 10.15.1.1 ]

**10.15.5.1.1 Where the 20 ft (6.1 m) separation distance is impractical due to lot size or set back requirements, portable and vehicle-mounted generators shall only be operated or refueled outdoors a minimum of 10 ft (3 m) from any building openings, including windows, doors, and air intakes of one- and two-family dwellings when the following are provided.**

**1. Carbon Monoxide alarms installed in accordance with NFPA 72 are providing within the dwelling units.**

**2. A solid barrier 4 ft (1.2 m) high and 8 ft (2.4 m) wide is provided between the generator and the dwelling. The barrier shall contact the ground for the entire 8 ft.**

**3. Exhaust shall be directed away from the dwelling units.**

### Statement of Problem and Substantiation for Public Input

In the 21 edition the 10ft distance was changed to 20ft based on CPSC guidance. The issue is that in many areas of the country the change from 10 to 20ft would prohibit portable generator use due to lot size, etc. The proposed reduction to 10ft is based CO2 in 63.9.14 permitting a wall to reduce the required separation distance. CO2 vapor density is 1.5 where CO is .9 basically neutral. The wall requirement would permit a temporary plywood wall to be placed between the generator and the home to block the exhaust path and disburse the exhaust. The proposed change would give a method to those that cant meet the 20ft distance to still use their generator.

### Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Tue Feb 23 08:13:43 EST 2021

**Committee:** FCC-FUN

### Committee Statement

**Resolution:** The requirements in the public input do not provide data indicating that these measures adequately address the hazards from portable generators. Most of the requirements are already state in the code, with the exception of the barrier. There is no information provided on the construction of the barrier and no data provided which shows the efficacy of the barrier in mitigating the hazards.



## Public Input No. 159-NFPA 1-2021 [ New Section after 10.20.1.5 ]

## **10.21 Modular rooms and sleep pods**

### **10.21.1 General.** The following products shall comply with Section 10.21 :

1. Modular rooms 100 square feet (9.3 m<sup>2</sup>) or less in floor area and 8 feet (2438 mm) or less in height.

2. Sleep pods 36 square feet (3.3 m<sup>2</sup>) or less in floor area, 8 feet (2438 mm) or less in height and 4 feet (1219 mm) or less in width.

10.21.1.1 Modular rooms and sleep pods exceeding the above dimensions shall comply with all applicable requirements of this code, NFPA 101 and the building code.

### **10.21.2 Listing.** Modular rooms and sleep pods shall be listed and labeled in accordance with UL 962 and installed in accordance with the listing and the manufacturer's instructions. Modular rooms and sleep pods shall be marked with the following ratings:

1. Wall and ceiling interior finish ratings as established in accordance with Section 12.5.

2. Plastic material ratings as established in accordance with the building code.

### **10.21.3 Locations.** Modular rooms and sleep pods shall only be installed in approved locations and shall not obstruct any means of egress.

10.21.4 Elevation change. Modular rooms and sleep pods with integral floors shall be permitted to have an elevation change measured from the finished floor that is a maximum of 5 inches (127 mm) higher than the floor of the existing structure outside the modular booth provided a sign is installed on each side of the door warning about the elevation change, and a distinctive marking stripe is installed across the threshold having a width of not less than 1 inch (25 mm) but not more than 2 inches (51 mm).

### **10.21.5 Sleep pods.** The installation of sleep pods shall comply with Sections 10.21.5.1 through 10.21.5.5.

10.21.5.1 Locations. Where approved, sleep pods shall be permitted to be installed in all occupancies. Individual sleep pods exceeding the dimensions in Section 10.21.1 shall be treated as guest rooms and shall only be installed in locations in which guest rooms are allowed.

10.21.5.2 Multiple sleep pod installations. The installation of more than one sleep pod in a room or space shall comply with the following:

1. The area in which sleep pods are installed shall not exceed 10 percent of the building area of the story in which they are located.

2. A maximum of four sleep pods can be located adjacent to each other, and each group of sleep pods shall be separated from other groups by a minimum of 10 feet (3048 mm).

3. Stacking of sleep pods shall only be done in accordance with the manufacturer's instructions and the listing.

10.21.5.2.1 Installations exceeding these limitations shall be permitted based on an approved risk assessment of the installation.

10.21.5.3 Fire suppression. Sleep pods shall be installed in rooms or spaces equipped with an automatic sprinkler system in accordance with NFPA 13.

10.21.5.4 Smoke detection. An automatic smoke detection system shall be provided in the rooms or spaces in which sleep pods are located in accordance with NFPA 72.

**10.21.5.5 Smoke alarms.** Smoke alarms shall be provided in sleep pods in accordance with NFPA 72. Where multiple sleep pods are located in the same room or space, the smoke alarms shall be interconnected in such a manner that the activation of one alarm will activate alarms in all of the sleep pods in the group.

## Statement of Problem and Substantiation for Public Input

Modular rooms and sleep pods are becoming increasingly popular, and are showing up in a variety of different occupancies. This proposal provides a means for AHJs to approve these installations and allow the use of these prefabricated structures.

This proposal treats modular rooms and sleep pods, such as those shown in the attached pictures, as products that can be installed in a building, and not as building construction, while not losing applicable code requirements. The proposal covers:

Section 10.21.1 places limitations on the size of modular rooms and sleep pods that are more appropriate for listed products. Modular rooms and sleep pods that exceed these size limitations will not fall under Section 10.21, and will be addressed with other fire, building and life safety code requirements, including those regulating internal wiring, lighting, and other construction.

Section 10.21.2 - The UL 962 listing covers the fabrication and safety of the modular room. UL 962 includes requirements for insulation, finish materials, internal wiring, lighting, ventilation, and other construction features. Markings are to be provided on the listed products to document the interior finish and foamed plastics ratings, such as the ASTM E84 (UL 723) and UL 1975.

Section 10.21.3 allows the AHJ to approve the installation locations, to make sure the means of egress is not compromised and other code requirements are not adversely impacted.

Section 10.21.4 addresses potential tripping hazards, and is based on Section 3.1.3, Item D in ICC ES AC519, "Enclosed Booths for Installation Inside New and Existing Buildings".

Section 10.21.5 includes additional requirements that are applicable to sleep pods, a type of modular room that are showing up in occupancies such as airports and office buildings. The proposal provides protection for these products by requiring the room or space in which they are installed to be provided with fire suppression and fire detection, smoke alarms in the units, and addresses multiple sleep pod installations.

These come in a variety of forms. For some examples see these links:  
<https://www.sleepinginairports.net/blog/airport-sleeping-pods.htm>

<https://www.aviationpros.com/airports/press-release/12339876/dubai-airports-airport-sleep-lounge-sleep-n-fly-opens-at-dxb>

<https://www.flightcentre.com.au/travel-news/destinations/airport-sleeping-options>

<https://www.pinterest.com/pin/340584790540317201/>

<https://dickinsonstatenews.com/dickinson-state-is-making-life-a-little-easier-for-parents-of-young-children/>

## Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<a href="#">Public Input No. 158-NFPA 1-2021 [New Section after 3.3]</a>	
<a href="#">Public Input No. 161-NFPA 1-2021 [New Section after 10.20.1.5]</a>	

## Submitter Information Verification

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC  
**Street Address:**  
**City:**  
**State:**  
**Zip:**  
**Submittal Date:** Thu Apr 01 14:53:18 EDT 2021  
**Committee:** FCC-FUN

## Committee Statement

**Resolution:** CI-108-NFPA 1-2021

**Statement:** Modular rooms and sleep pods are becoming increasingly popular, and are showing up in a variety of different occupancies. This proposal provides a means for AHJs to approve these installations and allow the use of these prefabricated structures.

This proposal treats modular rooms and sleep pods, such as those shown in the attached pictures, as products that can be installed in a building, and not as building construction, while not losing applicable code requirements. The proposal covers:

Section 10.21.1 places limitations on the size of modular rooms and sleep pods that are more appropriate for listed products. Modular rooms and sleep pods that exceed these size limitations will not fall under Section 10.21, and will be addressed with other fire, building and life safety code requirements, including those regulating internal wiring, lighting, and other construction.

Section 10.21.2 - The UL 962 listing covers the fabrication and safety of the modular room. UL 962 includes requirements for insulation, finish materials, internal wiring, lighting, ventilation, and other construction features. Markings are to be provided on the listed products to document the interior finish and foamed plastics ratings, such as the ASTM E84 (UL 723) and UL 1975.

Section 10.21.3 allows the AHJ to approve the installation locations, to make sure the means of egress is not compromised and other code requirements are not adversely impacted.

Section 10.21.4 addresses potential tripping hazards, and is based on Section 3.1.3, Item D in ICC ES AC519, "Enclosed Booths for Installation Inside New and Existing Buildings".

Section 10.21.5 includes additional requirements that are applicable to sleep pods, a type of modular room that are showing up in occupancies such as airports and office buildings. The proposal provides protection for these products by requiring the room or space in which they are installed to be provided with fire suppression and fire detection, smoke alarms in the units, and addresses multiple sleep pod installations.

These come in a variety of forms. For some examples see these links:  
<https://www.sleepinginairports.net/blog/airport-sleeping-pods.htm>

<https://www.aviationpros.com/airports/press-release/12339876/dubai-airports-airport-sleep-lounge-sleep-n-fly-opens-at-dxb>

<https://www.flightcentre.com.au/travel-news/destinations/airport-sleeping-options>

<https://www.pinterest.com/pin/340584790540317201/>

<https://dickinsonstatenews.com/dickinson-state-is-making-life-a-little-easier-for-parents-of-young-children/>





## Public Input No. 161-NFPA 1-2021 [ New Section after 10.20.1.5 ]

### **10.22 Powered Micromobility Devices**

**10.22.1 General.** Where more than five powered micromobility devices will be charged inside or within 10 feet (3048 mm) of a building or structure, the charging operation shall be in accordance with this section.

**10.22.2 Charging equipment.** Powered micromobility devices shall be charged in accordance with their listing and the manufacturer's instructions using either the original equipment manufacturer-supplied listed charging equipment or listed charging equipment specified in the manufacturer's instructions.

**10.22.3 Listing.** Powered micromobility devices and portable battery packs shall be listed and labeled in accordance with UL 2272, UL 2849, as applicable.

**10.22.4 Battery charging.** Battery charging for powered micromobility devices shall be performed in approved locations in accordance with all of the following:

1. The charging equipment for each device shall be plugged directly into an approved receptacle. Extension cords and relocatable power taps shall not be utilized for connecting charging devices.

2. Storage of combustible materials, combustible waste or hazardous materials shall not be permitted within 3 feet () the charging equipment.

3. The charging operation shall not be located in or obstruct any means of egress.

**2.3.17 UL Publications.** Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

**CAN/UL 2272, Electrical Systems for Personal E-Mobility Devices, 2019**

**CAN/UL 2849, Electrical Systems for eBikes, 2020**

### **Statement of Problem and Substantiation for Public Input**

: There has been a significant increase in the use of lithium battery powered micromobility devices & portable power packs in the past few years. The improper charging of these devices, especially those that have not been listed to an appropriate safety standard, has resulted in numerous fire incidents involving thermal runaway of the lithium-ion batteries. This proposal sets reasonable safety requirements to mitigate the hazards associated with the charging of these lithium battery powered devices.

The threshold for this section is the charging of more than five powered micromobility device and/or portable power packs. This section does not regulate the charging of a few individually owned devices for personal use. It does cover facilities where a much larger number of powered micromobility devices are charged. It also covers charging in and within 10 ft. of buildings or structures.

Increased use of these devices commercially has created a cottage industry of individuals being compensated for charging large numbers of these devices overnight.

The proper use of listed powered micromobility devices, portable power packs, and compatible chargers will reduce the fire incidents that have occurred with nonlisted or incompatible charging arrangements.

Add UL 2272 and UL 2849 to chapter 2 references provided the TC approves the proposal.

## Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<a href="#">Public Input No. 159-NFPA 1-2021 [New Section after 10.20.1.5]</a>	

## Submitter Information Verification

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Apr 01 15:00:15 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** [CI-109-NFPA 1-2021](#)

**Statement:** The committee recognizes the potential hazards of micromobility devices but has additional concerns regarding these devices. A task group has been formed to address the following additional concerns: what types of devices are included and excluded from the definitions such as motorized grocery carts (review referenced standards), requirements for means of egress restrictions, address NFPA manual of style issues.

There has been a significant increase in the use of lithium battery powered micromobility devices & portable power packs in the past few years. The improper charging of these devices, especially those that have not been listed to an appropriate safety standard, has resulted in numerous fire incidents involving thermal runaway of the lithium-ion batteries. This proposal sets reasonable safety requirements to mitigate the hazards associated with the charging of these lithium battery powered devices.

The threshold for this section is the charging of more than five powered micromobility device and/or portable power packs. This section does not regulate the charging of a few individually owned devices for personal use. It does cover facilities where a much larger number of powered micromobility devices are charged. It also covers charging in and within 10 ft. of buildings or structures.

Increased use of these devices commercially has created a cottage industry of individuals being compensated for charging large numbers of these devices overnight.

The proper use of listed powered micromobility devices, portable power packs, and compatible chargers will reduce the fire incidents that have occurred with nonlisted or incompatible charging arrangements.

Add UL 2272 and UL 2849 to chapter 2 references provided the TC approves the proposal.



## Public Input No. 50-NFPA 1-2021 [ Section No. 11.1.2.2 ]

### 11.1.2.2

Unless determined to present an imminent danger, existing electrical wiring, fixtures, appliances, and equipment shall be permitted to be maintained in accordance with the edition of NFPA 70 in effect at the time of the installation.

#### 11.1.2.2.1\*

Where the AHJ determines that there is sufficient evidence that existing electrical wiring, fixtures, appliances, electrical loads or equipment is potentially unsafe, the AHJ is authorized to require an evaluation of the existing electrical wiring, fixtures, appliances, or equipment, or portion thereof, by a qualified person.

#### 11.1.2.2.2

The qualified person shall provide a report to the AHJ with an assessment of the condition of the electrical wiring, fixtures, appliances, electrical loads or equipment along with recommendations for any needed repairs to correct the unsafe condition(s).

## Statement of Problem and Substantiation for Public Input

I think electrical loads should be considered.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Mon Feb 08 10:37:33 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-110-NFPA 1-2021

**Statement:** Electrical loads are an important factor to consider for an AHJ trying to determine if an imminent danger exists or if an existing system is adequate to be used.



## Public Input No. 142-NFPA 1-2021 [ Section No. 11.1.4 ]

### 11.1.4 Relocatable Power Taps.

#### 11.1.4.1

Relocatable power taps shall be listed to UL 1363, *Relocatable Power Taps*, or UL 1363A, *Outline of Investigation for Special Purpose Relocatable Power Taps*, where applicable.

#### 11.1.4.2

The relocatable power taps shall be directly connected to a permanently installed receptacle.

#### 11.1.4.3

Relocatable power tap cords shall not extend through walls, ceilings, or floors; under doors or floor coverings; or be subject to environmental or physical damage.

#### 11.1.4.4

Relocatable power taps incorporated into furniture shall be listed and labeled in accordance with UL 962A Furniture Power Distribution Units.

Add: Ch 2 – UL 962A Furniture Power Distribution Units, 2018, revised 2020.

## Statement of Problem and Substantiation for Public Input

Fire inspectors have inquired about what standard listing is to be used for furniture that incorporate power taps (cord and plug connection). Adding UL 962A answers that question and provides a standard to list and approve these installations.

This standard is listed and explained in 11.1.1.4 therefore shall also be listed in Chapter 2 as a referenced publication provided the related PI for 11.1.1.4 is approved by the technical committee.

NOTE: The following is from the scope of UL 962A - FPDU's are for fixed mounting to portable or stationary furnishings as a power supply connection for cord and plug connected electrical utilization equipment in accordance with the National Electrical Code, NFPA 70.

## Submitter Information Verification

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Apr 01 12:11:54 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-111-NFPA 1-2021

**Statement:** The committee has moved to combine PI-142 & 143 and reorganize this section to make it clear that the new sections are alternatives to the existing requirements.

The addition of UL 962A gives AHJs guidance on the appropriate listing and use of furniture that incorporate relocatable power taps.

The FR is adding reference to UL 962A, Furniture Power Distribution Units, 2018, revised 2020, UL 2930, Outline of Investigation for Cord-and-Plug-Connected Health Care Facility Outlet Assemblies, 2020, and UL 60601-1 Medical Electrical Equipment, Part 1: General Requirements for Safety, 2003.

NOTE: The following is from the scope of UL 962A - FPDUs are for fixed mounting to portable or stationary furnishings as a power supply connection for cord and plug connected electrical utilization equipment in accordance with the National Electrical Code, NFPA 70.

Both UL 2930 and UL 60601-1 are relative to relocatable power taps, particularly those located in medical facilities and should be used and referenced within NFPA 1 for knowledge and inspection reference purposes. Neither of these standards are currently referenced in NFPA 99, but public inputs have been submitted by the PI submitter for NFPA 99 to consider adding these two references.



## Public Input No. 143-NFPA 1-2021 [ Section No. 11.1.4 ]

### 11.1.4 Relocatable Power Taps.

#### 11.1.4.1

Relocatable power taps shall be listed to UL 1363, *Relocatable Power Taps*, or UL 1363A, *Outline of Investigation for Special Purpose Relocatable Power Taps*, where applicable.

#### 11.1.4.2

The relocatable power taps shall be directly connected to a permanently installed receptacle.

#### 11.1.4.3

Relocatable power tap cords shall not extend through walls, ceilings, or floors; under doors or floor coverings; or be subject to environmental or physical damage.

#### 11.1.4.5

**Relocatable power taps used in healthcare facilities shall be listed and labeled in accordance with UL 1363A or UL 2930 Outline Of Investigation for Cord and Plug Connected Health Care Facility Outlet Assemblies and UL 60601-1 Medical Electrical Equipment, Part 1: General Requirements for Safety.**

## Statement of Problem and Substantiation for Public Input

Both of these standards are relative to relocatable power taps, particularly those located in medical facilities and should be used and referenced within NFPA 1 for knowledge and inspection reference purposes. Neither of these standards are in NFPA 99 but are being added. I request the technical committee to resolve this PI as a CI and add these standards as an extract from NFPA 99 into the body of the code in Chapter 11 and into Chapter 2 as a reference upon publication .

## Submitter Information Verification

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Apr 01 12:15:02 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** [FR-111-NFPA 1-2021](#)

**Statement:** The committee has moved to combine PI-142 & 143 and reorganize this section to make it clear that the new sections are alternatives to the existing requirements.

The addition of UL 962A gives AHJs guidance on the appropriate listing and use of furniture that incorporate relocatable power taps.

The FR is adding reference to UL 962A, Furniture Power Distribution Units, 2018, revised 2020, UL 2930, Outline of Investigation for Cord-and-Plug-Connected Health Care Facility Outlet Assemblies, 2020, and UL 60601-1 Medical Electrical Equipment, Part 1: General Requirements for Safety, 2003.

NOTE: The following is from the scope of UL 962A - FPDUs are for fixed mounting to portable or stationary furnishings as a power supply connection for cord and plug connected electrical utilization equipment in accordance with the National Electrical Code, NFPA 70.

Both UL 2930 and UL 60601-1 are relative to relocatable power taps, particularly those located in medical facilities and should be used and referenced within NFPA 1 for knowledge and inspection reference purposes. Neither of these standards are currently referenced in NFPA 99, but public inputs have been submitted by the PI submitter for NFPA 99 to consider adding these two references.



## Public Input No. 112-NFPA 1-2021 [ New Section after 11.1.4.3 ]

**11.1.4.4 Where approved by the AHJ, not more than five relocatable power taps shall be permitted to be connected together for temporary use in support of electrical equipment for meetings.**

**A. 11.1.4.4 Conference rooms and meeting rooms may not provide a sufficient number of wall outlet or floor outlets in proximate locations to facilitate the use of portable computers and similar electronic devices by participants. The intent is for only electronic equipment with a low current draw to be permitted under this exception while the room is in use for meeting purposes.**

### Statement of Problem and Substantiation for Public Input

Conference rooms and meeting rooms frequently do not provide enough wall outlets or floor outlets to facilitate the use of computers and similar devices necessary to participate in conference work or meetings. This proposal provides a reasonable and common application for the need of temporary electrical power in a safe manner when authorized by the AHJ. The number five represents an arbitrary number of power taps based on amperage that is deemed reasonable based on the risk.

### Submitter Information Verification

**Submitter Full Name:** Anthony Apfelbeck

**Organization:** Altamonte Springs Building and Fire Safety Department

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Tue Mar 23 13:16:42 EDT 2021

**Committee:** FCC-FUN

### Committee Statement

**Resolution:** FR-112-NFPA 1-2021

**Statement:** Conference and meeting rooms frequently do not provide enough wall outlets to facilitate the use of computers and similar devices necessary to participate in conference work or meetings. This proposal provides a reasonable and common application for the need of temporary electrical power in a safe manner when authorized by the AHJ. The number five represents an arbitrary number of power taps based on amperage that is deemed reasonable on the risk.



## Public Input No. 100-NFPA 1-2021 [ Section No. 11.1.7.1 ]

### 11.1.7.1\*

Means shall be provided for the fire department to disconnect the electrical service to a building, structure, or facility when the electrical installation is covered under the scope of *NFPA 70*. In cases where the building disconnecting means is not readily accessible from the Fire Command Center, the fire alarm system may be used to send a signal to an automated device that opens the building disconnecting means.

## Statement of Problem and Substantiation for Public Input

In many cases, the building disconnecting means is not readily accessible from the exterior of the building or the Fire Command Center. Allowing the fire alarm system to be used to send an "EPO" signal to an automated building disconnecting means would provide a reliable pathway and increase safety for the responding fire department.

## Submitter Information Verification

**Submitter Full Name:** Greg Walson

**Organization:** Massachusetts Institute of Technology

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Mar 04 13:09:27 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** This change could potentially result in unwanted disconnection of the power to a building and there is nothing the code that currently prohibits this arrangement.



## Public Input No. 51-NFPA 1-2021 [ New Section after 11.3.6.3.1.5 ]

**13.3.6.3.1.5.1 Where permitted by the AHJ the elevator keys can be incorporated into the existing building access box.**

### Statement of Problem and Substantiation for Public Input

The AHJ and FD may not want another access box, they should be permitted to incorporate into their existing access box.

### Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Mon Feb 08 10:39:40 EST 2021

**Committee:** FCC-FUN

### Committee Statement

**Resolution:** This public input potentially causes confusion on where elevator keys are required to be located, the current sections adequate address the options for locations for these keys.



## Public Input No. 144-NFPA 1-2021 [ Section No. 11.7.2 ]

### 11.7.2 Stationary Combustion Engines and Gas Turbines Installation.

Stationary generator sets shall be installed in accordance with NFPA 37 and *NFPA 70*.

**11.7.2.1 Listing.** Stationary generator sets shall be *listed* and *labeled* in accordance with UL 2200 Stationary Engine Generator Assemblies.

## Statement of Problem and Substantiation for Public Input

The 2020 edition of NFPA 70, the National Electrical Code (NEC) added a new Section 445.6 that requires stationary engine generators 600 volts and less to be listed. This proposal is consistent with the NEC.

STATIONARY ENGINE GENERATOR ASSEMBLIES - UL 2200, is the UL ANSI standard for engine generators and it addresses safety concerns for both the electrical and fuel control for electrical generating equipment. Engine generators need to operate safely under normal and foreseeable abnormal conditions to prevent a risk of electric shock, fire and mechanical hazards especially considering they are often exposed to general public access in residential, commercial and industrial applications.

Engine Generators are not inherently safe and are unique hybrid products that include numerous hazards; Hazardous voltages, high energy AC & DC circuits, low voltage limited energy and communications circuits, mechanical hazards, highly flammable fuels, high temperatures and poisonous exhaust gasses. They include components that control the flow of explosive fuels as well as control the generation of electricity. Generators need appropriate ratings to be properly installed per NFPA 1. It is critical that these generators operate within required voltage and frequency ranges otherwise the safety of electrical loads powered by them can be compromised. Supply voltage outside the normal range defined in load product safety standards can result in risk of electric shock and fire. Much like furnaces and water heaters UL2200, requires redundancy for fuel shutoff valves to protect from single point fuel system failures that could result in the uncontrolled flow of gas that has resulted in catastrophic explosions. UL2200 listings address many safety hazards and the proposed new Section 11.7.2.1 would make it much easier for AHJs to approve engine generator installations.

ADD: UL 2200 Stationary Engine Generator Assemblies, 2020 to Chapter 2 provided the TC approves the proposal.

## Submitter Information Verification

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Apr 01 12:19:43 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** NFPA 37 and NFPA 70 have listing criteria for stationary generators. This change does not correlate with the requirements in NFPA 70. It is also not clear if this is intended to be

retroactive or if it is only intended to apply to new installations.



## Public Input No. 156-NFPA 1-2021 [ New Section after 11.10.2 ]

### TITLE OF NEW CONTENT

Type your content here ...

### NEW SECTIONS TO ADD

11.10.2.1 Two-way radio communications enhancement systems shall be provided where the radio signal strength for emergency services communications does not meet the minimum level determined by the AHJ .

11.10.2.2 Two-way Radio Communications Enhancement Systems shall not be required in locations such as telecommunications facility equipment rooms where the operation of two-way radio devices could impair telecommunication services due to interference.

## Statement of Problem and Substantiation for Public Input

AHJs are cautioned against requiring two-way radio communications enhancement systems in locations such as telecommunications facility equipment rooms where the operation of two-way radio devices could impair telecommunication services due to interference. Telecommunications facilities are essential elements of the public safety network, providing communities with connectivity to 911, E911, as well as processing of alarms and other signals. The telephone network has a large embedded base of legacy electronic equipment that was neither designed nor tested for immunity at the power levels and frequencies commonly used in responder radios. As a result, the use of radios in telecommunications equipment rooms can result in a phone service outage. A 2010 joint study of the effects of responder radios on telecommunications equipment was sponsored by AT&T, Verizon and Qwest and performed by UL. This study confirmed that telecommunications equipment can be functionally impaired and permanently damaged by close proximity radio operation at commonly used frequencies. To help assure reliability of the phone network, it is recommended that responder radios not be utilized in telecommunications equipment areas. Telecommunications equipment rooms are not publicly accessible areas and the number of incidents requiring responder access are low compared to other commercial occupancies. As these facilities are unique occupancies with such an important role, close cooperation between the owner and the AHJ is the best possible alternative to assure emergency responder activities are not unduly impaired.

## Submitter Information Verification

**Submitter Full Name:** Jeffrey Betz

**Organization:** AT&T Corporation

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Apr 01 13:41:53 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** The requirements of 11.10.10 already appears to address the intent of this public input. Additionally, the requirement for two-way communication systems only requires them to

be provided where required by the AHJ.



## Public Input No. 125-NFPA 1-2021 [ Section No. 11.10.2 ]

### 11.10.2\* General.

In all new and existing buildings, minimum radio signal strength for emergency services department communications shall be maintained at a level determined by the AHJ.

## Statement of Problem and Substantiation for Public Input

Applicable annex material entered in PI-123. Annex asterisk is added here.

## Related Public Inputs for This Document

### Related Input

Public Input No. 123-NFPA 1-2021 [New Section after  
A.11.10.3.2]

### Relationship

contains the applicable annex material.

## Submitter Information Verification

**Submitter Full Name:** Richard Kluge

**Organization:** Ericsson

**Affiliation:** Alliance for Telecommunications Industry Solutions

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Tue Mar 30 19:12:12 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-125-NFPA 1-2021

**Statement:** As noted in the proposed annex material, prudence is required when considering two-way radio communications enhancement systems in locations such as telecommunications facility equipment rooms where the operation of two-way radio devices could impair telecommunication services due to interference. Telecommunications facilities are essential elements of the public safety network, providing communities with connectivity to 911, E911, as well as processing of alarms and other signals. The telephone network has a large embedded base of legacy electronic equipment that has not been designed or tested for immunity at the power levels and frequencies commonly used in responder radios. As a result, the use of radios in telecommunications equipment rooms can result in a phone service outage. A 2010 joint study of the effects of responder radios on telecommunications equipment was sponsored by AT&T, Verizon and Qwest and performed by UL. This study confirmed that telecommunications equipment can be functionally impaired and damaged by close proximity radio operation at common frequencies. To help assure reliability of the phone network, it is recommended that responder radios not be utilized in telecommunications equipment areas when this can be avoided. Telecommunications equipment rooms are not publicly accessible areas and the number of incidents requiring responder access are low compared to other commercial occupancies. As these facilities are unique

occupancies with such an important role, close cooperation between the owner and the AHJ should be encouraged to assure responder activities are not unduly impaired. Two-way radio communications enhancement systems systems deployed in common areas, stairwells, lobbies and other non-equipment room locations within telecommunications buildings are less of a concern.



## Public Input No. 52-NFPA 1-2021 [ Section No. 11.10.2 ]

**Move to 11.10.7 and make existing 11.10.7, 11.10.7.1**

### **11.10.2 General.**

In all new and existing buildings, minimum radio signal strength for emergency services department communications shall be maintained at a level determined by the AHJ.

## Statement of Problem and Substantiation for Public Input

11.10.2 conflicts with 11.10.7 either put them together and make 11.10.7 the minimum 10.11.2 the exception or delete 11.10.2.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Mon Feb 08 10:53:06 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** Section 11.10.7 was deleted by FR-126.



## Public Input No. 13-NFPA 1-2020 [ New Section after 11.12.1.1 ]

11.12.1.1.1 Permits. Permits where required, shall comply with 1.12.

Add to Table 1.12.8(a)

Photovoltaic Systems - The installation and placement.

### Statement of Problem and Substantiation for Public Input

A permit should be required for the installation of pv systems.

### Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Wed Dec 30 08:53:46 EST 2020

**Committee:** FCC-FUN

### Committee Statement

**Resolution:** FR-127-NFPA 1-2021

**Statement:** This is consistent with actions that we have taken on permits for other issues. It is important that the fire official have a say in the design and layout of PV systems on buildings. Also see action on FR-128 adding requirements to Table 1.12.8(a).



## Public Input No. 169-NFPA 1-2021 [ Section No. 11.12.2.1.6 ]

### 11.12.2.1.6 Markings for Building Integrated PV (BIPV) Systems.

#### 11.12.2.1.6.1

BIPV systems installed as the roof covering shall have markings to identify any areas with electrical to avoid for ladder placement owing to electrical hazards hidden from view.

#### 11.12.2.1.6.2

Marking shall be both of the following:

- (1) Reflective
- (2) Visible from grade beneath the eaves or other location approved by the fire code official

#### 11.12.2.1.6.3

The AHJ shall be permitted to reduce or exempt marking requirements for BIPV systems installed as the roof covering when they are listed in accordance with 690.12(B)(2) of NFPA 70 . UL 3741.

## Statement of Problem and Substantiation for Public Input

The requirements in 2021 NFPA 1 Section 11.12.2.1.6 are in their first generation and not yet in effect. The technical requirements are in need of clarification. Some readers of this section have inquired about acceptable locations for reflective markings, and have asked whether the BIPV roof products themselves are required to be reflectorized wherever they occur on the roof of a residence or other building. Speaking with representatives from the fire service provided clarity about the original intent of this requirement. The original intent is for reflective marking that could be under an eave and visible from grade during "a 360" or could be in some other location visible from grade, such that the reflective marking identifies location(s) where a ladder should not be placed. The BIPV roof covering products themselves do not all need to be reflectorized.

For Section 11.12.2.1.6.3, the reference has been changed to UL 3741, as the original language is imprecise, and the UL 3741 standard is now published and is the correct reference.

## Submitter Information Verification

**Submitter Full Name:** Joe Cain

**Organization:** Solar Energy Industries Association (SEIA)

**Affiliation:** Solar Energy Industries Association (SEIA)

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Apr 01 19:13:12 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-123-NFPA 1-2021

**Statement:** The inclusion of the language for visibility of markings provides additional information and guidance for visibility of markings. The words "by the AHJ" were removed from the statement, as this is redundant with the definition of approved.

Proposed wording for ladder placement limits the electrical hazard and only references ladder placements and would not cover other potential electrical hazards not due to ladder placement.

UL 3741 is referenced in NFPA 70, 690.12 (B) (2). Adding this reference would not be consistent with the provisions found within NFPA 70, Article 690 and would create a correlation issue between NFPA 1 and NFPA 70.



## Public Input No. 145-NFPA 1-2021 [ Section No. 11.12.2.1.6.3 ]

### 11.12.2.1.6.3

The AHJ shall be permitted to reduce or exempt marking requirements for BIPV systems installed as the roof covering when they are listed in accordance with 690.12(B)(2) of *NFPA 70* UL 3741, Photovoltaic Hazard Control.

## Statement of Problem and Substantiation for Public Input

UL 3741 has been developed to address Section 690.12(B)(2) of NFPA 70. It is a consensus standard developed specifically for the evaluation and testing of rapid shutdown systems and equipment. Products are not listed to code sections, but to product certification standards. This proposal will provide clarity on the specific requirements to be used for listing these systems and equipment, and provide the performance anticipated by rapid shutdown operations.

## Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<a href="#">Public Input No. 146-NFPA 1-2021 [Section No. 11.12.3.1.3]</a>	

## Submitter Information Verification

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Apr 01 12:24:10 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** [FR-123-NFPA 1-2021](#)

**Statement:** The inclusion of the language for visibility of markings provides additional information and guidance for visibility of markings. The words "by the AHJ" were removed from the statement, as this is redundant with the definition of approved.

Proposed wording for ladder placement limits the electrical hazard and only references ladder placements and would not cover other potential electrical hazards not due to ladder placement.

UL 3741 is referenced in NFPA 70, 690.12 (B) (2). Adding this reference would not be consistent with the provisions found within NFPA 70, Article 690 and would create a correlation issue between NFPA 1 and NFPA 70.



## Public Input No. 146-NFPA 1-2021 [ Section No. 11.12.3.1.3 ]

### 11.12.3.1.3

The AHJ shall be permitted to reduce or modify roof access for BIPV systems installed as the roof covering when they are listed in accordance with 690.12(B)(2) of *NFPA 70 - UL 3741 Photovoltaic Hazard Control*.

Add Chapter 2 CAN/UL 3741, *Photovoltaic Hazard Control*, 2020

## Statement of Problem and Substantiation for Public Input

UL 3741 has been developed to address Section 690.12(B)(2) of NFPA 70. It is a consensus standard developed specifically for the evaluation and testing of rapid shutdown systems and equipment. Products are not listed to code sections, but to product certification standards. This proposal will provide clarity on the specific requirements to be used for listing these systems and equipment, and provide the performance anticipated by rapid shutdown operations. This standard is listed and explained in 11.12.2.1.6.3 and 11.12.3.1.3 therefore shall also listed in Chapter 2 as a referenced publication provided the related PIs for are approved by the technical committee.

## Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u><a href="#">Public Input No. 145-NFPA 1-2021 [Section No. 11.12.2.1.6.3]</a></u>	

## Submitter Information Verification

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Apr 01 12:26:55 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** [FR-123-NFPA 1-2021](#)

**Statement:** The inclusion of the language for visibility of markings provides additional information and guidance for visibility of markings. The words "by the AHJ" were removed from the statement, as this is redundant with the definition of approved.

Proposed wording for ladder placement limits the electrical hazard and only references ladder placements and would not cover other potential electrical hazards not due to ladder placement.

UL 3741 is referenced in NFPA 70, 690.12 (B) (2). Adding this reference would not be consistent with the provisions found within NFPA 70, Article 690 and would create a

correlation issue between NFPA 1 and NFPA 70.



## Public Input No. 148-NFPA 1-2021 [ New Section after 11.12.4.2 ]

### **11.13 Ultraviolet Germicidal Irradiation System Requirements**

**Where ultraviolet (UV) germicidal irradiation systems are provided they shall be listed and labeled in accordance with UL 8802 and installed in accordance with their listing and the manufacturer's instruction.**

**ADD Ch 2: UL 8802 , Outline of Investigation for Germicidal Systems , 2020**

### **Statement of Problem and Substantiation for Public Input**

Ultraviolet Germicidal Irradiation Systems are a new equipment or system addressing sterilization of rooms and or equipment in as a result of disease. Due to pandemic conditions this type of equipment is being installed and is being addressed in NFPA 99 and 101. Inspectors have little to no information on their construction, requirements or types of occupancies they may be used in. I request the technical committee to resolve this PI as a CI and add the definition and the requirements by extract from either NFPA 99 or 101 upon publication.

This standard is listed and explained in section 11.13 therefore shall also be listed in Chapter 2 as a referenced publication provided the related PIs are approved by the technical committee

### **Submitter Information Verification**

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Apr 01 12:32:34 EDT 2021

**Committee:** FCC-FUN

### **Committee Statement**

**Resolution:** [CI-116-NFPA 1-2021](#)

**Statement:** The committee recognizes the need to add germicidal protection in buildings. Criteria for these systems are also being considered for NFPA 101 and NFPA 99. The committee has entered this as a CI with the potential to add it at second draft or include it via extract of NFPA 101 or NFPA 99.



## Public Input No. 14-NFPA 1-2020 [ Section No. 18.1.1.2 ]

### 18.1.1.2

This chapter shall apply to public and privately owned fire hydrant systems and water supplies.

## Statement of Problem and Substantiation for Public Input

This section deals with more than just fire hydrants it also includes water supplies.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Wed Dec 30 08:58:12 EST 2020

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-117-NFPA 1-2021

**Statement:** This section deals with more than just fire hydrants it also includes water supplies. This updates the scope of the chapter to the scope of the requirements within the section.



## Public Input No. 60-NFPA 1-2021 [ Section No. 18.2.2 ]

### 18.2.2\* Access to Structures or Areas.

#### 18.2.2.1 Access Box(es).

The AHJ shall have the authority to require an access box(es) to be installed in an accessible location where access to or within a structure or area is difficult because of security, hazardous materials, processes or fire protection systems are installed. The access box(es) shall be of an approved type listed in accordance with UL 1037.

#### 18.2.2.2 Access to Gated Subdivisions or Developments.

The AHJ shall have the authority to require fire department access be provided to gated subdivisions or developments through the use of an approved device or system.

#### 18.2.2.3 Access Maintenance.

The owner or occupant of a structure or area, with required fire department access as specified in 18.2.2.1 or 18.2.2.2, shall notify the AHJ when the access is modified, keys or codes are changed in a manner that could prevent fire department access.

## Statement of Problem and Substantiation for Public Input

Current wording only allows access boxes when access is difficult due to security. If you have ever waited for a key holder because an alarm is going off at 2am, or a haz mat incident without access an access box should be required. Also added to clarify keys and codes should require them to notify you to replace.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Mon Feb 08 11:16:23 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** The intent of this section is to require an access box where physical access to a space is impeded due to security. It is not clear how the presence of a fire protection system or hazardous materials would impact the difficulty to access a space. Additionally, this input could potentially require an access box for any building that has a fire protection system even when security is not provided.



## Public Input No. 61-NFPA 1-2021 [ Section No. 18.4.2 ]

### 18.4.2 – Definitions.

See definitions 3.3.14.4 , Fire Flow Area, and 3.3.128 , Fire Flow.

## Statement of Problem and Substantiation for Public Input

Not needed the user should know all definitions are located in chapter 3. For consistency as most 1 chapters do not include a list of definitions in their chapters.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Mon Feb 08 11:21:41 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-118-NFPA 1-2021

**Statement:** This section is not consistent with the remainder of NFPA 1 and is unnecessary.



## Public Input No. 62-NFPA 1-2021 [ Section No. 18.5.5 ]

### 18.5.5 Testing and Maintenance.

#### 18.5.5.1

Private water supply systems shall be inspected, tested and maintained in accordance with NFPA 25.

#### 18.5.5.2

Public water supply systems providing fire flow shall be inspected, tested and maintained in accordance with ANSI/AWWA G200, *Standard for Distribution Systems Operation and Management*.

## Statement of Problem and Substantiation for Public Input

Inspection is an important component of ensuring water supplies work.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Mon Feb 08 11:23:44 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-119-NFPA 1-2021

**Statement:** Inspection is an important component of ensuring water supplies work. This terminology is consistent with the terminology used in NFPA 25.



## Public Input No. 134-NFPA 1-2021 [ Section No. A.4.1.6 ]

### A.4.1.6

Additional information on building security is provided in NFPA 730, [NFPA 731](#) and NFPA 731 [3000](#).

ADD to Annex F references: [NFPA 3000 Standard for an Active Shooter/Hostile Event Response \(ASHER\) Program, 2021 edition](#)

## Statement of Problem and Substantiation for Public Input

NFPA 3000 is directly related to security features and incident preplanning for emergency services. NFPA 3000 should be utilized as an additional resource for incorporating an active shooter/hostile event response plan when providing comprehensive security features to a building and its occupants in the event of an incident.

Add to Annex F for reference, provided related public input to A.4.1.6 is approved.

## Submitter Information Verification

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Wed Mar 31 14:15:59 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** [FR-120-NFPA 1-2021](#)

**Statement:** NFPA 3000 is directly related to security features and incident preplanning for emergency services. NFPA 3000 should be utilized as an additional resource for incorporating an active shooter/hostile event response plan when providing comprehensive security features to a building and its occupants in the event of an incident.



## Public Input No. 120-NFPA 1-2021 [ New Section after A.4.5.8.5 ]

### TITLE OF NEW CONTENT

#### A.4.5.8.8

While remote inspection methodologies have existed for several years, recent world events and technological improvements have elevated interest in both its current application and future potential. NFPA 915, Standard for Remote Inspections, provides both mandatory requirements and enhanced guidance on this topic. Jurisdictions, building owners and other interested parties should carefully consider potential uses of remote inspection to ensure that those performed are comparable to, or exceed that, of a traditional in-person inspection.

Type your content here ...

## Statement of Problem and Substantiation for Public Input

The interest in remote inspection applications and methodologies has accelerated in recent years. Remote inspection, when conducted properly, should achieve a comparable, or enhanced result, to an in-person inspection. Additionally, tangible time and financial savings may be achieved. This Public Input seeks to allow the use of remote inspections when permitted by the authority having jurisdiction. In the annex, a reference to NFPA 915 provides guidance for jurisdictions to consider as they implement as remote inspection programs.

## Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<a href="#">Public Input No. 119-NFPA 1-2021 [New Section after 4.5.8.7]</a>	annex for new proposed section

## Submitter Information Verification

**Submitter Full Name:** Jim Muir

**Organization:** Clark County, Washington Building Safety

**Affiliation:** Chair NFPA 915 Committee

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Tue Mar 30 17:53:10 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** [CI-55-NFPA 1-2021](#)

**Statement:** The committee would like review the possibility of adding references to NFPA 915, but at the time of the first draft meeting the document was not available. The committee will reconsider these PIs at second draft based on the availability of the NFPA 915 document.



## Public Input No. 123-NFPA 1-2021 [ New Section after A.11.10.3.2 ]

### A.11.10.2

AHJs are cautioned against requiring two-way radio communications enhancement systems in locations such as telecommunications facility equipment rooms where the operation of two-way radio devices could impair telecommunication services due to interference. Telecommunications facilities are essential elements of the public safety network, providing communities with connectivity to 911, E911, as well as processing of alarms and other signals. The telephone network has a large embedded base of legacy electronic equipment that has not been designed or tested for immunity at the power levels and frequencies commonly used in responder radios. As a result, the use of radios in telecommunications equipment rooms can result in a phone service outage. A 2010 joint study of the effects of responder radios on telecommunications equipment was sponsored by several telecommunications carriers and performed by UL. This study confirmed that telecommunications equipment can be functionally impaired and damaged by close proximity radio operation at common frequencies. To help assure reliability of the phone network, it is recommended that responder radios not be utilized in telecommunications equipment areas. Telecommunications equipment rooms are not publicly accessible areas and the number of incidents requiring responder access are low compared to other commercial occupancies. As these facilities are unique occupancies with such an important role, close cooperation between the telecommunications carrier and the AHJ should be encouraged to assure responder activities are not unduly impaired.

## Statement of Problem and Substantiation for Public Input

As noted in the proposed annex material, prudence is required when considering two-way radio communications enhancement systems in locations such as telecommunications facility equipment rooms where the operation of two-way radio devices could impair telecommunication services due to interference. Telecommunications facilities are essential elements of the public safety network, providing communities with connectivity to 911, E911, as well as processing of alarms and other signals. The telephone network has a large embedded base of legacy electronic equipment that has not been designed or tested for immunity at the power levels and frequencies commonly used in responder radios. As a result, the use of radios in telecommunications equipment rooms can result in a phone service outage. A 2010 joint study of the effects of responder radios on telecommunications equipment was sponsored by AT&T, Verizon and Qwest and performed by UL. This study confirmed that telecommunications equipment can be functionally impaired and damaged by close proximity radio operation at common frequencies. To help assure reliability of the phone network, it is recommended that responder radios not be utilized in telecommunications equipment areas when this can be avoided. Telecommunications equipment rooms are not publicly accessible areas and the number of incidents requiring responder access are low compared to other commercial occupancies. As these facilities are unique occupancies with such an important role, close cooperation between the owner and the AHJ should be encouraged to assure responder activities are not unduly impaired. Two-way radio communications enhancement systems systems deployed in common areas, stairwells, lobbies and other non-equipment room locations within telecommunications buildings are less of a concern.

## Related Public Inputs for This Document

<u>Related Input</u>	<u>Relationship</u>
<u>Public Input No. 125-NFPA 1-2021 [Section No. 11.10.2]</u>	

## Submitter Information Verification

**Submitter Full Name:** Richard Kluge

**Organization:** Ericsson  
**Affiliation:** Alliance for Telecommunications Industry Solutions  
**Street Address:**  
**City:**  
**State:**  
**Zip:**  
**Submittal Date:** Tue Mar 30 18:52:30 EDT 2021  
**Committee:** FCC-FUN

## Committee Statement

**Resolution:** FR-125-NFPA 1-2021

**Statement:** As noted in the proposed annex material, prudence is required when considering two-way radio communications enhancement systems in locations such as telecommunications facility equipment rooms where the operation of two-way radio devices could impair telecommunication services due to interference. Telecommunications facilities are essential elements of the public safety network, providing communities with connectivity to 911, E911, as well as processing of alarms and other signals. The telephone network has a large embedded base of legacy electronic equipment that has not been designed or tested for immunity at the power levels and frequencies commonly used in responder radios. As a result, the use of radios in telecommunications equipment rooms can result in a phone service outage. A 2010 joint study of the effects of responder radios on telecommunications equipment was sponsored by AT&T, Verizon and Qwest and performed by UL. This study confirmed that telecommunications equipment can be functionally impaired and damaged by close proximity radio operation at common frequencies. To help assure reliability of the phone network, it is recommended that responder radios not be utilized in telecommunications equipment areas when this can be avoided. Telecommunications equipment rooms are not publicly accessible areas and the number of incidents requiring responder access are low compared to other commercial occupancies. As these facilities are unique occupancies with such an important role, close cooperation between the owner and the AHJ should be encouraged to assure responder activities are not unduly impaired. Two-way radio communications enhancement systems deployed in common areas, stairwells, lobbies and other non-equipment room locations within telecommunications buildings are less of a concern.



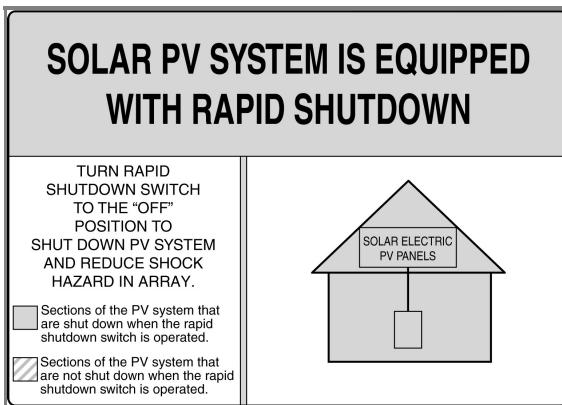
## Public Input No. 81-NFPA 1-2021 [ Section No. A.11.12.2.1.1 ]

[ See attached Tentative Interim Amendment No. 21-11 (Log No. 1541) on changes that were approved for incorporation into the document.]

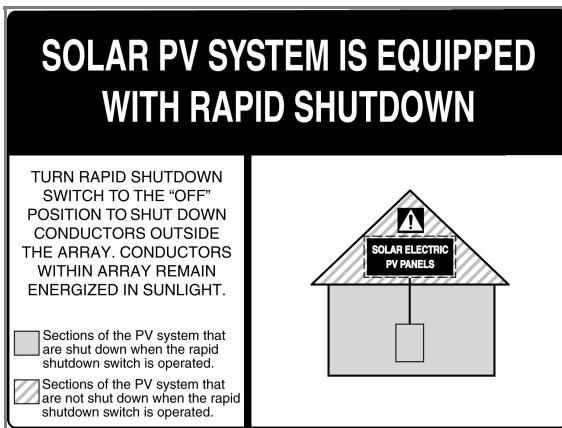
### A.11.12.2.1.1

To clarify what the labels described in the text of 11.12.2.1.1 should look like, this annex information provides a pictorial depiction of the sign to be similarly replicated for compliance with 11.12.2.1.1. Figure A.11.12.2.1.1(a) depicts the sign required by 11.12.2.1.1.1. Figure A.11.12.2.1.1(b) depicts the sign required by 11.12.2.1.1.2.

**Figure A.11.12.2.1.1(a) Sign Required by 11.12.2.1.1.1.**



**Figure A.11.12.2.1.1(b) Sign Required by 11.12.2.1.1.2.**



## Additional Proposed Changes

<u>File Name</u>	<u>Description</u>	<u>Approved</u>
TIA_1_21_11.pdf	NFPA 1 21-11 (Log No. 1541)	

## Statement of Problem and Substantiation for Public Input

NOTE: This public input originates from Tentative Interim Amendment No. 21-11 (Log No. 1541) issued by the Standard Council on , 2020 and per the NFPA Regs., needs to be reconsidered by the Technical Committee for the next edition of the document.

**Substantiation:** The NFPA 1 Technical Committee made revisions to the electrical safety information required on signage indicating PV system hazards for first responders. The committee modified the text for required signage but inadvertently failed to process and ballot a revision to the existing ANNEX A material that depicts two illustrations for the required signage. (Reference: Second Revision No. 48.)

This TIA corrects the text depicted in the sample PV safety signage illustrations in Annex A to match the revised requirements in the body of the code.

**Emergency Nature:** The standard contains an error or an omission that was overlooked during the regular revision process.

The standard contains an error or an omission that was overlooked during the regular revision process. Figures A.11.12.2.1.1(a) and (b) do not align with revised text in the body of the 2021 edition of NFPA 1.

## Submitter Information Verification

**Submitter Full Name:** TC ON FCC\_FUN

**Organization:** NFPA

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Mon Feb 15 11:50:03 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** The committee has no additional changes to the TIA material incorporated in the document.



Tentative Interim Amendment

# NFPA® 1

## *Fire Code*

**2021 Edition**

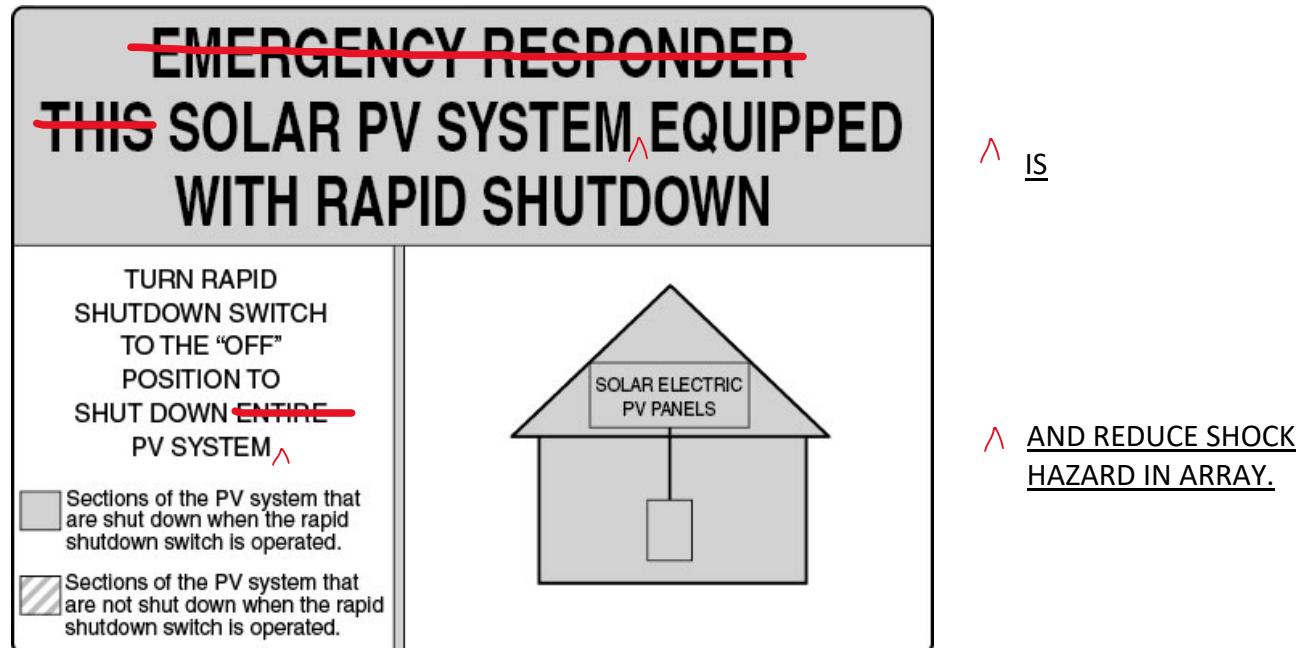
**Reference:** A.11.12.2.1.1(a) and (b)

**TIA 21-11**

(SC 20-12-4 / TIA Log #1541)

Pursuant to Section 5 of the *NFPA Regulations Governing the Development of NFPA Standards*, the National Fire Protection Association has issued the following Tentative Interim Amendment to NFPA 1, *Fire Code*, 2021 edition. The TIA was processed by the Technical Committee on Fire Code and was issued by the Standards Council on December 3, 2020, with an effective date of December 23, 2020.

1. Revise Figure A.11.12.2.1.1(a) to read as follows:



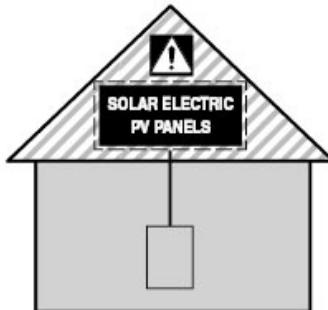
2. Revise Figure A.11.12.2.1.1(b) to read as follows:

# ~~EMERGENCY RESPONDER~~ ~~THIS SOLAR PV SYSTEM~~ EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN  
SWITCH TO THE "OFF"  
POSITION.

~~ONLY CONDUCTORS  
INSIDE BUILDING  
OR OFF THE ROOF  
WILL SHUT DOWN~~

- Sections of the PV system that are shut down when the rapid shutdown switch is operated.
- Sections of the PV system that are not shut down when the rapid shutdown switch is operated.



IS

~~TO SHUT DOWN  
CONDUCTORS OUTSIDE  
THE ARRAY. CONDUCTORS  
WITHIN ARRAY REMAIN  
ENERGIZED IN SUNLIGHT.~~

**Issue Date:** December 3, 2020

**Effective Date:** December 23, 2020

(Note: For further information on NFPA Codes and Standards, please see [www.nfpa.org/docinfo](http://www.nfpa.org/docinfo))

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NATIONAL FIRE PROTECTION ASSOCIATION



## Public Input No. 96-NFPA 1-2021 [ Chapter B ]

### Annex B Sample Ordinance Adopting the NFPA 1, **Fire Code**

*This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.*

**B.1**

The following sample ordinance is provided to assist a jurisdiction in the adoption of this *Code* and is not part of this *Code*.

ORDINANCE NO. \_\_\_\_\_

An ordinance of the *[jurisdiction]* adopting the *[year]* edition of NFPA 1, *Fire Code*, 2021 edition; and documents listed in Chapter 2 of that *Code*; prescribing regulations governing conditions hazardous to life and property from fire or explosion; providing for the issuance of permits and collection of fees; repealing Ordinance No. \_\_\_\_\_ of the *[jurisdiction]* and all other ordinances and parts of ordinances in conflict therewith; providing a penalty; providing a severability clause; and providing for publication; and providing an effective date.

**BE IT ORDAINED BY THE***[governing body]***OF THE***[jurisdiction]***:**

**SECTION 1** That the NFPA 1, *Fire Code*, 2021 edition, and documents adopted by Chapter 2, three (3) copies of which are on file and are open to inspection by the public in the office of the *[jurisdiction's keeper of records]* of the *[jurisdiction]*, are hereby adopted and incorporated into this ordinance as fully as if set out at length herein, and from the date on which this ordinance shall take effect, the provisions thereof shall be controlling within the limits of the *[jurisdiction]*. The same are hereby adopted as the code of the *[jurisdiction]* for the purpose of prescribing regulations governing conditions hazardous to life and property from fire or explosion and providing for issuance of permits and collection of fees.

**SECTION 2** Any person who shall violate any provision of this *Code* or standard hereby adopted or fail to comply therewith; or who shall violate or fail to comply with any order made thereunder; or who shall build in violation of any detailed statement of specifications or plans submitted and approved thereunder; or fail to operate in accordance with any certificate or permit issued thereunder; and from which no appeal has been taken; or who shall fail to comply with such an order as affirmed or modified by a court of competent jurisdiction, within the time fixed herein, shall severally for each and every such violation and noncompliance, respectively, be guilty of a misdemeanor, punishable by a fine of not less than \$ \_\_\_\_\_ nor more than \$ \_\_\_\_\_ or by imprisonment for not less than \_\_\_\_\_ days nor more than \_\_\_\_\_ days or by both such fine and imprisonment. The imposition of one penalty for any violation shall not excuse the violation or permit it to continue; and all such persons shall be required to correct or remedy such violations or defects within a reasonable time; and when not otherwise specified the application of the above penalty shall not be held to prevent the enforced removal of prohibited conditions. Each day that prohibited conditions are maintained shall constitute a separate offense.

**SECTION 3** Additions, insertions, and changes — that the *[year]* edition of NFPA 1, *Fire Code*, 2021 edition, is amended and changed in the following respects:

*[List Amendments]*

**SECTION 4** That ordinance No. \_\_\_\_\_ of *[jurisdiction]* entitled *[fill in the title of the ordinance or ordinances in effect at the present time]* and all other ordinances or parts of ordinances in conflict herewith are hereby repealed.

**SECTION 5** That if any section, subsection, sentence, clause, or phrase of this ordinance is, for any reason, held to be invalid or unconstitutional, such decision shall not affect the validity or constitutionality of the remaining portions of this ordinance. The *[governing body]* hereby declares that it would have passed this ordinance, and each section, subsection, clause, or phrase hereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses, and phrases be declared unconstitutional.

**SECTION 6** That the *[jurisdiction's keeper of records]* is hereby ordered and directed to cause this ordinance to be published.

*[NOTE: An additional provision may be required to direct the number of times the ordinance is to be published and to specify that it is to be in a newspaper in general circulation. Posting may also be required.]*

**SECTION 7** That this ordinance and the rules, regulations, provisions, requirements, orders, and matters established and adopted hereby shall take effect and be in full force and effect *[time period]* from and after the date of its final passage and adoption.

## Statement of Problem and Substantiation for Public Input

it was asked in the last cycle to have this reviewed by NFPA legal to make sure its still meets existing legal requirements, that review was not done so i am asking for it in a pi.

## Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Feb 25 07:44:54 EST 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** CI-121-NFPA 1-2021

**Statement:** The committee is requesting NFPA legal to review this section for any legal concerns and make sure it meets current legal requirements.



## Public Input No. 97-NFPA 1-2021 [ New Section after D.1 ]

**D.2 A permit shall be required for the installation of a fire fighter breathing-air replenishment system.**

D.2.1 The permit shall comply with 1.12.

### Statement of Problem and Substantiation for Public Input

A permit should be required for installing a breathing air system.

### Submitter Information Verification

**Submitter Full Name:** Steven Sawyer

**Organization:** [ Not Specified ]

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Feb 25 07:47:23 EST 2021

**Committee:** FCC-FUN

### Committee Statement

**Resolution:** FR-122-NFPA 1-2021

**Statement:** A permit should be required for installing a breathing air system.



**Public Input No. 155-NFPA 1-2021 [ Section No. F.1.2.29 ]**

**F.1.2.29** UL Publications.

- Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.
- Commodity Hazard Comparison of Expanded Plastic in Portable Bins and Racking*, Underwriters Laboratories, Project 99NK29106, NC4004, September 8, 2000.
- Technical Report of Fire Testing of Automotive Parts in Portable Storage Racking*, Underwriters Laboratories, Project 99NK29106, NC4004, January 5, 2001.
- UL 9, *Safety Fire Tests of Window Assemblies*, 2009, revised 2020.
- UL 10B, *Safety Fire Tests of Door Assemblies*, 2008, revised 2020.
- UL 10C, *Positive Pressure Fire Tests of Door Assemblies*, 2016.
- UL 30, *Metal Safety Cans*, 1995, revised 2019.
- UL 142, *Steel Aboveground Tanks for Flammable and Combustible Liquids*, 2019.
- UL 197, *Commercial Electric Cooking Appliances*, 2010, revised 2020.
- UL 199, *Automatic Sprinklers for Fire-Protection Service*, 2005, revised 2017.
- UL 199B, *Outline of Investigation for Control Cabinets for Automatic Sprinkler Systems Used for Protection of Commercial Cooking Equipment*, 2015.
- UL 199E, *Outline of Investigation for Fire Testing of Sprinklers and Water Spray Nozzles for Protection of Deep Fat Fryers*, 2004.
- UL 263, *Fire Tests of Building Construction and Materials*, 2011, revised 2020.
- UL 296A, *Waste Oil-Burning Air-Heating Appliances*, 2018.
- UL 300 UL/ULC 300, *Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment*, 2019.
- UL 558, *Safety Industrial Trucks, Internal Combustion Engine-Powered*, 1996, revised 2012 2020.
- UL 647, *Unvented Kerosene-Fired Room Heaters and Portable Heaters*, 1993.
- UL 710B, *Recirculating Exhaust Systems*, 2011, revised 2019.
- UL 711, *Rating and Fire Testing of Fire Extinguishers*, 2018.
- UL 723, *Test for Surface Burning Characteristics of Building Materials*, 2018.
- UL 737, *Fireplace Stoves*, 2011, revised 2020.
- UL 896, *Oil-Burning Stoves*, 1993, revised 2012 2016.
- UL 913, *Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III Division 1, Hazardous (Classified) Locations*, 2013, revised 2019.
- UL 923, *Microwave Cooking Appliances*, 2013, revised 2020.
- UL 969, *Marking and Labeling Systems*, 2017.
- UL 1040, *Fire Test of Insulated Wall Construction*, 1996, revised 2016.
- UL 1278, *Movable and Wall- or Ceiling-Hung Electric Room Heaters*, 2014.
- UL 1313, *Nonmetallic Safety Cans for Petroleum Products*, 2015.
- UL 1479, *Fire Tests of Through-Penetration Firestops*, 2015.
- UL 1709, *Rapid Rise Fire Tests of Protection Materials for Structural Steel*, 2017.
- UL 1715, *Fire Test of Interior Finish Material*, 1997, revised 2017.
- UL 1975, *Fire Tests for Foamed Plastics Used for Decorative Purposes*, 2006.
- UL 2085, *Protected Aboveground Tanks for Flammable and Combustible Liquids*, 1997.
- UL 2129, *Halocarbon Clean Agent Fire Extinguishers*, 2017.
- UL 2162, *Commercial Wood-Fired Baking Ovens — Refractory Type*, 2014, revised 2019.

UL 2335, *Fire Tests of Storage Pallets, 2010, revised 2017* .

UL 2436, *Outline of Investigation for Spill Containment for Stationary Lead Acid and Alkaline Electrolyte Battery Systems, 2006 2020* .

UL 60079-11, *Electrical Apparatus for Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety 'i'*, 2013.

## Statement of Problem and Substantiation for Public Input

These codes are updated

## Submitter Information Verification

**Submitter Full Name:** Kelly Nicolello

**Organization:** UL LLC

**Street Address:**

**City:**

**State:**

**Zip:**

**Submittal Date:** Thu Apr 01 13:16:22 EDT 2021

**Committee:** FCC-FUN

## Committee Statement

**Resolution:** Referenced standards will be updated at second draft, see CI-37.