

12.9.7.5 Testing of the joint system in a smoke barrier that also serves as fire barrier shall be representative of the actual installation suitable for the required engineering demand without compromising the fire resistance rating of the assembly or the structural integrity of the assembly. [101:8.5.7.5]

Chapter 13 Fire Protection Systems

13.1 General.

13.1.1 The AHJ shall have the authority to require that construction documents for all fire protection systems be submitted for review and approval and a permit be issued prior to the installation, rehabilitation, or modification. (For additional information concerning construction documents, see Section 1.14.) Further, the AHJ shall have the authority to require that full acceptance tests of the systems be performed in the AHJ's presence prior to final system certification.

13.1.1.1 Permits. Permits, where required, shall comply with Section 1.12.

13.1.2 The property owner shall be responsible for the proper testing and maintenance of the equipment and systems.

13.1.3 Obstructions shall not be placed or kept near fire hydrants, fire department inlet connections, or fire protection system control valves in a manner that would prevent such equipment or fire hydrants from being immediately visible and accessible.

13.1.4 A minimum 36 in. (91 mm) of clear space shall be maintained to permit access to and operation of fire protection equipment, fire department inlet connections, or fire protection system control valves. The fire department shall not be deterred or hindered from gaining immediate access to fire protection equipment.

13.1.4.1 An approved clear and unobstructed path shall be provided and maintained for access to the fire department inlet connections.

13.1.5 Detailed records documenting all systems and equipment testing and maintenance shall be kept by the property owner and shall be made available upon request for review by the AHJ.

13.1.6 Existing systems shall be in accordance with 1.3.6.2 and 10.3.2.

13.1.7 All fire protection systems and devices shall be maintained in a reliable operating condition and shall be replaced or repaired where defective or recalled.

13.1.8 The AHJ shall be notified when any fire protection system is out of service and on restoration of service.

13.1.9 When a fire protection system is out of service for more than 4 hours in a 24-hour period, the AHJ shall be permitted to require the building to be evacuated or an approved fire watch to be provided for all portions left unprotected by the fire protection system shutdown until the fire protection system has been returned to service.

13.1.10 In the event of a failure of a fire protection system or an excessive number of accidental activations, the AHJ shall be permitted to require an approved fire watch until the system is repaired.

13.1.11* For occupancies of an especially hazardous nature or where special hazards exist in addition to the normal hazard of the occupancy, or where access for fire apparatus is unduly difficult, or where the size or configuration of the building or contents limits normal fire suppression efforts, the AHJ shall have the authority to require additional safeguards consisting of additional fire safety equipment, more than one type of fire safety equipment, or special systems suitable for the protection of the hazard involved.

13.1.12 The AHJ shall have the authority to require locking fire department connection (FDC) plugs or caps on all water-based fire protection systems.

13.2 Standpipe Systems.

13.2.1 General. 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*.

13.2.2 Where Required.

13.2.2.1 Where required by this Code or the referenced codes and standards listed in Chapter 2, standpipe systems shall be installed in accordance with 13.2.1.

13.2.2.2 New buildings shall be equipped with a Class I standpipe system installed in accordance with the provisions of Section 13.2 where any of the following conditions exist:

- (1) More than three stories above grade where the building is protected by an approved automatic sprinkler system
- (2) More than two stories above grade where the building is not protected by an approved automatic sprinkler system
- (3) More than 50 ft (15 m) above grade and containing intermediate stories or balconies
- (4) More than one story below grade
- (5) More than 20 ft (6.1 m) below grade

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 ft² (93 m²) in area and all legitimate stages shall be equipped with 1½ in. (38 mm) hose lines for first aid fire fighting at each side of the stage. [101:12.4.5.12.1]

13.2.2.4.1 In existing assembly occupancies, stages over 1000 ft² (93 m²) in area shall be equipped with 1½ in. (38 mm) hose lines for first aid fire fighting at each side of the stage. [101:13.4.5.12.1]

13.2.2.4.2 Hose connections shall be in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*, unless Class II or Class III standpipes in accordance with NFPA 14 are used. [101:12.4.5.12.2; 101:13.4.5.12.2]

13.2.2.5 New and Existing Detention and Correctional Facilities. Standpipe and hose systems shall be provided in accordance with 9.7.4.2 of NFPA 101 as follows, unless otherwise permitted by 13.2.2.5.1:

- (1) Class I standpipe systems shall be provided for any building three or more stories in height.
- (2) Class III standpipe and hose systems shall be provided for all nonsprinklered buildings three or more stories in height. [101:22.3.5.5; 101:23.3.5.5]

13.2.2.5.1 The requirements of 13.2.2.5 shall not apply where otherwise permitted by the following:

- (1) Formed hose, 1 in. (25 mm) in diameter, on hose reels shall be permitted to provide Class II service.
- (2) Separate Class I and Class II systems shall be permitted in lieu of a Class III system. [101:22.3.5.6; 101:23.3.5.6]

13.2.2.6 The AHJ shall be authorized to permit the removal of existing occupant-use hose lines where all of the following are met:

- (1) This Code does not require their installation.
- (2) The current building code does not require their installation.
- (3) The AHJ determines that the occupant-use hose line will not be utilized by trained personnel or the fire department.

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13.2.3 Inspection, Testing, and Maintenance.

13.2.3.1 A standpipe system installed in accordance with this *Code* shall be properly maintained to provide at least the same level of performance and protection as designed.

13.2.3.2 The owner shall be responsible for maintaining the standpipe system and keeping it in good working condition.

13.2.3.3 A standpipe system installed in accordance with this *Code* shall be inspected, tested, and maintained in accordance with NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*.

13.2.3.4 Existing Systems.

13.2.3.4.1 Where an existing standpipe system, including yard piping and fire department connection, is modified, the new piping shall be independently tested in accordance with 11.4.1 of NFPA 14. [14:11.4.7.1]

13.2.3.4.2 Modifications that cannot be isolated, such as new valves or the point of connection for new piping, shall not require testing in excess of system static pressure. [14:11.4.7.2]

13.3 Automatic Sprinklers.

13.3.1 General.

13.3.1.1* Automatic sprinklers shall be installed and maintained in full operating condition in the occupancies specified in this *Code* or in the codes or standards referenced in Chapter 2.

13.3.1.2 Installations shall be in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*; NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*; or NFPA 13D, *Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes*, as appropriate.

13.3.1.3 Existing systems shall be in accordance with 1.3.6.2 and 10.3.2.

13.3.1.4 Sprinkler piping serving not more than six sprinklers for any isolated hazardous area shall be permitted to be connected directly to a domestic water supply system having a capacity sufficient to provide 0.15 gpm/ft² (6.1 mm/min) throughout the entire enclosed area. An indicating shutoff valve, supervised in accordance with 13.3.1.7 or NFPA 13, shall be installed in an accessible, visible location between the sprinklers and the connection to the domestic water supply. [101:9.7.1.2]

13.3.1.5* In areas protected by automatic sprinklers, automatic heat-detection devices required by other sections of this *Code* shall not be required. [101:9.7.1.3]

13.3.1.6 Automatic sprinkler systems installed to make use of an alternative permitted by this *Code* shall be considered required systems and shall meet the provisions of this *Code* that apply to required systems. [101:9.7.1.4]

13.3.1.7 Supervision.

13.3.1.7.1* **Supervisory Signals.** Where supervised automatic sprinkler systems are required by another section of this *Code*, supervisory attachments shall be installed and monitored for integrity in accordance with NFPA 72, *National Fire Alarm and Signaling Code*, and a distinctive supervisory signal shall be provided to indicate a condition that would impair the satisfactory operation of the sprinkler system. Supervisory signals shall sound and shall be displayed either at a location within the protected building that is

constantly attended by qualified personnel or at an approved, remotely located receiving facility. [101:9.7.2.1]

13.3.1.7.2 Alarm Signal Transmission. Where supervision of automatic sprinkler systems is provided in accordance with another provision of this *Code*, waterflow alarms shall be transmitted to an approved, proprietary alarm-receiving facility, a remote station, a central station, or the fire department. Such connection shall be in accordance with 13.7.1.1. [101:9.7.2.2]

13.3.1.8* The following practices shall be observed to provide sprinklers of other than ordinary-temperature classification unless other temperatures are determined or unless high-temperature sprinklers are used throughout, and temperature selection shall be in accordance with Table 13.3.1.8(a), Table 13.3.1.8(b), and Figure 13.3.1.8:

- (1) Sprinklers in the high-temperature zone shall be of the high-temperature classification, and sprinklers in the intermediate-temperature zone shall be of the intermediate-temperature classification.
- (2) Sprinklers located within 12 in. (305 mm) to one side or 30 in. (762 mm) above an uncovered steam main, heating coil, or radiator shall be of the intermediate-temperature classification.
- (3) Sprinklers within 7 ft (2.1 m) of a low-pressure blowoff valve that discharges free in a large room shall be of the high-temperature classification.

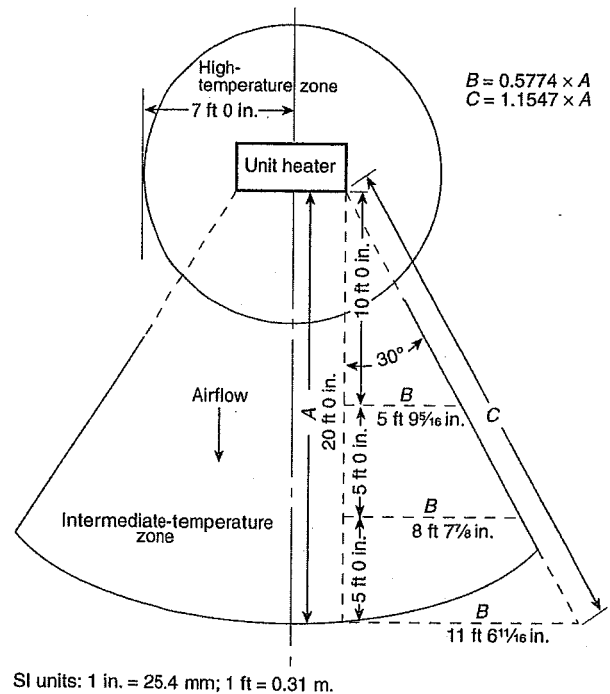


FIGURE 13.3.1.8 High-Temperature and Intermediate-Temperature Zones at Unit Heaters. [13:Figure 8.3.2.5]

- (4) Sprinklers under glass or plastic skylights exposed to the direct rays of the sun shall be of the intermediate-temperature classification.
- (5) Sprinklers in an unventilated, concealed space, under an uninsulated roof, or in an unventilated attic shall be of the intermediate-temperature classification.
- (6) Sprinklers in unventilated show windows having high-powered electric lights near the ceiling shall be of the intermediate-temperature classification.
- (7) Sprinklers protecting commercial-type cooking equipment and ventilation systems shall be of the high- or extra high-temperature classification as determined by use of a temperature-measuring device. (See 7.10.6 of NFPA 13.)
- (8) Sprinklers protecting residential areas installed near specific heat sources identified in Table 13.3.1.8(c) shall be installed in accordance with Table 13.3.1.8(c).
- (9) Ordinary-temperature sprinklers located adjacent to a heating duct that discharges air that is less than 100°F (38°C) are not required to be separated in accordance with Table 13.3.1.8(a).
- (10) Sprinklers in walk-in type coolers and freezers with automatic defrosting shall be of the intermediate-temperature classification or higher. [13:8.3.2.5]

13.3.2 Where Required.

13.3.2.1 Where required by this Code or the referenced codes and standards listed in Chapter 2, automatic sprinkler systems shall be installed in accordance with 13.3.1.

13.3.2.2 Basements exceeding 2500 ft² (232 m²) in new buildings shall be protected throughout by an approved automatic sprinkler system.

13.3.2.3 New buildings housing emergency fire, rescue, or ambulance services shall be protected throughout by approved automatic sprinkler systems.

13.3.2.4 New buildings three or more stories in height above grade shall be protected throughout by an approved automatic sprinkler system in accordance with Section 13.3 unless otherwise permitted by 13.3.2.5.

13.3.2.5 Stand-alone open parking structures that are detached from other occupancies shall not be required to be protected by an automatic sprinkler system.

13.3.2.6* Exterior Roofs, Canopies, Porte-Cocheres, Balconies, Decks, or Similar Projections. In buildings protected throughout by automatic sprinklers in accordance with NFPA 13, automatic sprinkler protection shall be provided for the exterior spaces in accordance with 13.3.2.6.

Table 13.3.1.8(a) Temperature Ratings of Sprinklers Based on Distance from Heat Sources

Type of Heat Condition	Ordinary-Temperature Rating	Intermediate-Temperature Rating	High-Temperature Rating
(1) Heating ducts			
(a) Above	More than 2 ft 6 in.	2 ft 6 in. or less	
(b) Side and below	More than 1 ft 0 in.	1 ft 0 in. or less	
(c) Diffuser	Any distance except as shown under Intermediate-Temperature Rating column	<p><i>Downward discharge:</i> Cylinder with 1 ft 0 in. radius from edge extending 1 ft 0 in. below and 2 ft 6 in. above</p> <p><i>Horizontal discharge:</i> Semicylinder or cylinder with 2 ft 6 in. radius in direction of flow extending 1 ft 0 in. below and 2 ft 6 in. above</p>	
(2) Unit heater			
(a) Horizontal discharge		<p><i>Discharge side:</i> 7 ft 0 in. to 20 ft 0 in. 7 ft 0 in. radius cylinder radius pie-shaped cylinder (see Figure 13.3.1.8) extending 7 ft 0 in. above and 2 and 2 ft 0 in. below unit cylinder more than 7 ft 0 in. above unit heater</p>	
(b) Vertical downward discharge (for sprinklers below unit heater, see Figure 13.3.1.8)		7 ft 0 in. radius cylinder extending 7 ft 0 in. upward from an elevation 7 ft 0 in. above unit heater	7 ft 0 in. radius cylinder extending from the top of the unit heater to an elevation 7 ft 0 in. above unit heater
(3) Steam mains (uncovered)			
(a) Above	More than 2 ft 6 in.	2 ft 6 in. or less	
(b) Side and below	More than 1 ft 0 in.	1 ft 0 in. or less	
(c) Blowoff valve	More than 7 ft 0 in.		7 ft 0 in. or less

For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.
[13: Table 8.3.2.5(a)]

Table 13.3.1.8(b) Ratings of Sprinklers in Specified Locations

Location	Ordinary-Temperature Rating	Intermediate-Temperature Rating	High-Temperature Rating
Skylights		Glass or plastic	
Attics	Ventilated	Unventilated	
Peaked roof: metal or thin boards, concealed or not concealed, insulated or uninsulated	Ventilated	Unventilated	
Flat roof: metal, not concealed	Ventilated or unventilated	Note: For uninsulated roof, climate and insulated or uninsulated occupancy can necessitate intermediate sprinklers. Check on job.	
Flat roof: metal, concealed, insulated or uninsulated	Ventilated	Unventilated	
Show windows	Ventilated	Unventilated	

Note: A check of job condition by means of thermometers might be necessary. [13: Table 8.3.2.5(b)]

Table 13.3.1.8(c) Ratings of Sprinklers in Specified Residential Areas

Heat Source	Minimum Distance from Edge of Source to Ordinary-Temperature Sprinkler		Minimum Distance from Edge of Source to Intermediate-Temperature Sprinkler	
	in.	mm	in.	mm
Side of open or recessed fireplace	36	914	12	305
Front of recessed fireplace	60	1524	36	914
Coal- or wood-burning stove	42	1067	12	305
Kitchen range	18	457	9	229
Wall oven	18	457	9	229
Hot air flues	18	457	9	229
Uninsulated heat ducts	18	457	9	229
Uninsulated hot water pipes	12	305	6	152
Side of ceiling- or wall-mounted hot air diffusers	24	607	12	305
Front of wall-mounted hot air diffusers	36	914	18	457
Hot water heater or furnace	6	152	3	76
Light fixture:				
0 W-250 W	6	152	3	76
250 W-499 W	12	305	6	152

[13: Table 8.3.2.5(c)]

13.3.2.6.1 Unless the requirements of 13.3.2.6.2, 13.3.2.6.3, or 13.3.2.6.4 are met, sprinklers shall be installed under exterior roofs, canopies, porte-cocheres, balconies, decks, or similar projections exceeding 4 ft (1.2 m) in width. [13:8.15.7.1]

13.3.2.6.2* Sprinklers shall be permitted to be omitted where the canopies, roofs, porte-cocheres, balconies, decks, or similar projections are constructed with materials that are noncombustible, limited-combustible, or fire retardant-treated wood as defined in NFPA 703, *Standard for Fire Retardant-Treated Wood and Fire-Retardant Coatings for Building Materials*. [13:8.15.7.2]

13.3.2.6.3 Sprinklers shall be permitted to be omitted from below the canopies, roofs, porte-cocheres, balconies, decks, or

similar projections of combustible construction, provided the exposed finish material on the roofs, canopies, or porte-cocheres are noncombustible, limited-combustible, or fire retardant-treated wood as defined in NFPA 703, *Standard for Fire Retardant-Treated Wood and Fire-Retardant Coatings for Building Materials*, and the roofs, canopies, or porte-cocheres contain only sprinklered concealed spaces or any of the following unsprinklered combustible concealed spaces:

- (1) Combustible concealed spaces filled entirely with noncombustible insulation
- (2) Light or ordinary hazard occupancies where noncombustible or limited-combustible ceilings are directly attached to the bottom of solid wood joists so as to create enclosed joist

spaces 160 ft³ (4.5 m³) or less in volume, including space below insulation that is laid directly on top or within the ceiling joists in an otherwise sprinklered attic [see 11.2.3.1.4(4)(d) of NFPA 13]

- (3) Concealed spaces over isolated small roofs, canopies, or porte-cocheres not exceeding 55 ft² (5.1 m²) in area

[13:8.15.7.3]

13.3.2.6.4 Sprinklers shall be permitted to be omitted from exterior exit corridors when the exterior walls of the corridor are at least 50 percent open and when the corridor is entirely of noncombustible construction. [13:8.15.7.4]

13.3.2.6.5* Sprinklers shall be installed under roofs, canopies, porte-cocheres, balconies, decks, or similar projections greater than 2 ft (0.6 m) wide over areas where combustibles are stored. [13:8.15.7.5]

13.3.2.7 New Assembly Occupancies.

- F **13.3.2.7.1** The Where the occupant load exceeds 100, the following assembly occupancies shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with 13.3.1.2:

- (1) Dance halls
- (2) Discotheques
- (3) Nightclubs
- (4) Assembly occupancies with festival seating [101:12.3.5.1]

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 ft² (1115 m²) 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 area 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 ft² (93 m²)
 - (b) Storage facilities of less than 1000 ft² (93 m²) 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]

13.3.2.7.4 Where another provision of Chapter 12 of NFPA 101 requires an automatic sprinkler system, the sprinkler system shall be installed in accordance with NFPA 13. [101:12.3.5.4]

13.3.2.7.5 Stages. Every stage shall be protected by an approved, supervised automatic sprinkler system in compliance with Section 13.3. [101:12.4.5.10]

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. [101:12.4.5.10.1]

13.3.2.7.5.2 Sprinklers shall not be required for stages 1000 ft² (93 m²) 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. [101:12.4.5.10.2]

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 5/8 in. (16 mm) Type X gypsum wallboard or the approved equivalent. [101:12.4.5.10.3]

13.3.2.8 Existing Assembly Occupancies.

- F **13.3.2.8.1** Where the occupant load exceeds 400 300, the following assembly occupancies shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with NFPA 13:

- (1) Dance halls
- (2) Discotheques
- (3) Nightclubs
- (4) Assembly occupancies with festival seating [101:13.3.5.1]

13.3.2.8.2 Any assembly occupancy used or capable of being used for exhibition or display purposes shall be protected throughout by an approved automatic sprinkler system in accordance with Section 13.3 where the exhibition or display area exceeds 15,000 ft² (1400 m²). [101:13.3.5.2]

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 area 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 ft² (93 m²)
 - (b) Storage facilities of less than 1000 ft² (93 m²) if enclosed with not less than 1-hour fire resistance-rated construction
 - (c) Enclosed areas underneath grandstands that comply with 25.3.4 [101:13.3.5.3]

13.3.2.8.4 Where another provision of this chapter and Chapter 13 of NFPA 101 requires an automatic sprinkler system, the sprinkler system shall be installed in accordance with NFPA 13. [101:13.3.5.4]

13.3.2.8.5 Stages. Every stage shall be protected by an approved automatic sprinkler system in compliance with Section 13.3. [101:13.4.5.10]

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. [101:13.4.5.10.1]

13.3.2.8.5.2 Sprinklers shall not be required for stages 1000 ft² (93 m²) 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. [101:13.4.5.10.2]

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 5/8 in. (16 mm) Type X gypsum wallboard or the approved equivalent. [101:13.4.5.10.3]

13.3.2.9 New Educational Occupancies.

13.3.2.9.1* Educational occupancy buildings exceeding 12,000 ft² (1120 m²) shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3. [101:14.3.5.1]

13.3.2.9.2 Educational occupancy buildings four or more stories in height shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3. [101:14.3.5.2]

13.3.2.9.3 Every portion of educational buildings below the level of exit discharge shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3. [101:14.3.5.3]

13.3.2.9.4 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 Section 13.3. [101:14.3.5.4]

13.3.2.9.5 Where another provision of Chapter 14 of NFPA 101 requires an automatic sprinkler system, the sprinkler system shall be installed in accordance with NFPA 13. [101:14.3.5.5]

13.3.2.10 Existing Educational Occupancies.

13.3.2.10.1 Where student occupancy exists below the level of exit discharge, every portion of such floor shall be protected throughout by an approved automatic sprinkler system in accordance with Section 13.3. [101:15.3.5.1]

13.3.2.10.2 Where student occupancy does not exist on floors below the level of exit discharge, such floors shall be separated from the rest of the building by 1-hour fire resistance-rated construction or shall be protected throughout by an approved automatic sprinkler system in accordance with Section 13.3. [101:15.3.5.2]

13.3.2.10.3 Automatic sprinkler protection shall not be required where student occupancy exists below the level of exit discharge, provided that both of the following criteria are met:

- (1) The approval of the AHJ shall be required.
- (2) Windows for rescue and ventilation shall be provided in accordance with 15.2.11.1 of NFPA 101. [101:15.3.5.3]

13.3.2.10.4 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 Section 13.3. [101:15.3.5.4]

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. [101:15.3.5.5]

13.3.2.11 New Health Care Occupancies.

13.3.2.11.1* Buildings containing health care occupancies shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3, unless otherwise permitted by 13.3.2.11.3. [101:18.3.5.1]

13.3.2.11.2 The sprinkler system required by 13.3.2.11.1 shall be installed in accordance with NFPA 13. [101:18.3.5.4]

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]

13.3.2.11.4* Listed quick-response or listed residential sprinklers shall be used throughout smoke compartments containing patient sleeping rooms. [101:18.3.5.6]

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 ft² (0.55 m²), 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]

13.3.2.11.6* Sprinklers in areas where cubicle curtains are installed shall be in accordance with NFPA 13. [101:18.3.5.11]

13.3.2.12 Existing Health Care Occupancies.

13.3.2.12.1 Buildings containing nursing homes shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3 and Section 9.7 of NFPA 101, unless otherwise permitted by 13.3.2.12.6. [101:19.3.5.1]

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. [101:19.4.2.1]

13.3.2.12.3 Where a jurisdiction adopts this edition of the Code and previously adopted the 2009 edition, the sprinkling required by 13.3.2.12.2 shall be installed within 9 years of the adoption of this Code. [101:19.4.2.2]

13.3.2.12.4 Where required by 19.1.6 of NFPA 101, buildings containing hospitals or limited care facilities shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 13.3 and Section 9.7 of NFPA 101, unless otherwise permitted by 13.3.2.12.6. [101:19.3.5.3]

13.3.2.12.5* The sprinkler system required by 13.3.2.12.1 or 13.3.2.12.4 shall be installed in accordance with NFPA 13. [101:19.3.5.4]

13.3.2.12.6 In Type I and Type II construction, alternative protection measures shall be permitted to be substituted for sprinkler protection in specified areas where the AHJ has prohibited sprinklers, without causing a building to be classified as nonsprinklered. [101:19.3.5.5]

13.3.2.12.7* Where this Code permits exceptions for fully sprinklered buildings or smoke compartments, the sprinkler system shall meet the following criteria:

- (1) It shall be 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) In Type I and Type II construction, where the AHJ has prohibited sprinklers, approved alternative protection measures shall be permitted to be substituted for sprinkler protection in specified areas without causing a building to be classified as nonsprinklered. [101:19.3.5.7]

13.3.2.12.8* Where this Code permits exceptions for fully sprinklered buildings or smoke compartments and specifically references this paragraph, the sprinkler system shall meet 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]

13.3.2.12.9 Isolated hazardous areas shall be permitted to be protected in accordance with 13.3.1.4. For new installations in existing health care occupancies, where more than two sprinklers are installed in a single area, waterflow detection shall be provided to sound the building fire alarm or to notify, by a signal, any constantly attended location, such as PBX, security, or emergency room, at which the necessary corrective action shall be taken. [101:19.3.5.9]

13.3.2.12.10* Sprinklers shall not be required in clothes closets of patient sleeping rooms in hospitals where the area of the closet does not exceed 6 ft² (0.55 m²), 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, *Standard for the Installation of Sprinkler Systems*. [101:19.3.5.10]

13.3.2.12.11* Newly introduced cubicle curtains in sprinklered areas shall be installed in accordance with NFPA 13. [101:19.3.5.11]

13.3.2.13 New Detention and Correctional Facilities.

13.3.2.13.1 All buildings classified as Use Condition II, Use Condition III, Use Condition IV, or Use Condition V shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with 13.3.2.13.2. [101:22.3.5.2]

13.3.2.13.2 The automatic sprinkler system required by 13.3.2.13.1 shall meet all of the following criteria:

- (1) It shall be in accordance with Section 13.3
- (2) It shall be installed in accordance with NFPA 13
- (3) It shall be electrically connected to the fire alarm system
- (4) It shall be fully supervised [101:22.3.5.3]

13.3.2.14 Existing Detention and Correctional Facilities.

13.3.2.14.1* Where required by Table 23.1.6.1 of NFPA 101, facilities shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with 13.3.2.14.2. [101:23.3.5.2]

13.3.2.14.2 Where this Code permits exceptions for fully sprinklered detention and correctional occupancies or sprinklered smoke compartments, the sprinkler system shall meet all of the following criteria:

- (1) It shall be in accordance with Section 13.3
- (2) It shall be installed in accordance with NFPA 13
- (3) It shall be electrically connected to the fire alarm system
- (4) It shall be fully supervised [101:23.3.5.3]

13.3.2.15 New Hotels and Dormitories.

13.3.2.15.1 All buildings, other than those complying with 13.3.2.15.2, shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with 13.3.2.15.3. [101:28.3.5.1]

13.3.2.15.2 Automatic sprinkler protection shall not be required in buildings where all guest sleeping rooms or guest suites have a door opening directly to either of the following:

- (1) Outside at the street or grade level
- (2) Exterior exit access arranged in accordance with 7.5.3 of NFPA 101 in buildings up to and including three stories in height above grade [101:28.3.5.2]

13.3.2.15.3 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 13.3.2.15.4. In buildings four or fewer stories above grade plane, systems in accordance with NFPA 13R shall be permitted. [101:28.3.5.3]

13.3.2.15.4 The provisions for draft stops and closely spaced sprinklers in NFPA 13 shall not be required for openings complying with 8.6.9.1 of NFPA 101 where the opening is within the guest room or guest suite. [101:28.3.5.4]

13.3.2.15.5 Listed quick-response or listed residential sprinklers shall be used throughout guest rooms and guest room suites. [101:28.3.5.6]

13.3.2.15.6 Open parking structures that comply with NFPA 88A, *Standard for Parking Structures*, and are contiguous with hotels or dormitories shall be exempt from the sprinkler requirements of 13.3.2.15.1. [101:28.3.5.7]

13.3.2.16 Existing Hotels and Dormitories.

13.3.2.16.1 All high-rise buildings, other than those where each guest room or guest suite has exterior exit access in accordance with 7.5.3 of NFPA 101, shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with 13.3.2.16.2. [101:29.3.5.1]

13.3.2.16.2* 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 13.3.2.16.3 and 13.3.2.16.4; in buildings up to and including four stories in height above grade, systems in accordance with NFPA 13R shall be permitted. [101:29.3.5.3]

13.3.2.16.3 The provisions for draft stops and closely spaced sprinklers in NFPA 13 shall not be required for openings complying with 8.6.9.1 of NFPA 101 where the opening is within the guest room or guest suite. [101:29.3.5.4]

13.3.2.16.4 In guest rooms and in guest room suites, sprinkler installations shall not be required in closets not exceeding 24 ft² (2.2 m²) and in bathrooms not exceeding 55 ft² (5.1 m²). [101:29.3.5.5]

13.3.2.17 New Apartment Buildings.

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. [101:30.3.5.1]

13.3.2.17.2 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 13.3.2.17.3 and 13.3.2.17.4. In buildings four or fewer stories above grade plane, systems in accordance with NFPA 13R shall be permitted. [101:30.3.5.2]

13.3.2.17.3 In buildings sprinklered in accordance with NFPA 13, closets less than 12 ft² (1.1 m²) in area in individual dwelling units shall not be required to be sprinklered. Closets that contain equipment such as washers, dryers, furnaces, or water heaters shall be sprinklered regardless of size. [101:30.3.5.3]

13.3.2.17.4 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. [101:30.3.5.4]

13.3.2.17.5 Listed quick-response or listed residential sprinklers shall be used throughout all dwelling units. [101:30.3.5.5]

13.3.2.17.6 Open parking structures complying with NFPA 88A, *Standard for Parking Structures*, that are contiguous with apartment buildings shall be exempt from the sprinkler requirements of 13.3.2.17.1. [101:30.3.5.6]

13.3.2.17.7 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. [101:30.3.5.7]

13.3.2.18 Existing Apartment Buildings.

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 13.3.2.18.3. In buildings four or fewer stories above grade plane, systems in accordance with NFPA 13R shall be permitted. [101:31.3.5.2]

13.3.2.18.2 In individual dwelling units, sprinkler installation shall not be required in closets not exceeding 24 ft² (2.2 m²) and in bathrooms not exceeding 55 ft² (5.1 m²). Closets that contain equipment such as washers, dryers, furnaces, or water heaters shall be sprinklered regardless of size. [101:31.3.5.3]

13.3.2.18.3 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. [101:31.3.5.4]

13.3.2.18.4 Buildings using Option 3 in accordance with NFPA 101 shall be provided with automatic sprinkler protection installed in accordance with 13.3.2.18.4.1 through 13.3.2.18.4.4. [101:31.3.5.8]

13.3.2.18.4.1 Automatic sprinklers shall be installed in the corridor, along the corridor ceiling, utilizing the maximum spacing requirements of the standards referenced in 13.3.1.2. [101:31.3.5.8.1]

13.3.2.18.4.2 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. [101:31.3.5.8.2]

13.3.2.18.4.3 The workmanship and materials of the sprinkler installation specified in 13.3.2.18.4 shall meet the requirements of 13.3.1.2. [101:31.3.5.8.3]

13.3.2.18.4.4 Where Option 3 is being used to permit the use of 1¼ 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. [101:31.3.5.8.4]

13.3.2.18.5 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. [101:31.3.5.9]

13.3.2.18.6* 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. [101:31.3.5.10]

13.3.2.19 Lodging and Rooming Houses.

13.3.2.19.1 All new lodging or rooming houses, other than those meeting 13.3.2.19.2, shall be protected throughout by an approved automatic sprinkler system in accordance with 13.3.2.19.3. [101:26.3.6.1]

13.3.2.19.2 An automatic sprinkler system shall not be required where every sleeping room has a door opening directly to the outside of the building at street or the finished ground level, or has a door opening directly to the outside leading to an exterior stairway that meets the requirements of 26.2.1.1.2 of NFPA 101. [101:26.3.6.2]

13.3.2.19.3 Where an automatic sprinkler system is required or is used as an alternative method of protection, either for total or partial building coverage, the system shall be in accordance with Section 13.3 and 13.3.2.19.3.1 through 13.3.2.19.3.6. [101:26.3.6.3]

13.3.2.19.3.1 Activation of the automatic sprinkler system shall actuate the fire alarm system in accordance with Section 13.7. [101:26.3.6.3.1]

13.3.2.19.3.2 In buildings four or fewer stories above grade plane, systems in accordance with NFPA 13R shall be permitted. [101:26.3.6.3.2]

13.3.2.19.3.3* Systems in accordance with NFPA 13D shall be permitted where all of the following requirements are met:

- (1) The lodging or rooming house shall not be part of a mixed occupancy.
- (2) Entrance foyers shall be sprinklered.
- (3) Lodging or rooming houses with sleeping accommodations for more than eight occupants shall be treated as two-family dwellings with regard to the water supply. [101:26.3.6.3.3]

13.3.2.19.3.4 In buildings sprinklered in accordance with NFPA 13, closets less than 12 ft² (1.1 m²) in area in individual dwelling units shall not be required to be sprinklered. [101:26.3.6.3.4]

13.3.2.19.3.5 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. [101:26.3.6.3.5]

13.3.2.19.3.6 In existing lodging or rooming houses, sprinkler installations shall not be required in closets not exceeding 24 ft² (2.2 m²) and in bathrooms not exceeding 55 ft² (5.1 m²). [101:26.3.6.3.6]

13.3.2.20 One- and Two-Family Dwellings.

13.3.2.20.1 ~~All new one and two family dwellings shall be protected throughout by an approved automatic sprinkler system in accordance with 13.3.2.20.2. [101:24.3.5.1]~~

13.3.2.20.2 Where an automatic sprinkler system is installed, either for total or partial building coverage, the system shall be in accordance with Section 13.3; in buildings of four or fewer stories in height above grade plane, systems in accordance with NFPA 13R and with NFPA 13D shall also be permitted. [101:24.3.5.2]

13.3.2.21 New Residential Board and Care Occupancies.

13.3.2.21.1 Large Facilities.

13.3.2.21.1.1 General. All buildings shall be protected throughout by an approved automatic sprinkler system installed in accordance with NFPA 13 and provided with quick-response or residential sprinklers throughout. [101:32.3.3.5.1]

13.3.2.21.1.2 Supervision. Automatic sprinkler systems shall be provided with electrical supervision in accordance with 13.3.1.7. [101:32.3.3.5.4]

13.3.2.21.2 Small Facilities.

13.3.2.21.2.1* All facilities, other than those meeting the requirement of 13.3.2.21.2.2, shall be protected throughout by an approved automatic sprinkler system, installed in accordance with 13.3.2.21.2.3, using quick-response or residential sprinklers. [101:32.2.3.5.1]

13.3.2.21.2.2* In conversions, sprinklers shall not be required in small board and care homes serving eight or fewer residents when all occupants have the ability as a group to move reliably to a point of safety within 3 minutes. [101:32.2.3.5.2]

13.3.2.21.2.3 Where an automatic sprinkler system is installed, for either total or partial building coverage, all of the following requirements shall be met:

- (1) The system shall be in accordance with NFPA 13 and shall initiate the fire alarm system in accordance with 13.7.2.15.1.1.
- (2) The adequacy of the water supply shall be documented to the AHJ. [101:32.2.3.5.3]

13.3.2.21.2.3.1 In buildings four or fewer stories above grade plane, systems in accordance with NFPA 13R shall be permitted. All habitable areas, closets, roofed porches, roofed decks, and roofed balconies shall be sprinklered. [101:32.2.3.5.3.1]

13.3.2.21.2.3.2* An automatic sprinkler system with a 30-minute water supply, and complying with the following requirements and with NFPA 13D, shall be permitted:

- (1) All habitable areas, closets, roofed porches, roofed decks, and roofed balconies shall be sprinklered.
- (2) Facilities with more than eight residents shall be treated as two-family dwellings with regard to water supply. [101:32.2.3.5.3.2]

13.3.2.21.2.4 Automatic sprinkler systems installed in accordance with NFPA 13 and NFPA 13R shall be provided with electrical supervision in accordance with 13.3.1.7. [101:32.2.3.5.4]

13.3.2.21.2.5 Automatic sprinkler systems installed in accordance with NFPA 13D shall be provided with valve supervision by one of the following methods:

- (1) Single listed control valve that shuts off both domestic and sprinkler systems and separate shutoff for the domestic system only
- (2) Electrical supervision in accordance with 13.3.1.7
- (3) Valve closure that causes the sounding of an audible signal in the facility [101:32.2.3.5.5]

13.3.2.21.2.6 Sprinkler piping serving not more than six sprinklers for any isolated hazardous area shall be permitted to be installed in accordance with 13.3.1.4 and shall meet all of the following requirements:

- (1) In new installations, where more than two sprinklers are installed in a single area, waterflow detection shall be provided to initiate the fire alarm system required by 13.7.2.15.1.1.
- (2) The duration of water supplies shall be as required by 13.3.2.21.2.3.2. [101:32.2.3.5.6]

13.3.2.22 Existing Residential Board and Care Facilities.

13.3.2.22.1 Large Facilities.

13.3.2.22.1.1* General. Where an automatic sprinkler system is installed, for either total or partial building coverage, the system shall be installed in accordance with Section 13.3, as modified by 13.3.2.22.1.1.1 through 13.3.2.22.1.1.3. [101:33.3.3.5.1]

13.3.2.22.1.1.1 In buildings four or fewer stories above grade plane, systems in accordance with NFPA 13R shall be permitted. [101:33.3.3.5.1.1]

13.3.2.22.1.1.2 In facilities having prompt or slow evacuation capability, automatic sprinklers shall not be required in closets not exceeding 24 ft² (2.2 m²) and in bathrooms not exceeding 55 ft² (5.1 m²), provided that such spaces are finished with noncombustible or limited-combustible materials. [101:33.3.3.5.1.2]

13.3.2.22.1.1.3 Initiation of the fire alarm system shall not be required for existing installations in accordance with 13.3.2.22.1.6. [101:33.3.3.5.1.3]

13.3.2.22.1.2 Impractical Evacuation Capability. All facilities having impractical evacuation capability shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with NFPA 13. [101:33.3.3.5.2]

13.3.2.22.1.3 High-Rise Buildings. All high-rise buildings shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with 13.3.2.22.1. Such systems shall initiate the fire alarm system in accordance with 13.7.1.4. [101:33.3.3.5.3]

13.3.2.22.1.4 Attics shall be protected in accordance with 13.3.2.22.1.4.1 or 13.3.2.22.1.4.2. [101:33.3.3.5.4]

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, *Standard for Fire Retardant-Treated Wood and Fire-Retardant Coatings for Building Materials*.

[101:33.3.3.5.4.2]

13.3.2.22.1.5 Supervision. Automatic sprinkler systems shall be supervised in accordance with Section 13.3; waterflow alarms shall not be required to be transmitted off-site. [101:33.3.3.5.5]

13.3.2.22.1.6 Domestic Water Supply Option. Sprinkler piping serving not more than six sprinklers for any isolated hazardous area in accordance with 13.3.1.4 shall be permitted; in new installations where more than two sprinklers are installed in a single area, waterflow detection shall be provided to initiate the fire alarm system required by 13.7.2.16.2.1. [101:33.3.3.5.6]

13.3.2.22.2 Small Facilities.

13.3.2.22.2.1 Where an automatic sprinkler system is installed, for either total or partial building coverage, the following requirements shall be met:

- (1) The system shall be in accordance with Section 13.3 and shall initiate the fire alarm system in accordance with 13.7.2.16.1.1, as modified by 13.3.2.22.2.1.1 through 13.3.2.22.2.1.6.
- (2) The adequacy of the water supply shall be documented to the AHJ. [101:33.2.3.5.3]

13.3.2.22.2.1.1* In prompt evacuation capability facilities, all of the following shall apply:

- (1) An automatic sprinkler system in accordance with NFPA 13D shall be permitted.
- (2) Automatic sprinklers shall not be required in closets not exceeding 24 ft² (2.2 m²) and in bathrooms not exceeding 55 ft² (5.1 m²), provided that such spaces are finished with lath and plaster or materials providing a 15-minute thermal barrier. [101:33.2.3.5.3.1]

13.3.2.22.2.1.2 In slow and impractical evacuation capability facilities, all of the following shall apply:

- (1) An automatic sprinkler system in accordance with NFPA 13D, with a 30-minute water supply, shall be permitted.
- (2) All habitable areas and closets shall be sprinklered.
- (3) Automatic sprinklers shall not be required in bathrooms not exceeding 55 ft² (5.1 m²), provided that such spaces are finished with lath and plaster or materials providing a 15-minute thermal barrier. [101:33.2.3.5.3.2]

13.3.2.22.2.1.3 In prompt and slow evacuation capability facilities, where an automatic sprinkler system is in accordance with NFPA 13, sprinklers shall not be required in closets not exceeding 24 ft² (2.2 m²) and in bathrooms not exceeding 55 ft² (5.1 m²), provided that such spaces are finished with lath and plaster or materials providing a 15-minute thermal barrier. [101:33.2.3.5.3.3]

13.3.2.22.2.1.4 In prompt and slow evacuation capability facilities in buildings four or fewer stories above grade plane, systems in accordance with NFPA 13R shall be permitted. [101:33.2.3.5.3.4]

13.3.2.22.2.1.5 In impractical evacuation capability facilities in buildings four or fewer stories above grade plane, systems in accordance with NFPA 13R shall be permitted. All habitable areas and closets shall be sprinklered. Automatic sprinklers shall not be required in bathrooms not exceeding 55 ft² (5.1 m²), provided that such spaces are finished with lath and plaster or materials providing a 15-minute thermal barrier. [101:33.2.3.5.3.5]

13.3.2.22.2.1.6 Initiation of the fire alarm system shall not be required for existing installations in accordance with 13.3.2.22.3. [101:33.2.3.5.3.6]

13.3.2.22.2.2 All impractical evacuation capability facilities shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with 13.3.2.22.2.1. [101:33.2.3.5.3.7]

13.3.2.22.3 Sprinkler piping serving not more than six sprinklers for any isolated hazardous area shall be permitted to be installed in accordance with 13.3.1.4 and shall meet the following requirements:

- (1) In new installations, where more than two sprinklers are installed in a single area, waterflow detection shall be provided to initiate the fire alarm system required by 13.7.2.16.1.1.
- (2) The duration of water supplies shall be as required for the sprinkler systems addressed in 13.3.2.22.2.1. [101:33.2.3.5.6]

13.3.2.22.4 Attics shall be protected in accordance with 13.3.2.22.4.1 or 13.3.2.22.4.2. [101:33.2.3.5.7]

13.3.2.22.4.1 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. [101:33.2.3.5.7.1]

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, *Standard for Fire Retardant-Treated Wood and Fire-Retardant Coatings for Building Materials*.

[101:33.2.3.5.7.2]

13.3.2.23 New Mercantile Occupancies.

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 ft² (1115 m²) in gross area
- (3) Throughout stories below the level of exit discharge where such stories have an area exceeding 2500 ft² (232 m²) 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), (2), or (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 13.3.1.7. [101:36.3.5.2]

13.3.2.23.3 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) The fire code (see 3.3.94 of NFPA 101)
- (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]

13.3.2.23.4 Mall Buildings.**13.3.2.23.4.1 Automatic Extinguishing Systems.**

13.3.2.23.4.1.1 The mall building and all anchor buildings shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with NFPA 13 and 13.3.2.23.4.1.2. [101:36.4.4.10.1]

13.3.2.23.4.1.2 The system shall be installed in such a manner that any portion of the system serving tenant spaces can be taken out of service without affecting the operating of the portion of the system serving the mall. [101:36.44.10.2]

13.3.2.23.4.2 Hose Connections.

13.3.2.23.4.2.1 There shall be a hose outlet connected to a system sized to deliver 250 gal/min (946 L/min) at the most hydraulically remote outlet. [5000:27.4.4.7.2.1]

13.3.2.23.4.2.2 The outlet shall be supplied from the mall zone sprinkler system and shall be hydraulically calculated. [5000:27.4.4.7.2.2]

13.3.2.23.4.2.3 Hose outlets shall be provided at each of the following locations:

- (1) Within the mall at the entrance to each exit passage or corridor
- (2) At each floor level landing within enclosed stairways opening directly onto the mall
- (3) At exterior public entrances to the mall [5000:27.4.4.7.2.3]

13.3.2.24 Existing Mercantile Occupancies.

13.3.2.24.1 Mercantile occupancies, other than one-story buildings that meet the requirements of a street floor, as defined in 3.3.249, shall be protected by an approved automatic sprinkler system in accordance with NFPA 13 in any of the following locations:

- (1) Throughout all mercantile occupancies with a story over 15,000 ft² (1400 m²) in area
- (2) Throughout all mercantile occupancies exceeding 30,000 ft² (2800 m²) in gross area
- (3) Throughout stories below the level of exit discharge where such stories have an area exceeding 2500 ft² (232 m²) 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), (2), or (3) apply to the mercantile occupancy [101:37.3.5.1]

13.3.2.24.2 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) The fire code (see 3.3.94 of NFPA 101)
- (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*

[101:37.4.5.5]

13.3.2.25 Underground and Windowless Structures.

Underground and 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 access portions of the structure.
- (2) They have an occupant load of 100 or fewer persons in existing underground or limited access portions of the structure.
- (3) The structure is a one-story underground or limited access structure that is permitted to have a single exit per Chapter 12 through Chapter 43 of NFPA 101, with a common path of travel not greater than 50 ft (15 m). [101:11.7.3.4]

13.3.2.26 High-Rise Buildings.

13.3.2.26.1 New high-rise buildings shall be protected throughout by an approved automatic sprinkler system in accordance with Section 13.3.

13.3.2.26.2* Existing high-rise buildings shall be protected throughout by an approved automatic sprinkler system in accordance with this chapter and 13.3.2.26.2.1 through 13.3.2.26.2.3.

13.3.2.26.2.1 Each building owner shall, within 180 days of receiving notice, file an intent to comply with this regulation with the AHJ for approval.

13.3.2.26.2.2 The AHJ shall review and respond to the intent-to-comply submittal within 60 days of receipt.

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F~~ **13.3.2.26.2.3* ~~The entire building shall be required to be protected by an approved automatic sprinkler system within 12 years of adoption of this Code.~~**

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F~~ **13.3.2.26.2.3** The entire building shall be required to be protected by an approved automatic sprinkler system by December 31, 2019 or comply with the requirement of FFPC 101: Chapter 31.

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F~~ **13.3.2.26.2.4** All existing high-rise apartment buildings shall be subject to the provisions of Section 718.111 and 718.112, Florida

F Statutes, which shall supercede the requirement of an approved
L automatic sprinkler system.

13.3.2.27* New Storage Occupancies.

13.3.2.27.1 High-Piled Storage. An automatic sprinkler system shall be installed throughout all occupancies containing areas greater than 2500 ft² (232 m²) for the high-piled storage of combustibles.

13.3.2.27.2* General Storage. An automatic sprinkler system shall be installed throughout all occupancies containing areas greater than 12,000 ft² (1115 m²) for the storage of combustibles.

13.3.2.27.3 An automatic sprinkler system shall be installed throughout all occupancies containing storage commodities classified as Group A Plastics in excess of 5 ft (1.5 m) in height over an area exceeding 2500 ft² (232 m²) in area.

13.3.2.27.4 Mini-Storage Building. An automatic sprinkler system shall be installed throughout all mini-storage buildings greater than 2500 ft² (232 m²) where any of the individual storage units are separated by less than 1-hour fire resistance-rated barrier. [5000:30.3.5.3]

13.3.2.27.5 Bulk Storage of Tires. Buildings and structures where the volume for the storage of tires exceeds 20,000 ft³ (566 m³) shall be equipped throughout with an approved automatic fire sprinkler system. [5000:30.3.5.2]

13.3.2.28 Woodworking Operations. An approved automatic fire sprinkler system shall be installed in buildings containing woodworking operations exceeding 2500 ft² (232 m²) that use equipment, machinery, or appliances, that generate finely divided combustible waste, or that use finely divided combustible materials. [5000:29.3.5.1.2]

13.3.2.29 New and Existing Day Care. 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 Section 13.3. [101:16.3.5.3; 101:17.3.5.3]

13.3.3 Inspection, Testing, and Maintenance.

13.3.3.1 A sprinkler system installed in accordance with this *Code* shall be properly maintained to provide at least the same level of performance and protection as designed. The owner shall be responsible for maintaining the system and keeping it in good working condition.

13.3.3.2 A sprinkler system installed in accordance with this *Code* shall be inspected, tested, and maintained in accordance with NFPA 25.

13.3.3.3 Ceiling Tiles and Ceiling Assemblies. Where automatic sprinklers are installed, ceilings necessary for the proper actuation of the fire protection device in accordance with NFPA 13 shall be maintained.

13.3.3.4 General Requirements.

13.3.3.4.1 Responsibility of the Property Owner or Designated Representative.

13.3.3.4.1.1* Responsibility for Inspection, Testing, Maintenance, and Impairment. The property owner or designated representative shall be responsible for properly maintaining a water-based fire protection system. [25:4.1.1]

13.3.3.4.1.1.1 Buildings. The building owner shall ensure that all areas of the building containing water-filled piping shall be maintained at a minimum temperature of 40°F (4.4°C) and not exposed to freezing conditions. [25:4.1.1.1]

(A)* Inspection, testing, maintenance, and impairment shall be implemented in accordance with procedures meeting those established in this document and in accordance with the manufacturer's instructions. [25:4.1.1.1]

13.3.3.4.1.1.2 Inspection, testing, and maintenance shall be performed by personnel who have developed competence through training and experience. [25:4.1.1.2]

13.3.3.4.1.1.3* Where the property owner or designated representative is not the occupant, the property owner or designated representative shall be permitted to delegate the authority for inspecting, testing, maintenance, and impairment of the fire protection systems to a designated representative. [25:4.1.1.3]

13.3.3.4.1.1.4 Where a designated representative has received the authority for inspection, testing, maintenance, and impairment, the designated representative shall comply with the requirements identified for the property owner or designated representative throughout this *Code*. [25:4.1.1.4]

13.3.3.4.1.2* Accessibility. The property owner or designated representative shall provide ready accessibility to components of water-based fire protection systems that require inspection, testing, and maintenance.

13.3.3.4.1.3 Notification of System Shutdown. The property owner or designated representative shall notify the AHJ, the fire department, if required, and the alarm-receiving facility before testing or shutting down a system or its supply. [25:4.1.3]

13.3.3.4.1.3.1 The notification of system shutdown shall include the purpose for the shutdown, the system or component involved, and the estimated time of shutdown. [25:4.1.3.1]

13.3.3.4.1.3.2 The AHJ, the fire department, and the alarm-receiving facility shall be notified when the system, supply, or component is returned to service. [25:4.1.3.2]

13.3.3.4.1.4* Corrections and Repairs.

13.3.3.4.1.4.1 The property owner or designated representative shall correct or repair deficiencies or impairments that are found during the inspection, test, and maintenance required by this *Code*. [25:4.1.4.1]

13.3.3.4.1.4.2* Corrections and repairs shall be performed by qualified maintenance personnel or a qualified contractor. [25:4.1.4.2]

13.3.3.4.1.5* Changes in Occupancy, Use, Process, or Materials. The property owner or designated representative shall not make changes in the occupancy, the use or process, or the materials used or stored in the building without evaluation of the fire protection systems for their capability to protect the new occupancy, use, or materials. [25:4.1.5]

13.3.3.4.1.5.1 The evaluation required by 13.3.3.4.1.5 shall not be considered part of the normal inspection, testing, and maintenance required by this *Code*. [25:4.1.5.1]

13.3.3.4.1.5.2 The evaluation shall consider factors that include, but are not limited to, the following:

- (1) Occupancy changes such as converting office or production space into warehousing
- (2) Process or material changes such as metal stamping to molded plastics
- (3) Building revisions such as relocated walls, added mezzanines, and ceilings added below sprinklers
- (4) Removal of heating systems in spaces with piping subject to freezing [25:4.1.5.2]

13.3.3.4.1.6* Addressing Changes in Hazards.

13.3.3.4.1.6.1 Where changes in the occupancy, hazard, water supply, storage commodity, storage arrangement, building modification, or other condition that affects the installation criteria of the system are identified, the property owner or designated representative shall promptly take steps to evaluate the adequacy of the installed system in order to protect the building or hazard in question. [25:4.1.6.1]

13.3.3.4.1.6.2 Where the evaluation reveals that the installed system is inadequate to protect the building or hazard in question, the property owner or designated representative shall make the required corrections. [25:4.1.6.2]

13.3.3.4.1.6.3 Corrections shall be approved. [25:4.1.6.3]

13.3.3.4.1.7 Valve Location. The location of shutoff valves shall be identified. [25:4.1.7]

13.3.3.4.1.8 Information Sign.

13.3.3.4.1.8.1 A permanently marked metal or rigid plastic information sign shall be placed at the system control riser supplying an antifreeze loop, dry system, preaction system, or auxiliary system control valve. [25:4.1.8.1]

13.3.3.4.1.8.2 Each sign shall be secured with a corrosion-resistant wire, chain, or other approved means and shall indicate at least the following information:

- (1) Location of the area served by the system
- (2) Location of auxiliary drains and low-point drains for dry pipe and preaction systems
- (3) The presence and location of antifreeze or other auxiliary systems
- (4) The presence and location(s) of heat tape [25:4.1.8.2]

13.3.3.4.1.9 Impairments.

13.3.3.4.1.9.1 Where an impairment to a water-based fire protection system occurs, the procedures outlined in Chapter 15 of NFPA 25 shall be followed, including the attachment of a tag to the impaired system. [25:4.1.9.1]

13.3.3.4.1.9.2 Where a water-based fire protection system is returned to service following an impairment, the system shall be verified to be working properly by means of an appropriate inspection or test. [25:4.1.9.2]

13.3.3.4.2 Corrective Action. Manufacturers shall be permitted to make modifications to their own listed product in the field with listed devices that restore the original performance as intended by the listing, where acceptable to the AHJ. [25:4.2]

13.3.3.4.3 Records.

13.3.3.4.3.1* Records shall be made for all inspections, tests, and maintenance of the system and its components and shall be made available to the AHJ upon request. [25:4.3.1]

13.3.3.4.3.2 Records shall indicate the procedure performed (e.g., inspection, test, or maintenance), the organization that performed the work, the results, and the date. [25:4.3.2]

13.3.3.4.3.3* Records shall be maintained by the property owner. [25:4.3.3]

13.3.3.4.3.4 As-built system installation drawings, hydraulic calculations, original acceptance test records, and device manufacturer's data sheets shall be retained for the life of the system. [25:4.4.3.4]

13.3.3.4.3.5 Subsequent records shall be retained for a period of 1 year after the next inspection, test, or maintenance of that type required by the Code. [25:4.3.5]

13.3.3.5 Sprinkler Systems.

13.3.3.5.1 Maintenance — Sprinklers.

13.3.3.5.1.1* Replacement sprinklers shall have the proper characteristics for the application intended, which include the following:

- (1) Style
- (2) Orifice size and K-factor
- (3) Temperature rating
- (4) Coating, if any
- (5) Deflector type (e.g., upright, pendent, sidewall)
- (6) Design requirements [25:5.4.1.1]

13.3.3.5.1.1.1* Spray sprinklers shall be permitted to replace old-style sprinklers. [25:5.4.1.1.1]

13.3.3.5.1.1.2 Replacement sprinklers for piers and wharves shall comply with NFPA 307, *Standard for the Construction and Fire Protection of Marine Terminals, Piers, and Wharves*. [25:5.4.1.1.2]

13.3.3.5.1.2 Only new, listed sprinklers shall be used to replace existing sprinklers. [25:5.4.1.2]

13.3.3.5.1.3* Special and quick-response sprinklers as defined by NFPA 13, *Standard for the Installation of Sprinkler Systems*, shall be replaced with sprinklers of the same orifice, size, temperature range and thermal response characteristics, and K-factor. [25:5.4.1.3]

13.3.3.5.1.4* A supply of spare sprinklers (never fewer than six) shall be maintained on the premises so that any sprinklers that have operated or been damaged in any way can be promptly replaced. [25:5.4.1.4]

13.3.3.5.1.4.1 The sprinklers shall correspond to the types and temperature ratings of the sprinklers in the property. [25:5.4.1.4.1]

13.3.3.5.1.4.2 The sprinklers shall be kept in a cabinet located where the temperature in which they are subjected will at no time exceed 100°F (38°C). [25:5.4.1.4.2]

(A) Where dry sprinklers of different lengths are installed, spare dry sprinklers shall not be required, provided that a means of returning the system to service is furnished. [25:5.4.1.4.2.1]

13.3.3.5.1.5 The stock of spare sprinklers shall include all types and ratings installed and shall be as follows:

- (1) For protected facilities having under 300 sprinklers — no fewer than 6 sprinklers
- (2) For protected facilities having 300 to 1000 sprinklers — no fewer than 12 sprinklers
- (3) For protected facilities having over 1000 sprinklers — no fewer than 24 sprinklers [25:5.4.1.5]

13.3.3.5.1.6* A special sprinkler wrench shall be provided and kept in the cabinet to be used in the removal and installation of sprinklers. [25:5.4.1.6]

13.3.3.5.1.6.1 One sprinkler wrench shall be provided for each type of sprinkler installed. [25:5.4.1.6.1]

13.3.3.5.1.7 Sprinklers protecting spray coating areas shall be protected against overspray residue. [25:5.4.1.7]

13.3.3.5.1.7.1* Sprinklers subject to overspray accumulations shall be protected using cellophane bags having a thickness of 0.003 in. (0.076 mm) or less or thin paper bags. [25:5.4.1.7.1]

13.3.3.5.1.7.2 Coverings shall be replaced when deposits or residue accumulate. [25:5.4.1.7.2]

13.3.3.5.1.8* Sprinklers shall not be altered in any respect or have any type of ornamentation, paint, or coatings applied after shipment from the place of manufacture. [25:5.4.1.8]

13.3.3.5.1.9 Sprinklers and automatic spray nozzles used for protecting commercial-type cooking equipment and ventilating systems shall be replaced annually. [25:5.4.1.9]

13.3.3.5.1.9.1 Where automatic bulb-type sprinklers or spray nozzles are used and annual examination shows no buildup of grease or other material on the sprinklers or spray nozzles, such sprinklers and spray nozzles shall not be required to be replaced. [25:5.4.1.9.1]

13.3.3.5.2* Dry Pipe Systems. Dry pipe systems shall be kept dry at all times. [25:5.4.2]

13.3.3.5.2.1 During nonfreezing weather, a dry pipe system shall be permitted to be left wet if the only other option is to remove the system from service while waiting for parts or during repair activities. [25:5.4.2.1]

13.3.3.5.2.2 Refrigerated spaces or other areas within the building interior where temperatures are maintained at or below 40°F (4.4°C) shall not be permitted to be left wet. [25:5.4.2.2]

13.3.3.5.2.3 Air driers shall be maintained in accordance with the manufacturer's instructions. [25:5.4.2.3]

13.3.3.5.2.4 Compressors used in conjunction with dry pipe sprinkler systems shall be maintained in accordance with the manufacturer's instructions. [25:5.4.2.4]

13.3.3.5.3* Installation and Acceptance Testing. Where maintenance or repair requires the replacement of sprinkler system components affecting more than 20 sprinklers, those components shall be installed and tested in accordance with NFPA 13. [25:5.4.3]

13.3.3.6 Impairments.

13.3.3.6.1 General.

13.3.3.6.1.1 Minimum Requirements.

13.3.3.6.1.1.1 Subsection 13.3.3.6 shall provide the minimum requirements for a water-based fire protection system impairment program. [25:15.1.1.1]

13.3.3.6.1.1.2 Measures shall be taken during the impairment to ensure that increased risks are minimized and the duration of the impairment is limited. [25:15.1.1.2]

13.3.3.6.2 Impairment Coordinator.

13.3.3.6.2.1 The property owner or designated representative shall assign an impairment coordinator to comply with the requirements of 13.3.3.6. [25:15.2.1]

13.3.3.6.2.2 In the absence of a specific designee, the property owner or designated representative shall be considered the impairment coordinator. [25:15.2.2]

13.3.3.6.2.3 Where the lease, written use agreement, or management contract specifically grants the authority for inspection, testing, and maintenance of the fire protection system(s) to the tenant, management firm, or managing individual, the tenant, management firm, or managing individual shall assign a person as impairment coordinator. [25:15.2.3]

13.3.3.6.3 Tag Impairment System.

13.3.3.6.3.1* A tag shall be used to indicate that a system, or part thereof, has been removed from service. [25:15.3.1]

13.3.3.6.3.2* The tag shall be posted at each fire department connection and the system control valve, and other locations required by the AHJ indicating which system, or part thereof, has been removed from service. [25:15.3.2]

13.3.3.6.4 Impaired Equipment.

13.3.3.6.4.1 The impaired equipment shall be considered to be the water-based fire protection system, or part thereof, that is removed from service. [25:15.4.1]

13.3.3.6.4.2 The impaired equipment shall include, but shall not be limited to, the following:

- (1) Sprinkler systems
- (2) Standpipe systems
- (3) Fire hose systems
- (4) Underground fire service mains
- (5) Fire pumps
- (6) Water storage tanks
- (7) Water spray fixed systems
- (8) Foam-water systems
- (9) Fire service control valves [25:15.4.2]

13.3.3.6.5* Preplanned Impairment Programs.

13.3.3.6.5.1 All preplanned impairments shall be authorized by the impairment coordinator. [25:15.5.1]

13.3.3.6.5.2 Before authorization is given, the impairment coordinator shall be responsible for verifying that the following procedures have been implemented:

- (1) The extent and expected duration of the impairment have been determined.
- (2) The areas or buildings involved have been inspected and the increased risks determined.
- (3) Recommendations have been submitted to management or the property owner or designated representative.
- (4) Where a required fire protection system is out of service for more than 10 hours in a 24-hour period, the impairment coordinator shall arrange for one of the following:
 - (a) Evacuation of the building or portion of the building affected by the system out of service
 - (b)* An approved fire watch
 - (c)* Establishment of a temporary water supply
 - (d)* Establishment and implementation of an approved program to eliminate potential ignition sources and limit the amount of fuel available to the fire
- (5) The fire department has been notified.
- (6) The insurance carrier, the alarm company, property owner or designated representative, and other AHJs have been notified.
- (7) The supervisors in the areas to be affected have been notified.
- (8) A tag impairment system has been implemented. (See 13.3.3.6.3.)
- (9) All necessary tools and materials have been assembled on the impairment site. [25:15.5.2]

13.3.3.6.6 Emergency Impairments.

13.3.3.6.6.1 Emergency impairments shall include, but are not limited to, system leakage, interruption of water supply, frozen or ruptured piping, and equipment failure. [25:15.6.1]

13.3.3.6.6.2 When emergency impairments occur, emergency action shall be taken to minimize potential injury and damage. [25:15.6.2]

13.3.3.6.6.3 The coordinator shall implement the steps outlined in 13.3.3.6.5. [25:15.6.3]

13.3.3.6.7 Restoring Systems to Service. When all impaired equipment is restored to normal working order, the impairment coordinator shall verify that the following procedures have been implemented:

- (1) Any necessary inspections and tests have been conducted to verify that affected systems are operational. The appropriate chapter of NFPA 25 shall be consulted for guidance on the type of inspection and test required.
- (2) Supervisors have been advised that protection is restored.
- (3) The fire department has been advised that protection is restored.
- (4) The property owner or designated representative, insurance carrier, alarm company, and other AHJs have been advised that protection is restored.
- (5) The impairment tag has been removed. [25:15.7]

13.4 Fire Pumps.

13.4.1 General.

13.4.1.1 Where provided, fire pumps shall be installed in accordance with NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection*, and Section 13.4.

13.4.1.2 Permits. Permits, where required, shall comply with Section 1.12.

13.4.1.3 Retroactivity. The provisions of this section reflect a consensus of what is necessary to provide an acceptable degree of protection from the hazards addressed in this section at the time the section was issued. [20:1.4]

13.4.1.3.1 Unless otherwise specified, the provisions of this section shall not apply to facilities, equipment, structures, or installations that existed or were approved for construction or installation prior to the effective date of the section. Where specified, the provisions of this section shall be retroactive. [20:1.4.1]

13.4.1.3.2 In those cases where the AHJ determines that the existing situation presents an unacceptable degree of risk, the AHJ shall be permitted to apply retroactively any portion of this section deemed appropriate. [20:1.4.2]

13.4.1.3.3 The retroactive requirements of this section shall be permitted to be modified if their application clearly would be impractical in the judgment of the AHJ, and only where it is clearly evident that a reasonable degree of safety is provided. [20:1.4.3]

13.4.1.4 Other Pumps.

13.4.1.4.1 Pumps other than those specified in this section and having different design features shall be permitted to be installed where such pumps are listed by a testing laboratory. [20:4.1.2.1]

13.4.1.4.2 These pumps shall be limited to capacities of less than 500 gpm (1892 L/min). [20:4.1.2.2]

13.4.1.5* Approval Required.

13.4.1.5.1 Stationary pumps shall be selected based on the conditions under which they are to be installed and used. [20:4.2.1]

13.4.1.5.2 The pump manufacturer or its authorized representative shall be given complete information concerning the liquid and power supply characteristics. [20:4.2.2]

13.4.1.5.3 A complete plan and detailed data describing pump, driver, controller, power supply, fittings, suction and discharge connections, and liquid supply conditions shall be prepared for approval. [20:4.2.3]

13.4.1.5.4 Each pump, driver, controlling equipment, power supply and arrangement, and liquid supply shall be approved by the AHJ for the specific field conditions encountered. [20:4.2.4]

13.4.1.6 Pump Operation.

13.4.1.6.1 In the event of fire pump operation, qualified personnel shall respond to the fire pump location to determine that the fire pump is operating in a satisfactory manner. [20:4.3.1]

13.4.1.6.2 System Designer. The system designer shall be identified on the system design documents. Acceptable minimum evidence of qualifications or certification shall be provided when requested by the AHJ. Qualified personnel shall include, but not be limited to, one or more of the following:

- (1) Personnel who are factory trained and certified for fire pump system design of the specific type and brand of system being designed
- (2) Personnel who are certified by a nationally recognized fire protection certification organization acceptable to the AHJ
- (3) Personnel who are registered, licensed, or certified by a state or local authority [20:4.3.2]

13.4.1.6.2.1 Additional evidence of qualification or certification shall be permitted to be required by the AHJ. [20:4.3.2.1]

13.4.1.6.3 System Installer. Installation personnel shall be qualified or shall be supervised by persons who are qualified in the installation, inspection, and testing of fire protection systems. Minimum evidence of qualifications or certification shall be provided when requested by the AHJ. Qualified personnel shall include, but not be limited to, one or more of the following:

- (1) Personnel who are factory trained and certified for fire pump system designed of the specific type and brand of system being designed
- (2) Personnel who are certified by a nationally recognized fire protection certification organization acceptable to the AHJ
- (3) Personnel who are registered, licensed, or certified by a state or local authority [20:4.3.3]

13.4.1.6.3.1 Additional evidence of qualification or certification shall be permitted to be required by the AHJ. [20:4.3.3.1]

13.4.1.6.4 Service Personnel Qualifications and Experience.

13.4.1.6.4.1 Service personnel shall be qualified and experienced in the inspection, testing, and maintenance of fire protection systems. Qualified personnel shall include, but not be limited to, one or more of the following:

- (1) Personnel who are factory trained and certified for fire pump system design of the specific type and brand of system being designed
- (2) Personnel who are certified by a nationally recognized fire protection certification organization acceptable to the AHJ
- (3) Personnel who are registered, licensed, or certified by a state or local authority

(4) Personnel who are employed and qualified by an organization listed by a nationally recognized testing laboratory for the servicing of fire protection systems [20:4.3.4.1]

13.4.1.6.4.2 Additional evidence of qualification or certification shall be permitted to be required by the AHJ. [20:4.3.4.2]

13.4.2* Equipment Protection.

13.4.2.1* **General Requirements.** The fire pump, driver, controller, water supply, and power supply shall be protected against possible interruption of service through damage caused by explosion, fire, flood, earthquake, rodents, insects, windstorm, freezing, vandalism, and other adverse conditions. [20:4.12.1]

13.4.2.1.1* Indoor Fire Pump Units.

13.4.2.1.1.1 Fire pump units serving high-rise buildings shall be protected from surrounding occupancies by a minimum of 2-hour fire-rated construction or physically separated from the protected building by a minimum of 50 ft (15.3 m). [20:4.12.1.1.1]

13.4.2.1.1.2 Indoor fire pump rooms in non-high-rise buildings or in separate fire pump buildings shall be physically separated or protected by fire-rated construction in accordance with Table 13.4.2.1.1.2. [20:4.12.1.1.2]

Table 13.4.2.1.1.2 Equipment Protection

Pump Room/House	Building(s) Exposing Pump Room/House	Required Separation
Not sprinklered	Not sprinklered	2 hour fire-rated
Not sprinklered	Fully sprinklered	or
Fully sprinklered	Not sprinklered	50 ft (15.3 m)
		1 hour fire-rated
Fully sprinklered	Fully sprinklered	or
		50 ft (15.3 m)

[20: Table 4.12.1.1.2]

13.4.2.1.1.3 The location of and access to the fire pump room shall be preplanned with the fire department. [20:4.12.1.1.3]

13.4.2.1.1.4* Except as permitted in 13.4.2.1.1.5, rooms containing fire pumps shall be free from storage, equipment, and penetrations not essential to the operation of the pump and related components. [20:4.12.1.1.4]

13.4.2.1.1.5 Equipment related to domestic water distribution shall be permitted to be located within the same room as the fire pump equipment. [20:4.12.1.1.5]

13.4.2.1.2 Outdoor Fire Pump Units.

13.4.2.1.2.1 Fire pump units that are outdoors shall be located at least 50 ft (15.3 m) away from any buildings and other fire exposures exposing the building. [20:4.12.1.2.1]

13.4.2.1.2.2 Outdoor installations shall be required to be provided with protection against possible interruption, in accordance with 13.4.2.1. [20:4.12.1.2.2]

13.4.2.2 Equipment Access.

13.4.2.2.1 Access to the fire pump room shall be preplanned with the fire department. [20:4.12.2.1]

13.4.2.2.1.1 Fire pump rooms not directly accessible from the outside shall be accessible through an enclosed passageway from an enclosed stairway or exterior exit. The enclosed passageway shall have a minimum 2-hour fire-resistance rating. [20:4.12.2.1.1]

13.4.2.3 Heat.

13.4.2.3.1 An approved or listed source of heat shall be provided for maintaining the temperature of a pump room or pump house, where required, above 40°F (5°C). [20:4.12.3.1]

13.4.2.3.2 The requirements of 13.4.4.5 shall be followed for higher temperature requirements for internal combustion engines. [20:4.12.3.2]

13.4.2.4 **Normal Lighting.** Artificial light shall be provided in a pump room or pump house. [20:4.12.4]

13.4.2.5 Emergency Lighting.

13.4.2.5.1 Emergency lighting shall be provided in accordance with NFPA 101, *Life Safety Code*. [20:4.12.5.1]

13.4.2.5.2 Emergency lights shall not be connected to an engine-starting battery. [20:4.12.5.2]

13.4.2.6 **Ventilation.** Provision shall be made for ventilation of a pump room or pump house. [20:4.12.6]

13.4.2.7* Drainage.

13.4.2.7.1 Floors shall be pitched for adequate drainage of escaping water away from critical equipment such as the pump, driver, controller, and so forth. [20:4.12.7.1]

13.4.2.7.2 The pump room or pump house shall be provided with a floor drain that will discharge to a frost-free location. [20:4.12.7.2]

13.4.2.8 **Guards.** Couplings and flexible connecting shafts shall be installed with a coupling guard in accordance with Section 8 of ANSI B15.1, *Safety Standard for Mechanical Power Transmission Apparatus*. [20:4.12.8]

13.4.3* Valve Supervision.

13.4.3.1 **Supervised Open.** Where provided, the suction valve, discharge valve, bypass valves, and isolation valves on the backflow prevention device or assembly shall be supervised open by one of the following methods:

- (1) Central station, proprietary, or remote station signaling service
- (2) Local signaling service that will cause the sounding of an audible signal at a constantly attended point
- (3) Locking valves open
- (4) Sealing of valves and approved weekly recorded inspection where valves are located within fenced enclosures under the control of the owner [20:4.16.1]

13.4.3.2 **Supervised Closed.** The test outlet control valves shall be supervised closed. [20:4.16.2]

13.4.4* Diesel Engine Driver System Operation.

13.4.4.1 Weekly Run.

13.4.4.1.1 Engines shall be designed and installed so that they can be started no less than once a week and run for no less than 30 minutes to attain normal running temperature. [20:11.6.1.1]

13.4.4.1.2 Engines shall run smoothly at rated speed, except for engines addressed in 13.4.4.1.3. [20:11.6.1.2]

13.4.4.1.3 Engines equipped with variable speed pressure limiting control shall be permitted to run at reduced speeds provided factory-set pressure is maintained and they run smoothly. [20:11.6.1.3]

13.4.4.2* Engine Maintenance. Engines shall be designed and installed so that they can be kept clean, dry, and well lubricated to ensure adequate performance. [20:11.6.2]

13.4.4.3 Battery Maintenance.

13.4.4.3.1 Storage batteries shall be designed and installed so that they can be kept charged at all times. [20:11.6.3.1]

13.4.4.3.2 Storage batteries shall be designed and installed so that they can be tested frequently to determine the condition of the battery cells and the amount of charge in the battery. [20:11.6.3.2]

13.4.4.3.3 Only distilled water shall be used in battery cells. [20:11.6.3.3]

13.4.4.3.4 Battery plates shall be kept submerged at all times. [20:11.6.3.4]

13.4.4.3.5 The automatic feature of a battery charger shall not be a substitute for proper maintenance of battery and charger. [20:11.6.3.5]

13.4.4.3.6 The battery and charger shall be designed and installed so that periodic inspection of both battery and charger is physically possible. [20:11.6.3.6]

13.4.4.3.6.1 This inspection shall determine that the charger is operating correctly, the water level in the battery is correct, and the battery is holding its proper charge. [20:11.6.3.6.1]

13.4.4.4* Fuel Supply Maintenance.

13.4.4.4.1 The fuel storage tanks shall be designed and installed so that they can be kept as full as practical at all times but never below 66 percent (two-thirds) of tank capacity. [20:11.6.4.1]

13.4.4.4.2 The tanks shall be designed and installed so that they can always be filled by means that will ensure removal of all water and foreign material. [20:11.6.4.2]

13.4.4.5* Temperature Maintenance.

13.4.4.5.1 The temperature of the pump room, pump house, or area where engines are installed shall be designed so that the temperature is maintained at the minimum recommended by the engine manufacturer and is never less than the minimum recommended by the engine manufacturer. [20:11.6.5.1]

13.4.4.6 Emergency Starting and Stopping.

13.4.4.6.1 The sequence for emergency manual operation, arranged in a step-by-step manner, shall be posted on the fire pump engine. [20:11.6.6.1]

13.4.4.6.2 It shall be the engine manufacturer's responsibility to list any specific instructions pertaining to the operation of this equipment during the emergency operation. [20:11.6.6.2]

13.4.5 Components.

13.4.5.1 Indicators on Controller.

13.4.5.1.1 All visible indicators shall be plainly visible. [20:12.4.1.1]

13.4.5.1.2* Visible indication shall be provided to indicate that the controller is in the automatic position. If the visible indicator is a pilot lamp, it shall be accessible for replacement. [20:12.4.1.2]

13.4.5.1.3 Separate visible indicators and a common audible fire pump alarm capable of being heard while the engine is running and operable in all positions of the main switch except the off position shall be provided to immediately indicate the following conditions:

- (1) Critically low oil pressure in the lubrication system. The controller shall provide means for testing the position of the pressure switch contacts without causing fire pump alarms.
- (2) High engine jacket coolant temperature.
- (3) Failure of engine to start automatically.
- (4) Shutdown from overspeed. [20:12.4.1.3]

13.4.5.1.4 Separate visible indicators and a common audible signal capable of being heard while the engine is running and operable in all positions of the main switch except the off position shall be provided to immediately indicate the following conditions:

- (1) Battery failure or missing battery. Each controller shall be provided with a separate visible indicator for each battery.
- (2) Battery charger failure. Each controller shall be provided with a separate visible indicator for battery charger failure and shall not require the audible signal for battery charger failure.
- (3) Low air or hydraulic pressure. Where air or hydraulic starting is provided (*see 11.2.7 and 11.2.7.4 of NFPA 20*), each pressure tank shall provide to the controller separate visible indicators to indicate low pressure.
- (4) System overpressure, for engines equipped with variable speed pressure limiting controls, to actuate at 115 percent of set pressure.
- (5) ECM selector switch in alternate ECM position (for engines with ECM controls only).
- (6) Fuel injection malfunction (for engines with ECM only).
- (7) Low fuel level. Signal at two-thirds tank capacity.
- (8) Low air pressure (air-starting engine controllers only). The air supply container shall be provided with a separate visible indicator to indicate low air pressure.
- (9) Low engine temperature. [20:12.4.1.4]

13.4.5.1.5 No audible signal silencing switch or valve, other than the controller main switch, shall be permitted for the conditions reflected in 13.4.5.1.3 and 13.4.5.1.4. [20:12.4.1.5]

13.4.5.1.5.1 A separate signal silencing switch shall be used for the conditions of 13.4.5.1.4(5), 13.4.5.1.4(7), and 13.4.5.1.4(8). [20:12.4.1.5.1]

13.4.5.1.5.2* The controller shall automatically return to the non-silenced state when the alarm(s) have cleared (returned to normal). This switch shall be clearly marked as to its function. [20:12.4.1.5.2]

13.4.5.1.5.3 Where audible signals for the additional conditions listed in A.4.24 of NFPA 20 are incorporated with the engine fire pump alarms specified in 13.4.5.1.3, a silencing switch or valve for the additional A.4.24 of NFPA 20 audible signals shall be provided at the controller. [20:12.4.1.5.3]

13.4.5.1.5.4 The circuit shall be arranged so that the audible signal will be actuated if the silencing switch or valve is in the silent position when the supervised conditions are normal. [20:12.4.1.5.4]

13.4.5.2 Signal Devices Remote from Controller.

13.4.5.2.1 Where the pump room is not constantly attended, audible or visible signals powered by a source other than the engine starting batteries and not exceeding 125 V shall be provided at a point of constant attendance. [20:12.4.2.1]

13.4.5.2.2 Remote Indication. Controllers shall be equipped to operate circuits for remote indication of the conditions covered in 13.4.5.1.3, 13.4.5.1.4, and 13.4.5.2.3. [20:12.4.2.2]

13.4.5.2.3 The remote panel shall indicate the following:

- (1) The engine is running (separate signal).
- (2) The controller main switch has been turned to the off or manual position (separate signal).
- (3)* There is trouble on the controller or engine (separate or common signals). (See 13.4.5.1.4 and 13.4.5.1.5.) [20:12.4.2.3]

13.4.5.3 Controller Contacts for Remote Indication. Controllers shall be equipped with open or closed contacts to operate circuits for the conditions covered in 13.4.5.2. [20:12.4.3]

13.4.6 Field Acceptance Tests.

13.4.6.1 The pump manufacturer, the engine manufacturer (when supplied), the controller manufacturer, and the transfer switch manufacturer (when supplied) or their factory-authorized representatives shall be present for the field acceptance test. (See Section 4.4 of NFPA 20.) [20:14.5.1]

13.4.6.2* All the AHJs shall be notified as to the time and place of the field acceptance test. [20:14.2.2]

13.4.6.3 Pump Room Electrical Wiring. All electric wiring to the fire pump motor(s), including control (multiple pumps) interwiring, normal power supply, alternate power supply where provided, and jockey pump, shall be completed and checked by the electrical contractor prior to the initial startup and acceptance test. [20:14.2.3]

13.4.6.4* Certified Pump Curve.

13.4.6.4.1 A copy of the manufacturer's certified pump test characteristic curve shall be available for comparison of the results of the field acceptance test. [20:14.2.4.1]

13.4.6.4.2 The fire pump as installed shall equal the performance as indicated on the manufacturer's certified shop test characteristic curve within the accuracy limits of the test equipment. [20:14.2.4.2]

13.4.6.5 The fire pump shall perform at minimum, rated, and peak loads without objectionable overheating of any component. [20:14.2.5.2.1]

13.4.6.6 Vibrations of the fire pump assembly shall not be of a magnitude to pose potential damage to any fire pump component. [20:14.2.5.2.2]

13.4.7 Manuals, Special Tools, and Spare Parts.

13.4.7.1 A minimum of one set of instruction manuals for all major components of the fire pump system shall be supplied by the manufacturer of each major component. [20:14.3.1]

13.4.7.2 The manual shall contain the following:

- (1) A detailed explanation of the operation of the component
- (2) Instructions for routine maintenance
- (3) Detailed instructions concerning repairs
- (4) Parts list and parts identification
- (5) Schematic electrical drawings of controller, transfer switch, and fire pump control panels [20:14.3.2]

13.4.7.3 Any special tools and testing devices required for routine maintenance shall be available for inspection by the AHJ at the time of the field acceptance test. [20:14.3.3]

13.4.7.4 Consideration shall be given to stocking spare parts for critical items not readily available. [20:14.3.4]

13.4.8 Periodic Inspection, Testing, and Maintenance. Fire pumps shall be inspected, tested, and maintained in accordance with NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*. [20:14.4]

13.4.9 Component Replacement.

13.4.9.1 Positive Displacement Pumps.

13.4.9.1.1 Whenever a critical path component in a positive displacement fire pump is replaced, as defined in 14.5.2.5 of NFPA 20, a field test of the pump shall be performed. [20:14.5.1.1]

13.4.9.1.2 If components that do not affect performance are replaced, such as shafts, then only a functional test shall be required to ensure proper installation and reassembly. [20:14.5.1.2]

13.4.9.1.3 If components that affect performance are replaced, such as rotors, plungers, and so forth, then a retest shall be conducted by the pump manufacturer or designated representative or qualified persons acceptable to the AHJ. [20:14.5.1.3]

13.4.9.1.4 Field Retest Results.

13.4.9.1.4.1 The field retest results shall be compared to the original pump performance as indicated by the original factory-certified test curve, whenever it is available. [20:14.5.1.4.1]

13.4.9.1.4.2 The field retest results shall meet or exceed the performance characteristics as indicated on the pump nameplate, and the results shall be within the accuracy limits of field testing as stated elsewhere in NFPA 20. [20:14.5.1.4.2]

13.5 Water Supply.

13.5.1 Private fire service mains shall be installed in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*, and NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*.

13.5.2 Where no adequate and reliable water supply exists for fire-fighting purposes, the requirements of NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting*, shall apply.

13.5.3* The installation of devices to protect the public water supply from contamination shall comply with the provisions of NFPA 13, NFPA 24, and the plumbing code.

13.5.3.1 Backflow prevention devices shall be inspected, tested, and maintained in accordance with the requirements of NFPA 25.

13.5.4 Inspection, Testing, and Maintenance.

13.5.4.1 A private fire service main installed in accordance with this Code shall be properly maintained to provide at least the same level of performance and protection as designed. The owner shall be responsible for maintaining the system and keeping it in good working condition.

13.5.4.2 A private fire service main installed in accordance with this Code shall be inspected, tested, and maintained in accordance with NFPA 25.

13.6 Portable Fire Extinguishers.

13.6.1 General Requirements. The selection, installation, distribution, inspection, maintenance, and testing of portable fire extinguishers shall be in accordance with NFPA 10 and Section 13.6.

13.6.1.1 Portable fire extinguishers are intended as a first line of defense to cope with fires of limited size. [10:1.1.1]

13.6.1.2 The selection and installation of extinguishers is independent of whether the building is equipped with automatic sprinklers, standpipe and hose, or other fixed protection equipment. (See 5.5.5, 6.1.1.1, 6.2.1.1, and 6.2.1.5 of NFPA 10.) [10:1.1.2]

13.6.1.3 The requirements given herein are minimum. [10:1.1.3]

13.6.1.4 The requirements do not apply to permanently installed systems for fire extinguishment, even where portions of such systems are portable (such as hose and nozzles attached to a fixed supply of extinguishing agent). [10:1.1.4]

13.6.2* Where Required. Fire extinguishers shall be provided where required by this Code as specified in Table 13.6.2 and the referenced codes and standards listed in Chapter 2.

13.6.3 Listing and Labeling.

13.6.3.1 Portable fire extinguishers used to comply with Section 13.6 shall be listed and labeled and shall meet or exceed all the requirements of one of the following fire test standards and one of the following applicable performance standards:

- (1) Fire test standards:
 - (a) ANSI/UL 711, *Standard for Rating and Fire Testing of Fire Extinguishers*
 - (b) CAN/ULC-S508, *Standard for Rating and Testing of Fire Extinguishers*
- (2) Performance standards:
 - (a) Carbon dioxide types: ANSI/UL 154, *Standard for Carbon-Dioxide Fire Extinguishers*; CAN/ULC-S503, *Standard for Carbon-Dioxide Fire Extinguishers*
 - (b) Dry chemical types: ANSI/UL 299, *Standard for Dry Chemical Fire Extinguishers*; CAN/ULC-S504, *Standard for Dry Chemical Fire Extinguishers*
 - (c) Water types: ANSI/UL 626, *Standard for Water Fire Extinguishers*; CAN/ULC-S507, *Standard for Water Fire Extinguishers*
 - (d) Halon types: CAN/ULC-S512, *Standard for Halogenated Agent Hand and Wheeled Fire Extinguishers*
 - (e) Film-forming foam types: ANSI/UL 8, *Water Based Agent Fire Extinguishers*; CAN/ULC-S554, *Standard for Water Based Agent Fire Extinguishers*
 - (f) Halocarbon types: ANSI/UL 2129, *Standard for Halocarbon Clean Agent Fire Extinguishers*; CAN/ULC-S566, *Standard for Halocarbon Clean Agent Fire Extinguishers* [10:4.1.1]

13.6.3.2* The identification of the listing and labeling organization, the fire test standard, and the performance standard that the fire extinguisher meets or exceeds shall be clearly marked on each fire extinguisher. [10:4.1.2]

13.6.3.2.1 Fire extinguishers manufactured prior to January 1, 1986, shall not be required to comply with 13.6.3.2. [10:4.1.2.1]

13.6.3.3* An organization listing fire extinguishers used to comply with the requirements of Section 13.6 shall utilize a third-party certification program for portable fire extinguishers that meets or exceeds UL 1803, *Standard for Factory Follow-Up on Third Party Certified Portable Fire Extinguishers*. [10:4.1.3]

Table 13.6.2 Portable Fire Extinguishers Required

Occupancy Use	Where Required
Ambulatory health care occupancies	Yes
Apartment occupancies ^a	Yes
Assembly occupancies ^b	Yes
Business occupancies	Yes
Day-care occupancies	Yes
Detention and correctional occupancies ^{c,d}	Yes
Educational occupancies	Yes
Health care occupancies	Yes
Hotel and dormitory occupancies	Yes
Industrial occupancies	Yes
Lodging and rooming house occupancies	Yes
Mercantile occupancies	Yes
Occupancies in special structures	Yes
One- and two-family dwelling occupancies	No
Residential board and care occupancies	Yes
Storage occupancies ^e	Yes

^aPortable fire extinguishers shall be permitted to be located at exterior locations or interior locations so that all portions of the buildings are within 75 ft (22.8 m) of travel distance to an extinguishing unit.

^bPortable fire extinguishers are not required in seating or outdoor performance areas.

^cAccess to portable fire extinguishers shall be permitted to be locked.

^dPortable fire extinguishers shall be permitted to be located at staff locations only.

^eIn storage areas where forklift, powered industrial truck, or cart operators are the primary occupants, fixed extinguishers, as specified in NFPA 10, need not be provided when:

- (1) Use of vehicle-mounted extinguishers is approved by the AHJ.
- (2) Each vehicle is equipped with a 10 lb, 40-A:80-B:C extinguisher affixed to the vehicle using a mounting bracket approved by the extinguisher manufacturer or the AHJ for vehicular use.
- (3) Not less than two spare extinguishers of equal or greater rating are available onsite to replace a discharged extinguisher.
- (4) Vehicle operators are trained in the proper operation and use of the extinguisher.
- (5) Inspections of vehicle-mounted extinguishers are performed daily.

13.6.3.3.1 Fire extinguishers manufactured prior to January 1, 1989, shall not be required to comply with 13.6.3.3. [10:4.1.3.1]

13.6.3.3.2 Certification organizations accredited by the Standards Council of Canada shall not be required to comply with 13.6.3.3. [10:4.1.3.2]

13.6.3.4 Electrical Conductivity. Extinguishers listed for the Class C rating shall not contain an agent that is a conductor of electricity. [10:4.1.4]

13.6.3.4.1 In addition to successfully meeting the requirements of ANSI/UL 711, *Standard for Rating and Fire Testing of Fire Extinguishers*, water-based agents shall be tested in accordance with ASTM D 5391, *Standard Test for Electrical Conductivity and Resistivity of a Flowing High Purity Water Sample*. [10:4.1.4.1]

13.6.3.4.2 Fire extinguishers containing water-based agents that have a conductivity higher than 1.00 MS/cm at 77°F (25°C) shall be considered a conductor of electricity and therefore shall not be rated Class C. [10:4.1.4.2]

13.6.3.4.3 Subsections 13.6.3.4.1 and 13.6.3.4.2 shall apply only to water-based extinguishers manufactured after August 15, 2002. [10:4.1.4.3]

13.6.4* Identification of Contents. A fire extinguisher shall have a label, tag, or stencil attached to it providing the following information:

- (1) The content's product name as it appears on the manufacturer's Material Safety Data Sheet (MSDS)
- (2) Listing of the hazardous material identification in accordance with *Hazardous Materials Identification System (HMIS), Implementational Manual* [in Canada, *Workplace Hazardous Materials Identification System (WHMIS) Reference Manual*] developed by the National Paint and Coatings Association
- (3) List of any hazardous materials that are in excess of 1.0 percent of the contents
- (4) List of each chemical in excess of 5.0 percent of the contents
- (5) Information as to what is hazardous about the agent in accordance with the MSDS
- (6) Manufacturer's or service agency's name, mailing address, and phone number [10:4.2]

13.6.5* Instruction Manual.

13.6.5.1 The owner or the owner's agent shall be provided with a fire extinguisher instruction manual that details condensed instructions and cautions necessary to the installation, operation, inspection, and maintenance of the fire extinguisher(s). [10:4.3.1]

13.6.5.2 The manual shall refer to NFPA 10 as a source of detailed instruction. [10:4.3.2]

13.6.6 Obsolete Fire Extinguishers. The following types of fire extinguishers are considered obsolete and shall be removed from service:

- (1) Soda acid
- (2) Chemical foam (excluding film-forming agents)
- (3) Vaporizing liquid (e.g., carbon tetrachloride)
- (4) Cartridge-operated water
- (5) Cartridge-operated loaded stream
- (6) Copper or brass shell (excluding pump tanks) joined by soft solder or rivets
- (7) Carbon dioxide extinguishers with metal horns
- (8) Solid charge-type AFFF extinguishers (paper cartridge)
- (9) Pressurized water fire extinguishers manufactured prior to 1971
- (10) Any extinguisher that needs to be inverted to operate
- (11) Any stored pressure extinguisher manufactured prior to 1955
- (12) Any extinguishers with 4B, 6B, 8B, 12B, and 16B fire ratings
- (13) Stored-pressure water extinguishers with fiberglass shells (pre-1976) [10:4.4]

13.6.6.1* Dry chemical stored-pressure extinguishers manufactured prior to October 1984 shall be removed from service at the next 6-year maintenance interval or the next hydrotest, whichever comes first. [10:4.4.1]

13.6.6.1.1 Paragraph 13.6.6.1 shall not apply to wheeled-type dry chemical stored-pressure fire extinguishers. [10:4.4.1.1]

13.6.6.2 Any fire extinguisher that can no longer be serviced in accordance with the manufacturer's maintenance manual is considered obsolete and shall be removed from service. [10:4.4.2]

13.6.7 Selection of Portable Fire Extinguishers.

13.6.7.1 General Requirements. The selection of fire extinguishers for a given situation shall be determined by the applicable requirements of Sections 5.2 through 5.6 of NFPA 10 and the following factors:

- (1) Type of fire most likely to occur
- (2) Size of fire most likely to occur
- (3) Hazards in the area where the fire is most likely to occur
- (4) Energized electrical equipment in the vicinity of the fire
- (5) Ambient temperature conditions
- (6) Other factors (see Section H.2 of NFPA 10)

[10:5.1]

13.6.7.2 Extinguisher Classification System.

13.6.7.2.1 The classification of fire extinguishers shall consist of a letter that indicates the class of fire on which a fire extinguisher has been found to be effective. [10:5.3.1]

13.6.7.2.1.1 Fire extinguishers classified for use on Class A or Class B hazards shall be required to have a rating number preceding the classification letter that indicates the relative extinguishing effectiveness. [10:5.3.1.1]

13.6.7.2.1.2 Fire extinguishers classified for use on Class C, Class D, or Class K hazards shall not be required to have a number preceding the classification letter. [10:5.3.1.2]

13.6.7.2.2 Fire extinguishers shall be selected for the class(es) of hazards to be protected in accordance with 13.6.7.2.2.1 through 13.6.7.2.2.5. (For specific hazards, see 13.6.7.3.) [10:5.3.2]

13.6.7.2.2.1* Fire extinguishers for the protection of Class A hazards shall be selected from types that are specifically listed and labeled for use on Class A fires. (For halon agent-type extinguishers, see 13.6.7.2.2.6.) [10:5.3.2.1]

13.6.7.2.2.2* Fire extinguishers for the protection of Class B hazards shall be selected from types that are specifically listed and labeled for use on Class B fires. (For halon agent-type extinguishers, see 13.6.7.2.2.6.) [10:5.3.2.2]

13.6.7.2.2.3* Fire extinguishers for the protection of Class C hazards shall be selected from types that are specifically listed and labeled for use on Class C hazards. (For halon agent-type fire extinguishers, see 13.6.7.2.2.6.) [10:5.3.2.3]

13.6.7.2.2.4* Fire extinguishers and extinguishing agents for the protection of Class D hazards shall be of the types specifically listed and labeled for use on the specific combustible metal hazard. [10:5.3.2.4]

13.6.7.2.2.5 Fire extinguishers for the protection of Class K hazards shall be selected from types that are specifically listed and labeled for use on Class K fires. [10:5.3.2.5]

13.6.7.2.2.6* Use of halon agent fire extinguishers shall be limited to applications where a clean agent is necessary to extinguish fire efficiently without damaging the equipment or area being protected, or where the use of alternative agents has the potential to cause a hazard to personnel in the area. [10:5.3.2.6]

13.6.7.2.2.6.1* Placement of portable fire extinguishers containing halogenated agents shall conform to minimum confined space volume requirement warnings contained on the fire extinguisher nameplates. [10:5.3.2.6.1]

13.6.7.2.2.7* Wheeled fire extinguishers shall be considered for hazard protection in areas in which a fire risk assessment has shown the following:

- (1) High hazard areas are present
- (2) Limited available personnel are present, thereby requiring an extinguisher that has the following features:
 - (a) High agent flow rate
 - (b) Increased agent stream range
 - (c) Increased agent capacity [10:5.3.2.7]

13.6.7.3 Classification of Hazards.

13.6.7.3.1 Classifying Occupancy Hazard. Rooms or areas shall be classified as being light (low) hazard, ordinary (moderate) hazard, or extra (high) hazard. [10:5.4.1]

13.6.7.3.1.1* **Light (Low) Hazards.** Light (low) hazard occupancies shall be classified as locations where the quantity and combustibility of Class A combustibles and Class B flammables are low and fires with relatively low rates of heat release are expected. These occupancies consist of fire hazards having normally expected quantities of Class A combustible furnishings, and/or the total quantity of Class B flammables typically expected to be present is less than 1 gal (3.8 L) in any room or area. [10:5.4.1.1]

13.6.7.3.1.2* **Ordinary (Moderate) Hazards.** Ordinary (moderate) hazard occupancies shall be classified as locations where the quantity and combustibility of Class A combustible materials and Class B flammables are moderate and fires with moderate rates of heat release are expected. These occupancies consist of fire hazards that only occasionally contain Class A combustible materials beyond normal anticipated furnishings, and/or the total quantity of Class B flammables typically expected to be present is from 1 gal to 5 gal (3.8 L to 18.9 L) in any room or area. [10:5.4.1.2]

13.6.7.3.1.3* **Extra (High) Hazards.** Extra (high) hazard occupancies shall be classified as locations where the quantity and combustibility of Class A combustible material are high or where high amounts of Class B flammables are present and rapidly developing fires with high rates of heat release are expected. These occupancies consist of fire hazards involved with the storage, packaging, handling, or manufacture of Class A combustibles, and/or the total quantity of Class B flammables expected to be present in more than 5 gal (18.9 L) in any room or area. [10:5.4.1.3]

13.6.7.3.1.4 Limited areas of greater or lesser hazard shall be protected as required. [10:5.4.1.4]

13.6.7.3.2* **Selection by Occupancy.** Fire extinguishers shall be provided for the protection of both the building structure and the occupancy hazards contained therein regardless of the presence of any fixed fire suppression systems. [10:5.4.2]

13.6.7.3.2.1 Required building protection shall be provided by fire extinguishers for Class A fires. [10:5.4.2.1]

13.6.7.3.2.2* Occupancy hazard protection shall be provided by fire extinguishers for such Class A, B, C, D, or K fire potentials as might be present. [10:5.4.2.2]

13.6.7.3.2.3 Fire extinguishers provided for building protection shall be permitted to also be considered for the protection of occupancies having a Class A fire potential. [10:5.4.2.3]

13.6.7.3.2.4 Buildings having an occupancy hazard subject to Class B or Class C fires, or both, shall have a standard complement of Class A fire extinguishers for building protection, plus additional Class B or Class C fire extinguishers, or both. [10:5.4.2.4]

13.6.7.3.2.5 Where fire extinguishers have more than one letter classification (such as 2-A:20-B:C), they shall be permitted to satisfy the requirements of each letter class. [10:5.4.2.5]

13.6.7.4 Selection for Specific Hazards.

13.6.7.4.1 Class B Fires.

13.6.7.4.1.1* Extinguishers for Pressurized Flammable Liquids and Pressurized Gas Fires.

13.6.7.4.1.1.1 Selection of fire extinguishers for this type of hazard shall be made on the basis of recommendations by manufacturers of this specialized equipment. [10:5.5.1.1.1]

13.6.7.4.1.1.2* Large capacity dry chemical extinguishers of 10 lb (4.54 kg) or greater and a discharge rate of 1 lb/sec (0.45 kg/sec) or more shall be used to protect these hazards. [10:5.5.1.1.2]

13.6.7.4.2 Three-Dimensional Fires. Large capacity dry chemical extinguishers of 10 lb (4.54 kg) or greater and having a discharge rate of 1 lb/sec (0.45 kg/sec) or more shall be used to protect these hazards. [10:5.5.2]

13.6.7.4.3 Water-Soluble Flammable Liquid Fires (Polar Solvents). Aqueous film-forming foam (AFFF) and film-forming fluoroprotein foam (FFFP) types of fire extinguishers shall not be used for the protection of water-soluble flammable liquids, such as alcohols, acetone, esters, ketones, and so forth, unless specifically referenced on the fire extinguisher nameplate. [10:5.5.3]

13.6.7.4.4 Obstacle Fires. Selection of a fire extinguisher for this type of hazard shall be based on one of the following:

- (1) Extinguisher containing a vapor-suppressing foam agent
- (2)* Multiple extinguishers containing non-vapor-suppressing Class B agents intended for simultaneous application
- (3) Larger capacity extinguishers of 10 lb (4.54 kg) or greater and a minimum discharge rate of 1 lb/sec (0.45 kg/sec) [10:5.5.4]

13.6.7.4.5* Class K Cooking Media Fires. Fire extinguishers provided for the protection of cooking appliances that use combustible cooking media (vegetable or animal oils and fats) shall be listed and labeled for Class K fires. [10:5.5.5]

13.6.7.4.5.1 Class K fire extinguishers manufactured after January 1, 2002, shall not be equipped with extended wand-type discharge devices. [10:5.5.5.1]

13.6.7.4.5.2 Fire extinguishers installed specifically for the protection of cooking appliances that use combustible cooking media (animal or vegetable oils and fats) without a Class K rating shall be removed from service. [10:5.5.5.2]

13.6.7.4.5.3* A placard shall be conspicuously placed near the extinguisher that states that the fire protection system shall be actuated prior to using the fire extinguisher. [10:5.5.5.3]

13.6.7.4.6* Electronic Equipment Fires. Fire extinguishers for the protection of delicate electronic equipment shall be selected from types specifically listed and labeled for Class C hazards. (See 13.6.7.2.2.3.) [10:5.5.6]



13.6.7.4.6.1* Dry chemical fire extinguishers shall not be installed for the protection of delicate electronic equipment. [10:5.5.6.1]

13.6.7.4.7 Areas Containing Oxidizers.

13.6.7.4.7.1 Only water-type extinguishers shall be installed in areas containing oxidizers, such as pool chemicals. [10:5.5.7.1]

13.6.7.4.7.2 Multipurpose dry chemical fire extinguishers shall not be installed in areas containing oxidizers, such as pool chemicals. [10:5.5.7.2]

13.6.7.5 Selection for Specific Locations.

13.6.7.5.1 Where portable fire extinguishers are required to be installed, the following documents shall be reviewed for the occupancies outlined in their respective scopes:

- (1) NFPA 30A, *Code for Motor Fuel Dispensing Facilities and Repair Garages*
- (2) NFPA 32, *Standard for Drycleaning Plants*
- (3) NFPA 58, *Liquefied Petroleum Gas Code*
- (4) NFPA 86, *Standard for Ovens and Furnaces*
- (5) NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*
- (6) NFPA 120, *Standard for Fire Prevention and Control in Coal Mines*
- (7) NFPA 122, *Standard for Fire Prevention and Control in Metal/Nonmetal Mining and Metal Mineral Processing Facilities*
- (8) NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*
- (9) NFPA 302, *Fire Protection Standard for Pleasure and Commercial Motor Craft*
- (10) NFPA 303, *Fire Protection Standard for Marinas and Boatyards*
- (11) NFPA 385, *Standard for Tank Vehicles for Flammable and Combustible Liquids*
- (12) NFPA 400, *Hazardous Materials Code*
- (13) NFPA 407, *Standard for Aircraft Fuel Servicing*
- (14) NFPA 408, *Standard for Aircraft Hand Portable Fire Extinguishers*
- (15) NFPA 410, *Standard on Aircraft Maintenance*
- (16) NFPA 418, *Standard for Heliports*
- (17) NFPA 498, *Standard for Safe Havens and Interchange Lots for Vehicles Transporting Explosives*
- (18) NFPA 1192, *Standard on Recreational Vehicles*
- (19) NFPA 1194, *Standard for Recreational Vehicle Parks and Campgrounds* [10:5.6.1]

13.6.7.5.2 In no case shall the requirements of the documents in 13.6.7.5.1 be less than those specified in Section 13.6 and Chapter 2. [10:5.6.2]

13.6.8 Installation of Portable Fire Extinguishers.

13.6.8.1 General.

13.6.8.1.1* Number of Extinguishers. The minimum number of fire extinguishers needed to protect a property shall be determined as outlined in 13.6.8. [10:6.1.1]

13.6.8.1.1.1 Additional extinguishers shall be permitted to be installed to provide more protection as necessary. [10:6.1.1.1]

13.6.8.1.1.2 Fire extinguishers having ratings less than those specified in Table 13.6.8.2.1.1 and Table 13.6.8.3.1.1 shall be permitted to be installed, provided they are not used in fulfilling the minimum protective requirements of this subsection, except as modified in 13.6.8.2.1.3.1, 13.6.8.2.1.4, and 13.6.8.3.1.5. [10:6.1.1.2]

13.6.8.1.2 Extinguisher Readiness. Portable fire extinguishers shall be maintained in a fully charged and operable condition and shall be kept in their designated places at all times when they are not being used. [10:6.1.2]

13.6.8.1.3 Placement.

13.6.8.1.3.1 Fire extinguishers shall be conspicuously located where they are readily accessible and immediately available in the event of fire. [10:6.1.3.1]

13.6.8.1.3.2 Fire extinguishers shall be located along normal paths of travel, including exits from areas. [10:6.1.3.2]

13.6.8.1.3.3 Visual Obstructions.

13.6.8.1.3.3.1 Fire extinguishers shall not be obstructed or obscured from view. [10:6.1.3.3.1]

13.6.8.1.3.3.2* In large rooms and in certain locations where visual obstructions cannot be completely avoided, means shall be provided to indicate the extinguisher location. [10:6.1.3.3.2]

13.6.8.1.3.4* Portable fire extinguishers other than wheeled extinguishers shall be installed using any of the following means:

- (1) Securely on a hanger intended for the extinguisher
- (2) In the bracket supplied by the extinguisher manufacturer
- (3) In a listed bracket approved for such purpose
- (4) In cabinets or wall recesses [10:6.1.3.4]

13.6.8.1.3.5 Wheeled fire extinguishers shall be located in designated locations. [10:6.1.3.5]

13.6.8.1.3.6 Fire extinguishers installed under conditions where they are subject to dislodgement shall be installed in manufacturer's strap-type brackets specifically designed for this problem. [10:6.1.3.6]

13.6.8.1.3.7 Fire extinguishers installed under conditions where they are subject to physical damage (e.g., from impact, vibration, the environment) shall be protected against damage. [10:6.1.3.7]

13.6.8.1.3.8 Installation Height.

13.6.8.1.3.8.1 Fire extinguishers having a gross weight not exceeding 40 lb (18.14 kg) shall be installed so that the top of the hand portable fire extinguisher is not more than 5 ft (1.53 m) above the floor. [10:6.1.3.8.1]

13.6.8.1.3.8.2 Fire extinguishers having a gross weight greater than 40 lb (18.14 kg) (except wheeled types) shall be installed so that the top of the fire extinguisher is not more than 3½ ft (1.07 m) above the floor. [10:6.1.3.8.2]

13.6.8.1.3.8.3 In no case shall the clearance between the bottom of the hand portable fire extinguisher and the floor be less than 4 in. (102 mm). [10:6.1.3.8.3]

13.6.8.1.3.9 Label Visibility.

13.6.8.1.3.9.1 Extinguishers' operating instructions shall be located on the front of the extinguisher and shall be clearly visible. [10:6.1.3.9.1]

13.6.8.1.3.9.2 Hazardous materials identification systems (HMIS) labels, 6-year maintenance labels, hydrostatic test labels, or other labels shall not be located or placed on the front of the extinguisher. [10:6.1.3.9.2]

13.6.8.1.3.9.3 The restrictions of 13.6.8.1.3.9.2 shall not apply to original manufacturer's labels, labels that specifically relate to the extinguisher's operation or fire classification, or inventory control labels specific to that extinguisher. [10:6.1.3.9.3]

13.6.8.1.3.10 Cabinets.

13.6.8.1.3.10.1 Cabinets housing fire extinguishers shall not be locked, except where fire extinguishers are subject to malicious use and cabinets include a means of emergency access. [10:6.1.3.10.1]

13.6.8.1.3.10.2 The location of fire extinguishers as described in 13.6.8.1.3.3.2 shall be marked conspicuously. [10:6.1.3.10.2]

13.6.8.1.3.10.3 Fire extinguishers mounted in cabinets or wall recesses shall be placed so that the fire extinguisher's operating instructions face outward. [10:6.1.3.10.3]

13.6.8.1.3.10.4* Where fire extinguishers are installed in closed cabinets that are exposed to elevated temperatures, the cabinets shall be provided with screened openings and drains. [10:6.1.3.10.4]

13.6.8.1.3.11* Fire extinguishers shall not be exposed to temperatures outside of the listed temperature range shown on the fire extinguisher label. [10:6.1.3.11]

13.6.8.1.4 Antifreeze.

13.6.8.1.4.1 Fire extinguishers containing plain water only can be protected to temperatures as low as -40°F (-40°C) by the addition of an antifreeze that is stipulated on the fire extinguisher nameplate. [10:6.1.4.1]

13.6.8.1.4.2 Calcium chloride solutions shall not be used in stainless steel fire extinguishers. [10:6.1.4.2]

13.6.8.2 Installations for Class A Hazards.**13.6.8.2.1 Fire Extinguisher Size and Placement for Class A Hazards.**

13.6.8.2.1.1 Minimal sizes of fire extinguishers for the listed grades of hazards shall be provided on the basis of Table 13.6.8.2.1.1, except as modified by 13.6.8.2.1.3.1 and 13.6.8.2.1.4. [10:6.2.1.1]

13.6.8.2.1.2 Fire extinguishers shall be located so that the maximum travel distances shall not exceed those specified in Table 13.6.8.2.1.1, except as modified by 13.6.8.2.1.4. (See *Annex E of NFPA 10.*) [10:6.2.1.2]

13.6.8.2.1.3 Certain smaller fire extinguishers that are charged with a multipurpose dry chemical or a halogenated agent rated on Class B and Class C fires but have insufficient effectiveness to earn the minimum 1-A rating even though they have value in extinguishing smaller Class A fires shall not be used to meet the requirements of 13.6.8.2.1. [10:6.2.1.3]

13.6.8.2.1.3.1 Fire extinguishers of lesser rating shall be permitted to be installed but shall not be considered as fulfilling any part of the requirements of Table 13.6.8.2.1.1, except as permitted in 13.6.8.2.1.3.1(A) and 13.6.8.2.1.3.1(B). [10:6.2.1.3.1]

(A) Up to two water-type extinguishers, each with 1-A rating, shall be permitted to be used to fulfill the requirements of one 2-A rated extinguisher. [10:6.2.1.3.1.1]

(B) Two 2½ gal (9.46 L) water-type extinguishers shall be permitted to be used to fulfill the requirements of one 4-A rated extinguisher. [10:6.2.1.3.1.2]

13.6.8.2.1.4 Up to one-half of the complement of fire extinguishers specified in Table 13.6.8.2.1.1 shall be permitted to be replaced by uniformly spaced ½ in. (38 mm) hose stations for use by the occupants of the building. [10:6.2.1.4]

Table 13.6.8.2.1.1 Fire Extinguisher Size and Placement for Class A Hazards

Criteria	Light (Low) Hazard Occupancy	Ordinary (Moderate) Hazard Occupancy	Extra (High) Hazard Occupancy
Minimum rated single extinguisher	2-A	2-A	4-A
Maximum floor area per unit of A	3000 ft ²	1500 ft ²	1000 ft ²
Maximum floor area for extinguisher	11,250 ft ²	11,250 ft ²	11,250 ft ²
Maximum travel distance to extinguisher	75 ft	75 ft	75 ft

For SI units, 1 ft = 0.305 m; 1 ft² = 0.0929 m².

Note: For maximum floor area explanations, see E.3.3 of NFPA 10. [10: Table 6.2.1.1]

13.6.8.2.1.4.1 Where hose stations are so provided, they shall conform to NFPA 14, *Standard for the Installation of Standpipe and Hose Systems.* [10:6.2.1.4.1]

13.6.8.2.1.4.2 The location of hose stations and the placement of fire extinguishers shall be such that the hose stations do not replace more than every other fire extinguisher. [10:6.2.1.4.2]

13.6.8.2.1.5 Where the area of the floor of a building is less than that specified in Table 13.6.8.2.1.1, at least one fire extinguisher of the minimum size recommended shall be provided. [10:6.2.1.5]

13.6.8.2.1.6 The protection requirements shall be permitted to be fulfilled with fire extinguishers of higher rating, provided the travel distance to such larger fire extinguishers does not exceed 75 ft (22.9 m). [10:6.2.1.6]

13.6.8.3 Installations for Class B Hazards.**13.6.8.3.1 Other Than for Fires in Flammable Liquids of Appreciable Depth.**

13.6.8.3.1.1 Minimum sizes of fire extinguishers for the listed grades of hazard shall be provided in accordance with Table 13.6.8.3.1.1, except as modified by 13.6.8.3.1.5. [10:6.3.1.1]

13.6.8.3.1.2 Fire extinguishers shall be located so that the maximum travel distances do not exceed those specified in Table 13.6.8.3.1.1. (See *Annex E of NFPA 10.*) [10:6.3.1.2]

13.6.8.3.1.2.1 Fire extinguishers of lesser rating, desired for small specific hazards within the general hazard area, shall be permitted to be installed but shall not be considered as fulfilling any part of the requirements of Table 13.6.8.3.1.1, except as modified by 13.6.8.3.1.5. [10:6.3.1.2.1]

Table 13.6.8.3.1.1 Fire Extinguisher Size and Placement for Class B Hazards

Type of Hazard	Basic Minimum Extinguisher Rating	Maximum Travel Distance to Extinguishers	
		ft	m
Light (low)	5-B	30	9.14
	10-B	50	15.25
Ordinary (moderate)	10-B	30	9.14
	20-B	50	15.25
Extra (high)	40-B	30	9.14
	80-B	50	15.25

Notes:

(1) The specified ratings do not imply that fires of the magnitudes indicated by these ratings will occur, but rather they are provided to give the operators more time and agent to handle difficult spill fires that have the potential to occur.

(2) For fires involving water-soluble flammable liquids, see 5.5.3 of NFPA 10.

(3) For specific hazard applications, see Section 5.5 of NFPA 10. [10: Table 6.3.1.1]

13.6.8.3.1.3 Up to three AFFF or FFFP fire extinguishers of at least 2½ gal (9.46 L) capacity shall be permitted to be used to fulfill extra (high) hazard requirements. [10:6.3.1.3]

13.6.8.3.1.4 Two AFFF or FFFP fire extinguishers of at least 1.6 gal (6 L) capacity shall be permitted to be used to fulfill ordinary (moderate) hazard requirements. [10:6.3.1.4]

13.6.8.3.1.5 Two or more fire extinguishers of lower rating shall not be used to fulfill the protection requirements of Table 13.6.8.3.1.1 except as permitted by 13.6.8.3.1.3 and 13.6.8.3.1.4. [10:6.3.1.5]

13.6.8.3.1.6 The protection requirements shall be permitted to be fulfilled with fire extinguishers of higher ratings, provided the travel distance to such larger fire extinguishers does not exceed 50 ft (15.25 m). [10:6.3.1.6]

13.6.8.3.2 Flammable Liquids of Appreciable Depth.

13.6.8.3.2.1 Portable fire extinguishers shall not be installed as the sole protection for flammable liquid hazards of appreciable depth where the surface area exceeds 10 ft² (0.93 m²). [10:6.3.2.1]

13.6.8.3.2.2* Where personnel who are trained in extinguishing fires in the protected hazards are located on the premises and capable of responding immediately, the maximum surface area shall not exceed 20 ft² (1.86 m²). [10:6.3.2.2]

13.6.8.3.2.3 For flammable liquid hazards of appreciable depth, a Class B fire extinguisher shall be provided on the basis of at least 2 numerical units of Class B extinguishing potential per 1 ft² (0.09 m²) of flammable liquid surface of the largest hazard area. [10:6.3.2.3]

13.6.8.3.2.4 AFFF- or FFFP-type fire extinguishers shall be permitted to be provided on the basis of 1-B of protection per 1 ft² (0.09 m²) of hazard. (For fires involving water-soluble flammable liquids, see 5.5.3 of NFPA 10.) [10:6.3.2.4]

13.6.8.3.2.5 Two or more fire extinguishers of lower ratings, other than AFFF- or FFFP-type fire extinguishers, shall not be

used in lieu of the fire extinguisher required for the largest hazard area. [10:6.3.2.5]

13.6.8.3.2.6 Up to three AFFF- or FFFP-type fire extinguishers shall be permitted to fulfill the requirements, provided the sum of the Class B ratings meets or exceeds the value required for the largest hazard area. [10:6.3.2.6]

13.6.8.3.2.7 Travel distances for portable fire extinguishers shall not exceed 50 ft (15.25 m). (See Annex E of NFPA 10.) [10:6.3.2.7]

13.6.8.3.2.7.1 Scattered or widely separated hazards shall be individually protected. [10:6.3.2.7.1]

13.6.8.3.2.7.2 A fire extinguisher in the proximity of a hazard shall be located to be accessible in the presence of a fire without undue danger to the operator. [10:6.3.2.7.2]

13.6.8.4* Installations for Class C Hazards.

13.6.8.4.1 Fire extinguishers with Class C ratings shall be required where energized electrical equipment can be encountered. [10:6.4.1]

13.6.8.4.2 The requirement in 13.6.8.4.1 shall include situations where fire either directly involves or surrounds electrical equipment. [10:6.4.2]

13.6.8.4.3 Because fire is a Class A or Class B hazard, the fire extinguishers shall be sized and located on the basis of the anticipated Class A or Class B hazard. [10:6.4.3]

13.6.8.5 Installations for Class D Hazards.

13.6.8.5.1 Fire extinguishers or extinguishing agents with Class D ratings shall be provided for fires involving combustible metals. [10:6.5.1]

13.6.8.5.2 Fire extinguishers or extinguishing agents (media) shall be located not more than 75 ft (22.9 m) of travel distance from the Class D hazard. (See Section E.6 of NFPA 10.) [10:6.5.2]

13.6.8.5.3 Portable fire extinguishers or extinguishing agents (media) for Class D hazards shall be provided in those work areas where combustible metal powders, flakes, shavings, chips, or similarly sized products are generated. [10:6.5.3]

13.6.8.5.4 Size determination shall be on the basis of the specific combustible metal, its physical particle size, area to be covered, and recommendations by the fire extinguisher manufacturer based on data from control tests. [10:6.5.4]

13.6.8.6 Installations for Class K Hazards.

13.6.8.6.1 Class K fire extinguishers shall be provided for hazards where there is a potential for fires involving combustible cooking media (vegetable or animal oils and fats). [10:6.6.1]

13.6.8.6.2 Maximum travel distance shall not exceed 30 ft (9.15 m) from the hazard to the extinguishers. [10:6.6.2]

13.6.8.6.3 All solid fuel cooking appliances (whether or not under a hood) with fire boxes of 5 ft³ (0.14 m³) volume or less shall have at least a listed 2-A rated water-type fire extinguisher or 1.6 gal (6 L) wet chemical fire extinguisher that is listed for Class K fires. [10:6.6.3]

13.6.9 Inspection, Maintenance, and Recharging of Portable Fire Extinguishers.**13.6.9.1* General.**

13.6.9.1.1 Responsibility. The owner or designated agent or occupant of a property in which fire extinguishers are located shall be responsible for inspection, maintenance, and recharging. (See 13.6.9.1.2.) [10:7.1.1]

13.6.9.1.2 Personnel.

13.6.9.1.2.1* Persons performing maintenance and recharging of extinguishers shall be certified. [10:7.1.2.1]

13.6.9.1.2.1.1 Persons training to become certified shall be permitted to perform maintenance and recharging of extinguishers under the direct supervision and in the immediate presence of a certified person. [10:7.1.2.1.1]

13.6.9.1.2.1.2* Certification requires that a person pass a test administered by an organization acceptable to the AHJ. [10:7.1.2.1.2]

13.6.9.1.2.1.3 The test shall at a minimum be based upon knowledge of the chapters and annexes of NFPA 10. [10:7.1.2.1.3]

13.6.9.1.2.1.4 The testing process shall permit persons to use NFPA 10 during the test. [10:7.1.2.1.4]

13.6.9.1.2.1.5 Persons passing the test required in 13.6.9.1.2.1.2 shall be issued a document or a certificate. [10:7.1.2.1.5]

13.6.9.1.2.1.6 The document or certificate shall be made available when requested by the AHJ. [10:7.1.2.1.6]

13.6.9.1.2.2 Persons performing maintenance and recharging of extinguishers shall be trained and shall have available the appropriate manufacturer's servicing manual(s), the correct tools, recharge materials, lubricants, and manufacturer's replacement parts or parts specifically listed for use in the fire extinguisher. [10:7.1.2.2]

13.6.9.1.2.3* Persons performing 30-day inspections shall not be required to be certified. [10:7.1.2.3]

13.6.9.1.3 Replacement While Servicing. Fire extinguishers removed from service for maintenance or recharging shall be replaced by a fire extinguisher suitable for the type of hazard being protected and shall be of at least equal rating. [10:7.1.3]

13.6.9.1.4 Tags or Labels.

13.6.9.1.4.1 Tags or labels intended for recording inspections, maintenance, or recharging shall not be placed on the front of the fire extinguishers. [10:7.1.4.1]

13.6.9.1.4.2 Labels indicating fire extinguisher use or classification or both shall be permitted to be placed on the front of the fire extinguisher. [10:7.1.4.2]

13.6.9.1.5 Electronic Monitoring Systems.

13.6.9.1.5.1 When used in conjunction with fire alarm systems, fire extinguisher electronic monitoring devices shall be inspected and maintained in accordance with NFPA 72 and 13.6.9.3.2.5. [10:7.1.5.1]

13.6.9.1.5.2 When used in conjunction with non-fire alarm systems, fire extinguisher electronic monitoring devices shall be inspected and maintained as required in 13.6.9.1.5.2.1 through 13.6.9.1.5.2.3 and the manufacturer's listed installation and maintenance manual(s). [10:7.1.5.2]

13.6.9.1.5.2.1 The connection to the electronic monitoring device shall be continuously supervised for integrity. [10:7.1.5.2.1]

13.6.9.1.5.2.2 The power source for the electronic monitoring device shall be supervised for continuity of power. [10:7.1.5.2.2]

13.6.9.1.5.2.3 The monitoring device shall be tested and maintained annually in accordance with 13.6.9.3.2.5. [10:7.1.5.2.3]

13.6.9.2 Inspection.**13.6.9.2.1 Frequency.**

13.6.9.2.1.1* Fire extinguishers shall be manually inspected when initially placed in service. [10:7.2.1.1]

13.6.9.2.1.2* Fire extinguishers shall be inspected either manually or by means of an electronic monitoring device/system at a minimum of 30-day intervals. [10:7.2.1.2]

13.6.9.2.1.2.1 Where electronic monitoring is used and the specific extinguisher cannot be verified electronically, the extinguisher shall be continuously monitored for location. [10:7.2.1.2.1]

13.6.9.2.1.3* Fire extinguishers shall be inspected at more frequent intervals when circumstances require. [10:7.2.1.3]

13.6.9.2.2 Procedures. Periodic inspection or electronic monitoring of fire extinguishers shall include a check of at least the following items:

- (1) Location in designated place
- (2) No obstruction to access or visibility
- (3) Pressure gauge reading or indicator in the operable range or position
- (4) Fullness determined by weighing or hefting for self-expelling-type extinguishers, cartridge-operated extinguishers, and pump tanks
- (5) Condition of tires, wheels, carriage, hose, and nozzle for wheeled extinguishers
- (6) Indicator for nonrechargeable extinguishers using push-to-test pressure indicators [10:7.2.2]

13.6.9.2.2.1 In addition to 13.6.9.2.2, fire extinguishers shall be visually inspected in accordance with 13.6.9.2.2.2 if they are located where any of the following conditions exists:

- (1) High frequency of fires in the past
- (2) Severe hazards
- (3) Locations that make fire extinguishers susceptible to mechanical injury or physical damage
- (4) Exposure to abnormal temperatures or corrosive atmospheres [10:7.2.2.1]

13.6.9.2.2.2 Where required by 13.6.9.2.2.1, the following inspection procedures shall be in addition to those addressed in 13.6.9.2.2:

- (1) Verifying that operating instructions on nameplates are legible and face outward
- (2) Checking for broken or missing safety seals and tamper indicators
- (3) Examination for obvious physical damage, corrosion, leakage, or clogged nozzle [10:7.2.2.2]

13.6.9.2.3 Corrective Action. When an inspection of any fire extinguisher reveals a deficiency in any of the conditions listed in 13.6.9.2.2, immediate corrective action shall be taken. [10:7.2.3]

13.6.9.2.3.1 Rechargeable Fire Extinguishers. When an inspection of any rechargeable fire extinguisher reveals a deficiency in any of the conditions listed in 13.6.9.2.2(3) or 13.6.9.2.2(4), the extinguisher shall be subjected to applicable maintenance procedures. [10:7.2.3.1]

13.6.9.2.3.2 Nonrechargeable Dry Chemical Fire Extinguisher. When an inspection of any nonrechargeable dry chemical fire extinguisher reveals a deficiency in any of the conditions listed in 13.6.9.2.2(3), 13.6.9.2.2(4), or 13.6.9.2.2(6), the extinguisher shall be removed from further use, discharged, and destroyed at the direction of the owner or returned to the manufacturer. [10:7.2.3.2]

13.6.9.2.3.3 Nonrechargeable Halon Agent Fire Extinguisher. When an inspection of any nonrechargeable fire extinguisher containing a halon agent reveals a deficiency in any of the conditions listed in 13.6.9.2.2(3), 13.6.9.2.2(4), or 13.6.9.2.2(6), the extinguisher shall be removed from service, not discharged, and returned to the manufacturer, a fire equipment dealer, or a distributor to permit recovery of the halon. [10:7.2.3.3]

13.6.9.2.4 Inspection Record Keeping.

13.6.9.2.4.1 Personnel making manual inspections shall keep records of all fire extinguishers inspected, including those found to require corrective action. [10:7.2.4.1]

13.6.9.2.4.2 Where electronically monitored systems are employed for inspections, records shall be kept for fire extinguishers found to require corrective action. [10:7.2.4.2]

13.6.9.2.4.3 Where at least monthly manual inspections are conducted, the date the manual inspection was performed and the initials of the person performing the inspection shall be recorded. [10:7.2.4.3]

13.6.9.2.4.4 Where manual inspections are conducted, records for manual inspections shall be kept on a tag or label attached to the fire extinguisher, on an inspection checklist maintained on file, or by an electronic method. [10:7.2.4.4]

13.6.9.2.4.5 Records shall be kept to demonstrate that at least the last 12 monthly inspections have been performed. [10:7.2.4.5]

13.6.9.2.4.6 Fire extinguishers inspected via electronic monitoring, whereby the extinguisher causes a signal at a control unit when a deficiency in any of the conditions listed in 13.6.9.2.2 occurs, shall provide record keeping in the form of an electronic event log at the control panel. [10:7.2.4.6]

13.6.9.3* Maintenance.

13.6.9.3.1 Frequency.

13.6.9.3.1.1 All Fire Extinguishers.

13.6.9.3.1.1.1 Fire extinguishers shall be subjected to maintenance at intervals of not more than 1 year, at the time of hydrostatic test, or when specifically indicated by an inspection or electronic notification. [10:7.3.1.1.1]

13.6.9.3.1.1.2 Fire extinguishers shall be internally examined at intervals not exceeding those specified in Table 13.6.9.3.1.1.2. [10:7.3.1.1.2]

13.6.9.3.1.2 Stored-Pressure Types.

13.6.9.3.1.2.1 Six-Year Internal Examination. Every 6 years, stored-pressure fire extinguishers that require a 12-year hydrostatic test shall be emptied and subjected to the applicable internal examination procedures as detailed in the manufacturer's service manual and NFPA 10. [10:7.3.1.2.1]

(A) When the applicable maintenance procedures are performed during periodic recharging or hydrostatic testing, the 6-year requirement shall begin from that date. [10:7.3.1.2.1.1]

Table 13.6.9.3.1.1.2 Maintenance Involving Internal Examination

Extinguisher Type	Internal Examination Interval (years)
Stored-pressure loaded stream and antifreeze	1
Pump tank water and pump tank calcium chloride-based	1
Dry chemical, cartridge- and cylinder-operated, with mild steel shells	1*
Dry powder, cartridge- and cylinder-operated, with mild steel shells	1*
Wetting agent	1
Stored-pressure water	5
AFFF (aqueous film-forming foam)	†
FFFP (film-forming fluoroprotein foam)	†
Stored-pressure dry chemical, with stainless steel shells	5
Carbon dioxide	5
Wet chemical	5
Dry chemical stored-pressure, with mild steel shells, brazed brass shells, and aluminum shells	6
Halogenated agents	6
Dry powder, stored-pressure, with mild steel shells	6

*Dry chemical and dry powder in cartridge- or cylinder-operated extinguishers are examined annually.

†The extinguishing agent in liquid charge-type AFFF and FFPF extinguishers is replaced every 3 years, and an internal examination (teardown) is normally conducted at that time. [10: Table 7.3.1.1.2]

(B)* The removal of agent from halon agent fire extinguishers shall only be done using a listed halon closed recovery system. [10:7.3.1.2.1.2]

(C) Nonrechargeable fire extinguishers shall not be required to comply with 13.6.9.3.1.2.1(B) and shall not be hydrostatically tested but shall be removed from service at a maximum interval of 12 years from the date of manufacture. [10:7.3.1.2.1.3]

(D) Nonrechargeable halon agent fire extinguishers shall be disposed of in accordance with 13.6.9.2.3.3. [10:7.3.1.2.1.4]

13.6.9.3.1.2.2 When subjected to temperatures at or above their listed rating, stored-pressure fire extinguishers that require a 12-year hydrostatic test shall be emptied and subjected to the applicable maintenance and recharge procedures on an annual basis. [10:7.3.1.2.2]

(A) The loaded stream charge shall be permitted to be recovered and re-used, provided it is subjected to agent analysis in accordance with the extinguisher manufacturer's instructions. [10:7.3.1.2.2.1]

13.6.9.3.1.2.3 Loaded Stream Charge. Stored-pressure types of fire extinguishers containing a loaded stream agent shall be disassembled on an annual basis and subjected to complete maintenance. [10:7.3.1.2.3]

13.6.9.3.1.2.4 When the applicable maintenance procedures are performed during periodic recharging or hydrostatic testing, the 1-year requirement shall begin from that date. [10:7.3.1.2.4]

13.6.9.3.1.3* Carbon Dioxide Hose Assemblies. A conductivity test shall be conducted annually on all carbon dioxide hose assemblies. [10:7.3.1.3]

13.6.9.3.1.3.1 Carbon dioxide hose assemblies that fail the conductivity test shall be replaced. [10:7.3.1.3.1]

13.6.9.3.1.3.2 Carbon dioxide hose assemblies that pass a conductivity test shall have the test information recorded on a durable weatherproof label that has a minimum size of ½ in. × 3 in. (13 mm × 76 mm). [10:7.3.1.3.2]

(A) The label shall be affixed to the hose by means of a heatless process. [10:7.3.1.3.2.1]

(B) The label shall include the following information:

- (1) Month and year the test was performed, indicated by perforation, such as is done by a hand punch
- (2) Name or initials of person performing the test and the name of the agency performing the test [10:7.3.1.3.2.2]

13.6.9.3.1.4 Pressure Regulators. Pressure regulators provided with wheeled-type fire extinguishers shall be tested annually for outlet static pressure and flow rate in accordance with the manufacturer's instructions. [10:7.3.1.4]

13.6.9.3.1.5* Wheeled Unit Hoses. Discharge hoses on wheeled extinguishers shall be coiled in a manner to prevent kinks and to allow rapid deployment in accordance with the manufacturer's instructions. [10:7.3.1.5]

13.6.9.3.2* Procedures. Maintenance procedures shall include following the procedures detailed in the manufacturer's service manual and a thorough examination of the basic elements of the fire extinguisher and components of the electronic monitoring system, including the following:

- (1) Mechanical parts of all fire extinguishers
- (2) Extinguishing agent of cartridge- or cylinder-operated dry chemical, stored-pressure loaded stream, and pump tank fire extinguishers
- (3) Expelling means of all fire extinguishers
- (4) Physical appearance
- (5)* Components of electronically monitored system
- (6) Hoses on wheeled-type fire extinguishers completely uncoiled and examined for damage [10:7.3.2]

13.6.9.3.2.1 Internal and External Examination.

13.6.9.3.2.1.1 Internal examination during annual maintenance shall not be required for nonrechargeable fire extinguishers, carbon dioxide fire extinguishers, or stored-pressure fire extinguishers, except for those types specified in 13.6.9.3.1.2.2. [10:7.3.2.1.1]

13.6.9.3.2.1.2 The fire extinguishers listed in 13.6.9.3.2.1.1 shall be thoroughly examined externally in accordance with the applicable items of 13.6.9.3.2(1). [10:7.3.2.1.2]

13.6.9.3.2.2* Seals or Tamper Indicators. At the time of the maintenance, the tamper seal of a rechargeable fire extinguisher shall be removed by operating the pull pin or locking device. [10:7.3.2.2]

13.6.9.3.2.2.1 After the applicable maintenance procedures are completed, a new listed tamper seal shall be installed. [10:7.3.2.2.1]

13.6.9.3.2.2.2 Tamper indicators on nonrechargeable-type extinguishers shall not be removed. [10:7.3.2.2.2]

13.6.9.3.2.3* Boots, Foot Rings, and Attachments. All removable extinguisher boots, foot rings, and attachments shall be removed to accommodate thorough annual cylinder examinations. [10:7.3.2.3]

13.6.9.3.2.4 Physical Appearance. A visual examination of the extinguisher shall be made to detect obvious physical damage, corrosion, or nozzle blockage and to verify the operating instructions are present, legible, and facing forward and that the HMIS information is present and legible. [10:7.3.2.4]

13.6.9.3.2.5 Electronic Monitoring. The components of the monitoring device/system shall be tested and maintained annually in accordance with the manufacturer's listed maintenance manual with the following items as a minimum:

- (1) Power supply inspection/battery change
- (2) Obstruction sensor inspection
- (3) Location sensor inspection
- (4) Pressure indication inspection
- (5) Connection continuity inspection (*see 13.6.9.3.2.5.1 and 13.6.9.3.2.5.2*) [10:7.3.2.5]

13.6.9.3.2.5.1 One hundred percent of all units shall be tested upon initial installation or reacceptance with verification of receipt of signal at the control panel or a local alarm. [10:7.3.2.5.1]

13.6.9.3.2.5.2 Twenty percent of units shall be tested annually on a rotating basis so that all units are tested within a 5-year period. [10:7.3.2.5.2]

13.6.9.3.3* Maintenance Record Keeping. Each fire extinguisher shall have a tag or label securely attached that indicates the month and year the maintenance was performed, identifies the person performing the work, and identifies the name of the agency performing the work. [10:7.3.3]

13.6.9.3.3.1* Six-Year Service Label. Fire extinguishers that pass the applicable 6-year requirement of 13.6.9.3.1.2.1 shall have the maintenance information recorded on a weatherproof durable label that is a minimum size of 2 in. × 3½ in. (51 mm × 89 mm). [10:7.3.3.1]

13.6.9.3.3.1.1 The new label shall be affixed to the shell by a heatless process, and any old maintenance labels shall be removed. [10:7.3.3.1.1]

13.6.9.3.3.1.2 These labels shall be of the self-destructive type when their removal from a fire extinguisher is attempted. [10:7.3.3.1.2]

13.6.9.3.3.1.3 The label shall include the following information:

- (1) Month and year the maintenance was performed, indicated by a perforation such as is done by a hand punch
- (2) Name or initials of the person performing the maintenance and name of the agency performing the maintenance [10:7.3.3.1.3]

13.6.9.3.3.2* Verification-of-Service Collar (Maintenance or Recharging).

13.6.9.3.3.2.1 Each extinguisher that has undergone maintenance that includes internal examination or that has been recharged (*see 13.6.9.4.5.2*) shall have a verification-of-service collar located around the neck of the container. [10:7.3.3.2.1]

(A) The collar shall contain a single circular piece of uninterrupted material forming a hole of a size that does not permit the collar assembly to move over the neck of the container unless the valve is completely removed. [10:7.3.3.2.1.1]

(B) The collar shall not interfere with the operation of the fire extinguisher. [10:7.3.3.2.1.2]

(C) The collar shall include the following information:

- (1) Month and year the service was performed, indicated by a perforation such as is done by a hand punch
- (2) Name of the agency performing the maintenance or recharge [10:7.3.3.2.1.3]

13.6.9.3.3.2.2 Cartridge- or cylinder-operated fire extinguishers shall not be required to comply with 13.6.9.3.3.2.1. [10:7.3.3.2.2]

13.6.9.3.3.2.3 New extinguishers requiring an initial charge in the field (such as pressurized water extinguishers, AFFF, FFFP, or wet chemical) shall not be required to have a verification-of-service collar installed. [10:7.3.3.2.3]

13.6.9.4 Recharging.

13.6.9.4.1* General.

13.6.9.4.1.1 All rechargeable-type fire extinguishers shall be recharged after any use or as indicated by an inspection or when maintenance is performed. [10:7.4.1.1]

13.6.9.4.1.2* When the recharging is performed, the recommendations of the manufacturer shall be followed. (*For recharge chemicals, see 13.6.9.4.3.1.*) [10:7.4.1.2]

13.6.9.4.1.3* The amount of recharge agent shall be verified by weighing. [10:7.4.1.3]

13.6.9.4.1.3.1 The recharged gross weight shall be the same as the gross weight that is marked on the nameplate. [10:7.4.1.3.1]

(A) Weight scales used for the maintenance and recharge of fire extinguishers shall have the reading increments and the accuracy necessary to verify the charge weights required in the service manuals and on the nameplates. [10:7.4.1.3.1.1]

13.6.9.4.1.3.2 For those fire extinguishers that do not have the gross weight marked on the nameplate or valve, a permanent label that indicates the gross weight shall be affixed to the cylinder. [10:7.4.1.3.2]

13.6.9.4.1.3.3 The added label containing the gross weight shall be a durable material of a pressure-sensitive, self-destruct type. (*For stored-pressure water-type extinguishers, see 13.6.9.4.3.10.*) [10:7.4.1.3.3]

13.6.9.4.1.3.4 Pump tank water and pump tank calcium chloride-based antifreeze types shall not be required to have weight marked. [10:7.4.1.3.4]

13.6.9.4.1.3.5* After recharging, a leak test shall be performed on stored-pressure and self-expelling types of fire extinguishers. [10:7.4.1.3.5]

13.6.9.4.1.4 Conversion of Fire Extinguisher Types.

13.6.9.4.1.4.1 No fire extinguisher shall be converted from one type to another, nor shall any fire extinguisher be converted to use a different type of extinguishing agent. [10:7.4.1.4.1]

13.6.9.4.1.4.2 Fire extinguishers shall not be used for any purpose other than that of a fire extinguisher. [10:7.4.1.4.2]

13.6.9.4.2 Frequency.

13.6.9.4.2.1 Pump Tank. Every 12 months, pump tank water and pump tank calcium chloride-based antifreeze types of fire extinguishers shall be recharged with new chemicals or water as applicable. [10:7.4.2.1]

13.6.9.4.2.2 Wetting Agent. The agent in stored-pressure wetting agent fire extinguishers shall be replaced annually. [10:7.4.2.2]

13.6.9.4.2.2.1 Only the agent specified on the nameplate shall be used for recharging. [10:7.4.2.2.1]

13.6.9.4.2.2.2 The use of water or any other additives shall be prohibited. [10:7.4.2.2.2]

13.6.9.4.2.3 AFFF and FFFP.

13.6.9.4.2.3.1 The premixed agent in liquid charge-type AFFF and FFFP fire extinguishers shall be replaced at least once every 3 years. [10:7.4.2.3.1]

13.6.9.4.2.3.2 Only the foam agent specified on the extinguisher nameplate shall be used for recharge. [10:7.4.2.3.2]

13.6.9.4.2.3.3 The agent in nonpressurized AFFF and FFFP fire extinguishers that is subjected to agent analysis in accordance with manufacturer's instructions shall not be required to comply with 13.6.9.4.2.3.1. [10:7.4.2.3.3]

13.6.9.4.3 Procedures.

13.6.9.4.3.1* Recharge Agents.

13.6.9.4.3.1.1 Only those agents specified on the nameplate or agents proven to have equal chemical composition, physical characteristics, and fire-extinguishing capabilities shall be used. [10:7.4.3.1.1]

13.6.9.4.3.1.2 Agents listed specifically for use with that fire extinguisher shall be considered to meet these requirements. [10:7.4.3.1.2]

13.6.9.4.3.2* Mixing of Dry Chemicals. Multipurpose dry chemicals shall not be mixed with alkaline-based dry chemicals. [10:7.4.3.2]

13.6.9.4.3.3 Topping Off.

13.6.9.4.3.3.1 The remaining dry chemical in a discharged fire extinguisher shall be permitted to be re-used, provided that it is thoroughly checked for the proper type, contamination, and condition. [10:7.4.3.3.1]

13.6.9.4.3.3.2 Dry chemical found to be of the wrong type or contaminated shall not be re-used. [10:7.4.3.3.2]

13.6.9.4.3.4 Dry Chemical Agent Re-Use.

13.6.9.4.3.4.1 Fire extinguishers removed for 6-year maintenance or hydrostatic testing shall be emptied. [10:7.4.3.4.1]

13.6.9.4.3.4.2 The dry chemical agent shall be permitted to be re-used, provided a closed recovery system is used and the agent is stored in a sealed container to prevent contamination. [10:7.4.3.4.2]

13.6.9.4.3.4.3 Prior to re-use, the dry chemical shall be thoroughly checked for the proper type, contamination, and condition. [10:7.4.3.4.3]

13.6.9.4.3.4.4 Where doubt exists with respect to the type, contamination, or condition of the dry chemical, the dry chemical shall be discarded. [10:7.4.3.4.4]

13.6.9.4.3.4.5 Dry Chemical Closed Recovery System.

(A) The system shall be constructed in a manner that does not introduce foreign material into the agent being recovered. [10:7.4.3.4.5.1]

(B) The system shall have a means for visual inspection of the recovered agent for contaminants. [10:7.4.3.4.5.2]

13.6.9.4.3.5 Dry Powder.

13.6.9.4.3.5.1 Pails or drums containing dry powder agents for scoop or shovel application for use on metal fires shall be kept full and covered at all times. [10:7.4.3.5.1]

13.6.9.4.3.5.2 The dry powder shall be replaced if found damp. (See A.13.6.9.4.3.1.) [10:7.4.3.5.2]

13.6.9.4.3.6* Removal of Moisture. For all non-water types of fire extinguishers, any moisture shall be removed before recharging. [10:7.4.3.6]

13.6.9.4.3.7* Halogenated Agent. Halogenated agent fire extinguishers shall be charged with only the type and weight of agent specified on the nameplate. [10:7.4.3.7]

13.6.9.4.3.8 Halogenated Agent Re-Use.

13.6.9.4.3.8.1 The removal of Halon 1211 from fire extinguishers shall be done using only a listed halon closed recovery system. [10:7.4.3.8.1]

13.6.9.4.3.8.2 The removal of agent from other halogenated agent fire extinguishers shall be done using only a closed recovery system. [10:7.4.3.8.2]

13.6.9.4.3.8.3 The fire extinguisher shall be examined internally for contamination or corrosion or both. [10:7.4.3.8.3]

13.6.9.4.3.8.4 The halogenated agent retained in the system recovery cylinder shall be re-used only if no evidence of internal contamination is observed in the fire extinguisher cylinder. [10:7.4.3.8.4]

13.6.9.4.3.8.5 Halogenated agent removed from fire extinguishers that exhibits evidence of internal contamination or corrosion shall be processed in accordance with the fire extinguisher manufacturer's instructions. [10:7.4.3.8.5]

13.6.9.4.3.9* Carbon Dioxide.

13.6.9.4.3.9.1 The vapor phase of carbon dioxide shall be not less than 99.5 percent carbon dioxide. [10:7.4.3.9.1]

13.6.9.4.3.9.2 The water content shall be not more than 60 parts per million (ppm) by weight at -52°F (-47°C) dew point. [10:7.4.3.9.2]

13.6.9.4.3.9.3 Oil content shall not exceed 10 ppm by weight. [10:7.4.3.9.3]

13.6.9.4.3.10* Water Types. The amount of liquid agent shall be determined by using one of the following:

- (1) Exact measurement by weight
- (2) Exact measurement in volume
- (3) Anti-overfill tube, if provided
- (4) Fill mark on fire extinguisher shell, if provided

[10:7.4.3.10]

13.6.9.4.3.10.1 Only the agent specified on the extinguisher nameplate shall be used for recharge. [10:7.4.3.10.1]

13.6.9.4.3.11 Wet Chemical and Water Mist Agent Re-Use.

13.6.9.4.3.11.1 Wet chemical and water mist agents shall not be re-used. [10:7.4.3.11.1]

13.6.9.4.3.11.2 If a wet chemical or water mist extinguisher is partially discharged, all remaining wet chemical or water mist shall be discarded. [10:7.4.3.11.2]

13.6.9.4.3.11.3 Wet chemical or water mist agent shall be discarded and replaced at the hydrostatic test interval. [10:7.4.3.11.3]

(A) Only the agent specified on the extinguisher nameplate shall be used for recharge. [10:7.4.3.11.3.1]

13.6.9.4.4 Precautionary Pressurization Measures.

13.6.9.4.4.1* Pressure Gauges. Replacement pressure gauges shall have the correct indicated charging (service) pressure, shall be marked for use with the agent in the fire extinguisher, and shall be compatible with the fire extinguisher valve, body material. [10:7.4.4.1]

13.6.9.4.4.2 Stored-Pressure Fire Extinguishers.

13.6.9.4.4.2.1 A rechargeable stored-pressure-type fire extinguisher shall be pressurized only to the charging pressure specified on the fire extinguisher nameplate. [10:7.4.4.2.1]

(A) The manufacturer's pressurizing adapter shall be connected to the valve assembly before the fire extinguisher is pressurized. [10:7.4.4.2.1.1]

(B) A regulated source of pressure, set no higher than 25 psi (172 kPa) above the operating (service) pressure, shall be used to pressurize fire extinguishers. [10:7.4.4.2.1.2]

(C) The gauge used to set the regulated source of pressure shall be calibrated at least annually. [10:7.4.4.2.1.3]

13.6.9.4.4.2.2 An unregulated source of pressure, such as a nitrogen cylinder without a pressure regulator, shall not be used because the fire extinguisher has the potential to be overpressurized and possibly rupture. [10:7.4.4.2.2]

13.6.9.4.4.2.3* A fire extinguisher shall not be left connected to the regulator of a high-pressure source for an extended period of time. [10:7.4.4.2.3]

13.6.9.4.4.3 Pressurizing Gas. Only standard industrial-grade nitrogen with a dew point of -60°F (-51°C) or lower (CGA nitrogen specification G10.1, grades D through P) shall be used to pressurize stored-pressure dry chemical and halogenated-type fire extinguishers that use nitrogen as a propellant. [10:7.4.4.3]

13.6.9.4.4.3.1 Halogenated-type fire extinguishers that require argon shall be pressurized with argon with a dew point of -65°F (-54°C) or lower. [10:7.4.4.3.1]

13.6.9.4.4.3.2 Compressed air through moisture traps shall not be used for pressurizing even though so stated in the instructions on older fire extinguishers. (See Annex J of NFPA 10.) [10:7.4.4.3.2]

13.6.9.4.4.3.3 Compressed air shall be permitted to be used from special compressor systems capable of delivering air with a dew point of -60°F (-51°C) or lower. [10:7.4.4.3.3]

13.6.9.4.4.3.4 The special compressor system shall be equipped with an automatic monitoring and alarm system to ensure that the dew point remains at or below -60°F (-51°C) at all times. [10:7.4.4.3.4]

13.6.9.4.4.3.5* Class D, wet chemical, water mist, and halocarbon fire extinguishers shall be repressurized only with the type of expellant gas referred to on the fire extinguisher label. [10:7.4.4.3.5]

13.6.9.4.4.3.6 Compressed air without moisture removal devices shall be permitted for pressurizing water extinguishers. [10:7.4.4.3.6]

13.6.9.4.5 Recharge Record Keeping.

13.6.9.4.5.1 Each fire extinguisher shall have a tag or label attached that indicates the month and year recharging was performed, identifies the person performing the service, and identifies the name of the agency performing the work. [10:7.4.5.1]

13.6.9.4.5.2 A verification-of-service (maintenance or recharging) collar in accordance with 13.6.9.3.3.2 shall also be attached to the extinguisher. [10:7.4.5.2]

13.6.9.4.5.2.1 Liquefied gas, halogenated agent, and carbon dioxide extinguishers that have been recharged without valve removal shall not be required to have a verification-of-service collar installed following recharge. [10:7.4.5.2.1]

13.6.9.4.5.2.2 Cartridge- and cylinder-operated extinguishers shall not be required to have a verification-of-service collar installed. (See 13.6.9.3.3.2.) [10:7.4.5.2.2]

13.6.10 For hydrostatic testing of portable fire extinguishers, see Chapter 8 of NFPA 10.

13.6.11 Condemning Extinguishers.

13.6.11.1 Fails Test or Examination. When a fire extinguisher cylinder, shell, or cartridge fails a hydrostatic pressure test or fails to pass a visual examination as specified in 8.4.2 of NFPA 10, it shall be condemned or destroyed by the owner or the owner's agent. [10:8.8.1]

13.6.11.1.1 When a cylinder is required to be condemned, the retester shall notify the owner in writing that the cylinder is condemned and that it cannot be reused. [10:8.8.1.1]

13.6.11.1.2 A condemned cylinder shall not be repaired. [10:8.8.1.2]

13.6.11.2 Marking Condemned Extinguishers.

13.6.11.2.1 Condemned cylinders shall be stamped "CONDEMNED" on the top, head, shoulder, or neck with a steel stamp. [10:8.8.2.1]

13.6.11.2.2 No person shall remove or obliterate the "CONDEMNED" marking. [10:8.8.2.2]

13.6.11.2.3 Minimum letter height shall be $\frac{1}{8}$ in. (3 mm). [10:8.8.2.3]

13.7 Detection, Alarm, and Communications Systems.

13.7.1 General.

13.7.1.1 Where building fire alarm systems or automatic fire detectors are required by other sections of this *Code*, they shall be provided and installed in accordance with NFPA 70, *NFPA 72, National Fire Alarm and Signaling Code*, and Section 13.7.

13.7.1.2 Building Fire Alarm Systems. Protected premises fire alarm systems that serve the general fire alarm needs of a building or buildings shall include one or more of the following systems or functions:

- (1) Manual fire alarm signal initiation
- (2) Automatic fire alarm and supervisory signal initiation

- (3) Monitoring of abnormal conditions in fire suppression systems
- (4) Activation of fire suppression systems
- (5) Activation of fire safety functions
- (6) Activation of fire alarm notification appliances
- (7) In-building fire emergency voice/alarm communications
- (8) Guard's tour supervisory service
- (9) Process monitoring supervisory systems
- (10) Activation of off-premises signals
- (11) Combination systems [72:23.3.3.1]

13.7.1.3 All apparatus requiring rewinding or resetting to maintain normal operation shall be rewound or reset as promptly as possible after each test and alarm. [72:14.5.4]

13.7.1.4 The provisions of Section 13.7 shall apply only where specifically required by another section of this *Code*. [101:9.6.1.1]

13.7.1.4.1 Fire detection, alarm, and communications systems installed to make use of an alternative permitted by this *Code* shall be considered required systems and shall meet the provisions of this *Code* applicable to required systems. [101:9.6.1.2]

13.7.1.4.2 All systems and components shall be approved for the purpose for which they are installed. [101:9.6.1.4]

13.7.1.4.3* To ensure operational integrity, the fire alarm system shall have an approved maintenance and testing program complying with the applicable requirements of Sections 13.4 and 13.7. [101:9.6.1.5]

13.7.1.4.4* Where a required fire alarm system is out of service for more than 4 hours in a 24-hour period, the AHJ shall be notified, and the building shall be evacuated or an approved fire watch shall be provided for all parties left unprotected by the shutdown until the fire alarm system has been returned to service. [101:9.6.1.6]

13.7.1.4.5 For the purposes of this *Code*, a complete fire alarm system shall provide functions for initiation, notification, and control, which shall perform as follows:

- (1) The initiation function provides the input signal to the system.
- (2) The notification function is the means by which the system advises that human action is required in response to a particular condition.
- (3) The control function provides outputs to control building equipment to enhance protection of life. [101:9.6.1.7]

13.7.1.4.6 Protection of Fire Alarm System.

13.7.1.4.6.1* In areas that are not continuously occupied, and unless otherwise permitted by 13.7.1.4.6.1.1 or 13.7.1.4.6.1.2, automatic smoke detection shall be installed to provide notification of fire at the following locations:

- (1) Each fire alarm control unit
- (2) Notification appliance circuit power extenders
- (3) Supervising station transmitting equipment [101:9.6.1.8.1]

13.7.1.4.6.1.1 The provisions of 13.7.1.4.6.1(2) and 13.7.1.4.6.1(3) shall not apply to existing alarm systems. [101:9.6.1.8.1.1]

13.7.1.4.6.1.2 Where ambient conditions prohibit installation of a smoke detector, a heat detector shall be used. [101:9.6.1.8.1.2]

13.7.1.4.7* Nonrequired Coverage.

13.7.1.4.7.1 Detection installed for reasons of achieving specific fire safety objectives, but not required by any laws, codes, or standards, shall meet all of the requirements of this *Code*, with the exception of prescriptive spacing criteria of Chapter 17 of *NFPA 72*. [72:17.5.3.3.1]

13.7.1.4.7.2 Where nonrequired detectors are installed for achieving specific fire safety objectives, additional detectors not necessary to achieve the objectives shall not be required. [72:17.5.3.3.2]

13.7.1.4.8 Signal Initiation.

13.7.1.4.8.1 Where required by other sections of this *Code*, actuation of the complete fire alarm system shall be initiated by, but shall not be limited to, any or all of the following means:

- (1) Manual fire alarm initiation
- (2) Automatic detection
- (3) Extinguishing system operation [101:9.6.2.1]

13.7.1.4.8.2 Manual fire alarm boxes shall be used only for fire-protective signaling purposes. Combination fire alarm and guard's tour stations shall be acceptable. [101:9.6.2.2]

13.7.1.4.8.3 A manual fire alarm box shall be provided as follows, unless modified by another section of this *Code*:

- (1) For new alarm system installations, the manual fire alarm box shall be located within 5 ft (1.5 m) of exit doorways.
- (2) For existing alarm system installations, the manual fire alarm box either shall be provided in the natural exit access path near each required exit or within 5 ft (1.5 m) of exit doorways. [101:9.6.2.3]

13.7.1.4.8.4 Manual fire alarm boxes shall be mounted on both sides of grouped openings over 40 ft (12.2 m) in width, and within 5 ft (1.5 m) of each side of the opening. [101:9.6.2.4]

13.7.1.4.8.5* Additional manual fire alarm boxes shall be located so that, on any given floor in any part of the building, no horizontal distance on that floor exceeding 200 ft (60 m) shall need to be traversed to reach a manual fire alarm box. [101:9.6.2.5]

13.7.1.4.8.6* For fire alarm systems using automatic fire detection or waterflow detection devices to initiate the fire alarm system in accordance with Chapters 11 through 43 of *NFPA 101*, not less than one manual fire alarm box shall be provided to initiate a fire alarm signal. The manual fire alarm box shall be located where required by the AHJ. [101:9.6.2.6]

13.7.1.4.8.7* Each manual fire alarm box on a system shall be accessible, unobstructed, and visible. [101:9.6.2.7]

13.7.1.4.8.8 Where a sprinkler system provides automatic detection and alarm system initiation, it shall be provided with an approved alarm initiation device that operates when the flow of water is equal to or greater than that from a single automatic sprinkler. [101:9.6.2.8]

13.7.1.4.8.9 Where a total (complete) coverage smoke detection system is required by another section of this *Code*, automatic detection of smoke in accordance with *NFPA 72* shall be provided in all occupiable areas in environments that are suitable for proper smoke detector operation. [101:9.6.2.9]

13.7.1.4.9 Smoke Alarms.

13.7.1.4.9.1 General.

13.7.1.4.9.1.1 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 13.7.1.4.9.1.2, 13.7.1.4.9.1.3, or 13.7.1.4.9.1.4. [101:9.6.2.10.1.1]

13.7.1.4.9.1.2 The installation of smoke alarms in sleeping rooms shall be required where required by Chapters 11 through 43 of *NFPA 101*. [101:9.6.2.10.1.2]

13.7.1.4.9.1.3* The interconnection of smoke alarms shall apply only to new construction as provided in 13.7.1.4.9.3. [101:9.6.2.10.1.3]

13.7.1.4.9.1.4 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. [101:9.6.2.10.1.4]

13.7.1.4.9.2 Smoke alarms, other than existing battery-operated smoke alarms as permitted by other sections of this *Code*, shall be powered in accordance with the requirements of *NFPA 72*. [101:9.6.2.10.2]

13.7.1.4.9.3* 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 the following:

- (1) The requirement of 13.7.1.4.9.3 shall not apply where permitted by another section of this *Code*.
- (2) The requirement of 13.7.1.4.9.3 shall not apply to configurations that provide equivalent distribution of the alarm signal. [101:9.6.2.10.3]

13.7.1.4.9.4 The alarms 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. Remote annunciation shall be permitted. [101:9.6.2.10.4]

13.7.1.4.9.5 Where required by this *Code* or Chapters 11 through 43 of *NFPA 101*, an automatic fire detection system shall be provided in hazardous areas for initiation of the signaling system. [101:9.6.2.11]

13.7.1.4.10 Occupant Notification.

13.7.1.4.10.1 Occupant notification shall be provided to alert occupants of fire or other emergency where required by other sections of this *Code*. [101:9.6.3.1]

13.7.1.4.10.2 Occupant notification shall be in accordance with 13.7.1.4.10.3 through 13.7.1.4.10.10.2, unless otherwise provided in 13.7.1.4.10.2.1 through 13.7.1.4.10.2.4.

13.7.1.4.10.2.1* Elevator lobby, hoistway, and associated machine room smoke detectors used solely for elevator recall, and heat detectors used solely for elevator power shutdown, shall not be required to activate the building evacuation alarm if the power supply and installation wiring to such detectors are monitored by the building fire alarm system, and if the activation of such detectors initiates a supervisory signal at a constantly attended location. [101:9.6.3.2.1]

13.7.1.4.10.2.2* Smoke detectors used solely for closing dampers or heating, ventilating, and air-conditioning system shutdown shall not be required to activate the building evacuation alarm, provided that the power supply and installation wiring to the detectors are monitored by the building fire alarm system, and the activation of the detectors initiates a supervisory signal at a constantly attended location. [101:9.6.3.2.2]

13.7.1.4.10.2.3* Smoke detectors located at doors for the exclusive operation of automatic door release shall not be required to activate the building evacuation alarm, provided that the power supply and installation wiring to the detectors are monitored by the building fire alarm system, and the activation of the detectors initiates a supervisory signal at a constantly attended location. [101:9.6.3.2.3]

13.7.1.4.10.2.4 Detectors in accordance with 22.3.4.3.1(2) and 23.3.4.3.1(2) of NFPA 101 shall not be required to activate the building evacuation alarm. [101:9.6.3.2.4]

13.7.1.4.10.3 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. [101:9.6.3.3]

13.7.1.4.10.4 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. [101:9.6.3.4]

13.7.1.4.10.5 Unless otherwise provided in 13.7.1.4.10.5.1 through 13.7.1.4.10.5.8, notification signals for occupants to evacuate shall be 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 shall be provided. [101:9.6.3.5]

13.7.1.4.10.5.1 Areas not subject to occupancy by persons who are hearing impaired shall not be required to comply with the provisions for visible signals. [101:9.6.3.5.1]

13.7.1.4.10.5.2 Visible-only signals shall be provided where specifically permitted in health care occupancies in accordance with the provisions of Chapters 18 and 19 of NFPA 101. [101:9.6.3.5.2]

13.7.1.4.10.5.3 Existing alarm systems shall not be required to comply with the provision for visible signals. [101:9.6.3.5.3]

13.7.1.4.10.5.4 Visible signals shall not be required in lodging or rooming houses in accordance with the provisions of Chapter 26 of NFPA 101. [101:9.6.3.5.4]

13.7.1.4.10.5.5 Visible signals shall not be required in exit stair enclosures. [101:9.6.3.5.5]

13.7.1.4.10.5.6 Visible signals shall not be required in elevator cars. [101:9.6.3.5.6]

13.7.1.4.10.5.7* 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. [101:9.6.3.5.7]

13.7.1.4.10.5.8* Where visible signals are not required, as permitted by 13.7.1.4.10.5.7, documentation of such omission shall be maintained in accordance with 9.7.7 of NFPA 101. [101:9.6.3.5.8]

13.7.1.4.10.6 The general evacuation alarm signal shall operate in accordance with one of the methods prescribed by 13.7.1.4.10.6.1 through 13.7.1.4.10.6.3. [101:9.6.3.6]

13.7.1.4.10.6.1 The general evacuation alarm signal shall operate throughout the entire building. [101:9.6.3.6.1]

13.7.1.4.10.6.2* Where total evacuation of occupants is impractical due to building configuration, only the occupants in the affected zones shall be notified initially. Provisions shall be

made to selectively notify occupants in other zones to afford orderly evacuation of the entire building. [101:9.6.3.6.2]

13.7.1.4.10.6.3 Where occupants are incapable of evacuating themselves because of age, physical or mental disabilities, or physical restraint, the private operating mode as described in NFPA 72 shall be permitted to be used. Only the attendants and other personnel required to evacuate occupants from a zone, area, floor, or building shall be required to be notified. The notification shall include means to readily identify the zone, area, floor, or building in need of evacuation. [101:9.6.3.6.3]

13.7.1.4.10.6.4 The general evacuation signal shall not be required to operate in exit stair enclosures. [101:9.6.3.6.4]

13.7.1.4.10.6.5 The general evacuation signal shall not be required to operate in elevator cars. [101:9.6.3.6.5]

13.7.1.4.10.7 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. [101:9.6.3.7]

13.7.1.4.10.8 Audible alarm notification appliances shall produce signals that are distinctive from audible signals used for other purposes in a given building. [101:9.6.3.8]

13.7.1.4.10.9 Automatically transmitted or live voice evacuation or relocation instructions shall be permitted to be used to notify occupants and shall comply with either 13.7.1.4.10.9.1 or 13.7.1.4.10.9.2. [101:9.6.3.9]

13.7.1.4.10.9.1 Automatically transmitted or live voice evacuation or relocation instructions shall be in accordance with NFPA 72. [101:9.6.3.9.1]

13.7.1.4.10.9.2 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 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.

[101:9.6.3.9.2]

13.7.1.4.10.10 Unless otherwise permitted by another section of this Code, audible and visible fire alarm notification appliances shall comply with either 13.7.1.4.10.10.1 or 13.7.1.4.10.10.2. [101:9.6.3.10]

13.7.1.4.10.10.1 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]

13.7.1.4.10.10.2 Emergency voice/alarm communication systems shall be permitted to be used for other purposes, subject to the approval of the AHJ, if the fire alarm system takes precedence over all other signals, with the exception of mass notification inputs. [101:9.6.3.10.2]

13.7.1.4.11 Emergency Forces Notification.

13.7.1.4.11.1 Where required by another section of this Code, emergency forces notification shall be provided to alert the

municipal fire department and fire brigade (if provided) of fire or other emergency. [101:9.6.4.1]

13.7.1.4.11.2 Where fire department notification is required by another section of this *Code*, the fire alarm system shall be arranged to transmit the alarm automatically via any of the following means acceptable to the AHJ and shall be in accordance with *NFPA 72*:

- (1) Auxiliary fire alarm system
- (2) Central station fire alarm system
- (3) Proprietary supervising station fire alarm system
- (4) Remote supervising station fire alarm system [101:9.6.4.2]

13.7.1.4.11.3 For existing installations where none of the means of notification specified in 13.7.1.4.11.2(1) through 13.7.1.4.11.2(4) are available, an approved plan for notification of the municipal fire department shall be permitted. [101:9.6.4.3]

13.7.1.4.12 Fire Safety Functions.

13.7.1.4.12.1 Fire safety functions shall be installed in accordance with the requirements of *NFPA 72*. [101:9.6.5.1]

13.7.1.4.12.2 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 [101:9.6.5.2]
- (6) HVAC shutdown

13.7.1.4.13 Location of Controls. Operator controls, alarm indicators, and manual communications capability shall be installed at a convenient location acceptable to the AHJ. [101:9.6.6]

13.7.1.4.14 Annunciation and Annunciation Zoning.

13.7.1.4.14.1 Where alarm annunciation is required by another section of this *Code*, it shall comply with 13.7.1.4.14.2 through 13.7.1.4.14.13. [101:9.6.7.1]

13.7.1.4.14.2 Alarm Annunciation. Where required by other governing laws, codes, or standards, the location of an operated initiating device shall be annunciated by visible means. [72:10.16.1.1]

13.7.1.4.14.2.1 Visible annunciation of the location of an operated initiating device shall be by an indicator lamp, alphanumeric display, printout, or other approved means. [72:10.16.1.1.1]

13.7.1.4.14.2.2 The visible annunciation of the location of operated initiating devices shall not be canceled by the means used to deactivate alarm notification appliances. [72:10.16.1.1.2]

13.7.1.4.14.3 Supervisory and Trouble Annunciation. Where required by other governing laws, codes, or standards, supervisory and/or trouble conditions shall be annunciated by visible means. [72:10.16.2.1]

13.7.1.4.14.3.1 Visible annunciation shall be by an indicator lamp, alphanumeric display, a printout, or other means. [72:10.16.2.1.1]

13.7.1.4.14.3.2 The visible annunciation of supervisory and/or trouble conditions shall not be canceled by the means used to deactivate supervisory or trouble notification appliances. [72:10.16.2.1.2]

13.7.1.4.14.4* Annunciator Access and Location.

13.7.1.4.14.4.1 All required annunciation means shall be readily accessible to responding personnel. [72:10.16.3.1]

13.7.1.4.14.4.2 All required annunciation means shall be located as required by the AHJ to facilitate an efficient response to the fire situation. [72:10.16.3.2]

13.7.1.4.14.5 Alarm Annunciation Display. Visible annunciators shall be capable of displaying all zones in alarm. [72:10.16.4]

13.7.1.4.14.5.1 If all zones in alarm are not displayed simultaneously, the zone of origin shall be displayed. [72:10.16.4.1]

13.7.1.4.14.5.2 If all zones in alarm are not displayed simultaneously, there shall be an indication that other zones are in alarm. [72:10.16.4.2]

13.7.1.4.14.6 Fire Command Center. Annunciation at the fire command center shall be by means of audible and visible indicators. [72:10.16.5]

13.7.1.4.14.7* Annunciation Zoning.

13.7.1.4.14.7.1 For the purpose of alarm annunciation, each floor of the building shall be considered as a separate zone. [72:10.16.6.1]

13.7.1.4.14.7.2 For the purposes of alarm annunciation, a floor of the building is subdivided into multiple zones by fire or smoke barriers and the fire plan for the protected premises allows relocation of occupants from the zone of origin to another zone on the same floor, each zone on the floor shall be annunciated separately. [72:10.16.6.2]

13.7.1.4.14.7.3 Where the system serves more than one building, each building shall be annunciated separately. [72:10.16.6.3]

13.7.1.4.14.8 Alarm annunciation at the control center shall be by means of audible and visible indicators. [101:9.6.7.2]

13.7.1.4.14.9 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 13.7.1.4.14.10.3, 13.7.1.4.14.10.4, 13.7.1.4.14.10.5 or as another section of this *Code*. [101:9.6.7.3]

13.7.1.4.14.10 If a floor area exceeds 22,500 ft² (2090 m²), 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 13.7.1.4.14.10.1 through 13.7.1.4.14.10.5 or otherwise modified by another section of this *Code*. [101:9.6.7.4]

13.7.1.4.14.10.1 Where permitted by another section of this *Code*, fire alarm zones shall be permitted to exceed 22,500 ft² (2090 m²), and the length of a zone shall be permitted to exceed 300 ft (91 m) in any direction. [101:9.6.7.4.1]

13.7.1.4.14.10.2 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. [101:9.6.7.4.2]

13.7.1.4.14.10.3 Unless otherwise prohibited elsewhere in 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. [101:9.6.7.4.3]

13.7.1.4.14.10.4 Where the building is protected by an automatic sprinkler system in accordance with NFPA 13D, the sprinkler system shall be permitted to be annunciated on the fire alarm system as a single zone. [101:9.6.7.4.4]

13.7.1.4.14.10.5 Where the building is protected by an automatic sprinkler system in accordance with NFPA 13R, the sprinkler system shall be permitted to be annunciated on the fire alarm system as a single zone. [101:9.6.7.4.5]

13.7.1.4.14.11 A system trouble signal shall be annunciated at the control center by means of audible and visible indicators. [101:9.6.7.5]

13.7.1.4.14.12 A system supervisory signal shall be annunciated at the control center by means of audible and visible indicators. [101:9.6.7.6]

13.7.1.4.14.13 Where the system serves more than one building, each building shall be annunciated separately. [101:9.6.7.7]

13.7.1.5 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, *Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment*. [101:9.8]

13.7.2 Where Required.

13.7.2.1 New Assembly Occupancies.

13.7.2.1.1 Assembly occupancies with occupant loads of more than 300 and all theaters with more than one audience-viewing room shall be provided with an approved fire alarm system in accordance with Section 13.7 of this *Code* and NFPA 101, unless otherwise permitted by 13.7.2.1.2. [101:12.3.4.1.1]

13.7.2.1.2 Assembly occupancies that are a part of a multiple occupancy protected as a mixed occupancy (*see 6.1.14*) shall be permitted to be served by a common fire alarm system, provided that the individual requirements of each occupancy are met. [101:12.3.4.1.2]

13.7.2.2 Existing Assembly Occupancies.

13.7.2.2.1 Assembly occupancies with occupant loads of more than 300 and all theaters with more than one audience-viewing room shall be provided with an approved fire alarm system in accordance with Section 13.7 of this *Code* and NFPA 101, unless otherwise permitted by 13.7.2.2.2, 13.7.2.2.3, or 13.7.2.2.4. [101:13.3.4.1.1]

13.7.2.2.2 Assembly occupancies that are a part of a multiple occupancy protected as a mixed occupancy (*see 6.1.14 of NFPA 101*) shall be permitted to be served by a common fire alarm system, provided that the individual requirements of each occupancy are met. [101:13.3.4.1.2]

13.7.2.2.3 Voice communication or public address systems complying with 13.3.4.3.6 of NFPA 101 shall not be required to comply with Section 13.7 of this *Code*. [101:13.3.4.1.3]

13.7.2.2.4 The requirement of 13.7.2.2.1 shall not apply to assembly occupancies where, in the judgment of the AHJ, adequate alternative provisions exist or are provided for the discovery of a fire and for alerting the occupants promptly. [101:13.3.4.1.4]

13.7.2.3 New Educational Occupancies.

13.7.2.3.1 Educational occupancies shall be provided with a fire alarm system in accordance with Section 13.7 and NFPA 101. [101:14.3.4.1.1]

13.7.2.3.2 The requirement of 13.7.2.3.1 shall not apply to buildings meeting all of the following criteria:

- (1) Buildings having an area not exceeding 1000 ft² (93 m²)
- (2) Buildings containing a single classroom
- (3) Buildings located not less than 30 ft (9.2 m) from another building [101:14.3.4.1.2]

13.7.2.3.3 Emergency Forces Notification. Fire department notification shall be accomplished in accordance with 13.7.1.4.11. [101:14.3.4.3.2]

13.7.2.4 Existing Educational Occupancies.

13.7.2.4.1 Educational occupancies shall be provided with a fire alarm system in accordance with Section 13.7 and NFPA 101. [101:15.3.4.1.1]

13.7.2.4.2 The requirement of 13.7.2.4.1 shall not apply to buildings meeting all of the following criteria:

- (1) Buildings having an area not exceeding 1000 ft² (93 m²)
- (2) Buildings containing a single classroom
- (3) Buildings located not less than 30 ft (9.2 m) from another building [101:15.3.4.1.2]

13.7.2.4.3 Emergency Forces Notification. Wherever any of the school authorities determine that an actual fire exists, they shall immediately call the local fire department using the public fire alarm system or other available facilities. [101:15.3.4.3.2]

13.7.2.5 New Health Care Occupancies.

13.7.2.5.1 General. Health care occupancies shall be provided with a fire alarm system in accordance with Section 13.7 and NFPA 101. [101:18.3.4.1]

13.7.2.5.2 Detection in Spaces Open to Corridors. Detectors shall be installed in spaces open to the corridor in accordance with 18.3.6.1 of NFPA 101. [101:18.3.4.5.2]

13.7.2.5.3* Nursing Homes. An approved automatic smoke detection system shall be installed in corridors throughout smoke compartments containing patient sleeping rooms and in spaces open to corridors as permitted in nursing homes by 18.3.6.1 of NFPA 101, unless otherwise permitted by the following:

- (1) Corridor systems shall not be required where each patient sleeping room is protected by an approved smoke detection system.
- (2) Corridor systems shall not be required where patient room doors are equipped with automatic door-closing devices with integral smoke detectors on the room side installed in accordance with their listing, provided that the integral detectors provide occupant notification. [101:18.3.4.5.3]

13.7.2.5.4 Emergency Forces Notification. Fire department notification shall be accomplished in accordance with 13.7.1.4.11. [101:18.3.4.3.2.1]

13.7.2.6 Existing Health Care Occupancies.

13.7.2.6.1 General. Health care occupancies shall be provided with a fire alarm system in accordance with Section 13.7 and NFPA 101. [101:19.3.4.1]

13.7.2.6.2 Corridors. An approved automatic smoke detection system in accordance with 13.7.1 shall be installed in all corridors of limited care facilities, unless otherwise permitted by the following:

- (1) Where each patient sleeping room is protected by an approved smoke detection system, and a smoke detector is provided at smoke barriers and horizontal exits in accordance with 13.7.1 of this *Code*, the corridor smoke detection system shall not be required on the patient sleeping room floors.
- (2) Smoke compartments protected throughout by an approved, supervised automatic sprinkler system in accordance with 19.3.5.7 of NFPA 101 shall be permitted. [101:19.3.4.5.1]

13.7.2.6.3 Detection in Spaces Open to Corridors. Detectors shall be installed in spaces open to the corridor in accordance with 19.3.6.1 of NFPA 101.

13.7.2.6.4 Emergency Forces Notification.

13.7.2.6.4.1 Fire department notification shall be accomplished in accordance with 13.7.1.4.11. [101:19.3.4.3.2.1]

13.7.2.6.4.2 Smoke detection devices or smoke detection systems equipped with reconfirmation features shall not be required to automatically notify the fire department, unless the alarm condition is reconfirmed after a period not exceeding 120 seconds. [101:19.3.4.3.2.2]

13.7.2.7 New Detention and Correctional Occupancies.

13.7.2.7.1 Detention and correctional occupancies shall be provided with a fire alarm system in accordance with 13.7.1 and NFPA 101, except as modified by 22.3.4.2 through 22.3.4.4.3 of NFPA 101. [101:22.3.4.1]

13.7.2.7.2* Detection. An approved automatic smoke detection system shall be in accordance with 13.7.1.4, as modified by 13.7.2.7.2.1 through 13.7.2.7.2.3, throughout all resident sleeping areas and adjacent day rooms, activity rooms, or contiguous common spaces. [101:22.3.4.4]

13.7.2.7.2.1 Smoke detectors shall not be required in sleeping rooms with four or fewer occupants. [101:22.3.4.4.1]

13.7.2.7.2.2 Other arrangements and positioning of smoke detectors shall be permitted to prevent damage or tampering, or for other purposes. [101:22.3.4.4.2]

13.7.2.7.2.2.1 Other arrangements, as specified in 13.7.2.7.2.2, shall be capable of detecting any fire, and the placement of detectors shall be such that the speed of detection is equivalent to that provided by the spacing and arrangements required by the installation standards referenced in 13.7.1.1. [101:22.3.4.4.2.1]

13.7.2.7.2.2.2 Detectors shall be permitted to be located in exhaust ducts from cells, behind grilles, or in other locations. [101:22.3.4.4.2.2]

13.7.2.7.2.2.3 The equivalent performance of the design permitted by 13.7.2.7.2.2.2 shall be acceptable to the AHJ in accordance with the equivalency concepts specified in Section 1.4. [101:22.3.4.4.2.3]

13.7.2.7.2.3* Smoke detectors shall not be required in Use Condition II open dormitories where staff is present within the dormitory whenever the dormitory is occupied. [101:22.3.4.4.3]

13.7.2.7.3 Emergency Forces Notification.

13.7.2.7.3.1 Fire department notification shall be accomplished in accordance with 13.7.1.4.11, unless otherwise permitted by the following:

- (1) A positive alarm sequence shall be permitted in accordance with 13.7.1.4.10.4.
- (2) Any smoke detectors required by Chapter 22 of NFPA 101 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]

13.7.2.7.3.2 Where the provision of 13.7.2.7.3.1(3) is utilized, the fire plan, as required by 22.7.1.3 of NFPA 101, shall include procedures for logging of alarms and immediate notification of the fire department. [101:22.3.4.3.2.2]

13.7.2.8 Existing Detention and Correctional Occupancies.

13.7.2.8.1 General. Detention and correctional occupancies shall be provided with a fire alarm system in accordance with 13.7.1 and NFPA 101, except as modified by 23.3.4.2 through 23.3.4.4.4 of NFPA 101. [101:23.3.4.1]

13.7.2.8.2 Detection. An approved automatic smoke detection system shall be in accordance with Section 13.7, as modified by 13.7.2.8.2.1 through 13.7.2.8.2.4, throughout all resident housing areas. [101:23.3.4.4]

13.7.2.8.2.1 Smoke detectors shall not be required in sleeping rooms with four or fewer occupants in Use Condition II or Use Condition III. [101:23.3.4.4.1]

13.7.2.8.2.2 Other arrangements and positioning of smoke detectors shall be permitted to prevent damage or tampering, or for other purposes. [101:23.3.4.4.2]

13.7.2.8.2.2.1 Other arrangements, as specified in 13.7.2.8.2.2, shall be capable of detecting any fire, and the placement of detectors shall be such that the speed of detection is equivalent to that provided by the spacing and arrangements required by the installation standards referenced in Section 13.7. [101:23.3.4.4.2.1]

13.7.2.8.2.2.2 Detectors shall be permitted to be located in exhaust ducts from cells, behind grilles, or in other locations. [101:23.3.4.4.2.2]

13.7.2.8.2.2.3 The equivalent performance of the design permitted by 13.7.2.8.2.2.2 shall be acceptable to the AHJ in accordance with the equivalency concepts specified in Section 1.4. [101:23.3.4.4.2.3]

13.7.2.8.2.3* Smoke detectors shall not be required in Use Condition II open dormitories where staff is present within the dormitory whenever the dormitory is occupied, and the building is protected throughout by an approved, supervised automatic sprinkler system in accordance with 13.3.2.14. [101:23.3.4.4.3]

13.7.2.8.2.4 In smoke compartments protected throughout by an approved automatic sprinkler system in accordance with 13.3.2.14, smoke detectors shall not be required, except in corridors, common spaces, and sleeping rooms with more than four occupants. [101:23.3.4.4.4]

13.7.2.8.3 Emergency Forces Notification.

13.7.2.8.3.1 Fire department notification shall be accomplished in accordance with 13.7.1.4.11, unless otherwise permitted by the following:

- (1) A positive alarm sequence shall be permitted in accordance with 13.7.1.4.10.4.
- (2) Any smoke detectors required by Chapter 23 of NFPA 101 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]

13.7.2.8.3.2 Where the provision of 13.7.2.8.3.1(3) is utilized, the fire plan, as required by 23.7.1.3 of NFPA 101, shall include procedures for logging of alarms and immediate notification of the fire department. [101:23.3.4.3.2.2]

13.7.2.9 New Hotels and Dormitories.

13.7.2.9.1 General. A fire alarm system in accordance with 13.7.1 and NFPA 101, except as modified by 28.3.4.2 through 28.3.4.6 of NFPA 101, shall be provided. [101:28.3.4.1]

13.7.2.9.2 Detection. A corridor smoke detection system in accordance with Section 13.7 shall be provided in buildings other than those protected throughout by an approved, supervised automatic sprinkler system in accordance with 13.3.2.15. [101:28.3.4.4]

13.7.2.9.3* Smoke Alarms. An approved single-station smoke alarm shall be installed in accordance with 13.7.1.4.9 in every guest room and every living area and sleeping room within a guest suite. [101:28.3.4.5]

13.7.2.9.4 Carbon Monoxide Alarms or Detection Systems. Carbon monoxide alarms or carbon monoxide detectors in accordance with 13.7.1.5 and 13.7.2.9.4 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 13.7.2.9.4.2
- (2) Guest rooms or guest suites containing a permanently installed fuel-burning appliance [101:28.3.4.6.1]

13.7.2.9.4.1 Where required by 13.7.2.9.4, carbon monoxide alarms or carbon monoxide detectors shall be installed 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 [101:28.3.4.6.2]

13.7.2.9.4.2 Carbon monoxide alarms and carbon monoxide detectors as specified in 13.7.2.9.4(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 [101:28.3.4.6.3]

13.7.2.9.4.3 Carbon monoxide alarms or carbon monoxide detectors shall be provided in areas other than guest rooms and guest suites in accordance with 13.7.1.5 as modified by 13.7.2.9.4.4. [101:28.3.4.6.4]

13.7.2.9.4.4 Carbon monoxide alarms or 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
- (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 [101:28.3.4.6.5]

13.7.2.9.5 Emergency forces notification shall be provided in accordance with 13.7.1.4.11. [101:28.3.4.3.6]

13.7.2.10 Existing Hotels and Dormitories.

13.7.2.10.1 General. A fire alarm system in accordance with 13.7.1 and NFPA 101, except as modified by 29.3.4.2 through 29.3.4.5 of NFPA 101, shall be provided in buildings, other than those where each guest room has exterior exit access in accordance with 14.10.3 and the building is three or fewer stories in height. [101:29.3.4.1]

13.7.2.10.2* Smoke Alarms. An approved single-station smoke alarm shall be installed in accordance with 13.7.1.4.9 in every guest room and every living area and sleeping room within a guest suite. [101:29.3.4.5]

13.7.2.10.2.1 The smoke alarms shall not be required to be interconnected. [101:29.3.4.5.1]

- **13.7.2.10.2.2** Single-station smoke alarms without a secondary (standby) power source shall be permitted. [101:29.3.4.5.2]

13.7.2.10.3* Where the existing fire alarm system does not provide for automatic emergency forces notification in accordance with 13.7.1.4.11, provisions shall be made for the immediate notification of the public fire department by telephone or other means in case of fire, and, where there is no public fire department, notification shall be made to the private fire brigade. [101:29.3.4.3.6]

13.7.2.10.4 Where a new fire alarm system is installed or the existing fire alarm system is replaced, emergency forces notification shall be provided in accordance with 13.7.1.4.11. [101:29.3.4.3.7]

13.7.2.11 New Apartment Buildings.

13.7.2.11.1 Apartment buildings four or more stories in height or with more than 11 dwelling units, other than those meeting the requirements of 13.7.2.11.2, shall be provided with a fire alarm system in accordance with Section 13.7 and NFPA 101, except as modified by 30.3.4.2 through 30.3.4.5 of NFPA 101. [101:30.3.4.1.1]

13.7.2.11.2 A fire alarm system shall not be required in buildings where each dwelling unit is separated from other contiguous dwelling units by fire barriers (see Section 12.7) having a minimum 1-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. [101:30.3.4.1.2]

13.7.2.11.3* Smoke Alarms. Smoke alarms shall be installed in accordance with 13.7.1.4.9 in every sleeping area, outside every sleeping area in the immediate vicinity of the bedrooms, and on all levels of the dwelling unit, including basements. [101:30.3.4.5]

13.7.2.11.4 Carbon Monoxide Alarms or Detection Systems. Carbon monoxide alarms or carbon monoxide detectors in accordance with 13.7.1.5 and 13.7.2.11.4 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 13.7.2.11.4.2
- (2) Dwelling units containing a permanently installed fuel burning appliance [101:30.3.4.6.1]

13.7.2.11.4.1 Where required by 13.7.2.11.4, carbon monoxide alarms or carbon monoxide detectors shall be installed in the following locations:

- (1) Outside of each separate dwelling unit sleeping area in the immediate vicinity of the sleeping rooms
- (2) On every occupiable level of a dwelling unit. [101:30.3.4.6.2]

13.7.2.11.4.2 Carbon monoxide alarms and carbon monoxide detectors as specified in 13.7.2.11.4(1) shall not be required in the following locations:

- (1) In garages
- (2) Within dwelling units with communicating attached garages that are open parking structures as defined by the building code
- (3) Within dwelling units with communicating attached garages that are mechanically ventilated in accordance with the mechanical code [101:30.3.4.6.3]

13.7.2.11.4.3 Carbon monoxide alarms or carbon monoxide detectors shall be provided in areas other than dwelling units in accordance with 13.7.1.5 as modified by 13.7.2.11.4.4. [101:30.3.4.6.4]

13.7.2.11.4.4 Carbon monoxide alarms or 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
- (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 [101:30.3.4.6.5]

13.7.2.11.5 Fire department notification shall be accomplished in accordance with 13.7.1.4.11. [101:30.3.4.3.5]

13.7.2.12 Existing Apartment Buildings.

13.7.2.12.1 Apartment buildings four or more stories in height or with more than 11 dwelling units, other than those meeting the requirements of 13.7.2.12.2, shall be provided with a fire alarm system in accordance with Section 13.7 and NFPA 101, except as modified by 31.3.4.2 through 31.3.4.5 of NFPA 101. [101:31.3.4.1.1]

13.7.2.12.2 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 ½-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]

13.7.2.12.3 Smoke Alarms.

13.7.2.12.3.1* In buildings other than those equipped throughout with an existing, complete automatic smoke detection system, smoke alarms shall be installed in accordance with 13.7.1.4.9, as modified by 13.7.2.12.3.2, outside every sleeping area in the immediate vicinity of the bedrooms and on all levels of the dwelling unit, including basements. [101:31.3.4.5.1]

13.7.2.12.3.2 Smoke alarms required by 13.7.2.12.3.1 shall not be required to be provided with a secondary (standby) power source. [101:31.3.4.5.2]

13.7.2.12.3.3 In buildings other than those equipped throughout with an existing, complete automatic smoke detection system or a complete, supervised automatic sprinkler system in accordance with 13.3.2.18, smoke alarms shall be installed in every sleeping area in accordance with 13.7.1.4.9, as modified by 13.7.2.12.3.4. [101:31.3.4.5.3]

13.7.2.12.3.4 Smoke alarms required by 13.7.2.12.3.3 shall be permitted to be battery powered. [101:31.3.4.5.4]

13.7.2.12.4 Fire department notification shall be accomplished in accordance with 13.7.1.4.11. [101:31.3.4.3.5]

13.7.2.13 Lodging and Rooming Houses. Lodging and rooming houses, other than those meeting 13.7.2.13.1, shall be provided with a fire alarm system in accordance with Section 13.7 and NFPA 101. [101:26.3.4.1.1]

13.7.2.13.1 A fire alarm system in accordance with Section 13.7 shall not be required in existing lodging and rooming houses that have an existing smoke detection system meeting or exceeding the requirements of 13.7.2.13.2.1 where that detection system includes not less than one manual fire alarm box per floor arranged to initiate the smoke detection alarm. [101:26.3.4.1.2]

13.7.2.13.2 Smoke Alarms.

13.7.2.13.2.1 Approved single-station smoke alarms, other than existing smoke alarms meeting the requirements of 13.7.2.13.2.3, shall be installed in accordance with 13.7.1.4.9 in every sleeping room. [101:26.3.4.5.1]

13.7.2.13.2.2 In other than existing buildings, the smoke alarms required by 13.7.2.13.2.1 shall be interconnected in accordance with 13.7.1.4.9.3. [101:26.3.4.5.2]

13.7.2.13.2.3 Existing battery-powered smoke alarms, rather than house electric-powered smoke alarms, shall be permitted where the facility has demonstrated to the AHJ that the testing, maintenance, and battery replacement programs will ensure reliability of power to the smoke alarms. [101:26.3.4.5.3]

13.7.2.13.3 Carbon Monoxide Alarms and Carbon Monoxide Detection Systems.

13.7.2.13.3.1 Carbon monoxide alarms or carbon monoxide detectors in accordance with 13.7.1.5 and 13.7.2.13.3 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 13.7.2.13.3.3
- (2) Lodging or rooming houses containing fuel burning appliances [101:26.3.4.6.1]

13.7.2.13.3.2* Where required by 13.7.2.13.3.1, 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]

13.7.2.13.3.3 Carbon monoxide alarms and carbon monoxide detectors as specified in 13.7.2.13.3.1(1) shall not be required in the following locations:

- (1) In garages
- (2) Within lodging or rooming houses with communicating attached garages that are open parking structures as defined by the building code
- (3) Within lodging or rooming houses with communicating attached garages that are mechanically ventilated in accordance with the mechanical code [101:26.3.4.6.3]

13.7.2.14 One- and Two-Family Dwellings.

13.7.2.14.1 Detection, Alarm, and Communications Systems. Smoke alarms or a smoke detection system shall be provided in accordance with either 13.7.2.14.2 or 13.7.2.14.3, and NFPA 101, as modified by 13.7.2.14.4. [101:24.3.4.1]

13.7.2.14.2 Smoke alarms shall be installed in accordance with 13.7.1.4.9 in the following locations:

- (1) All sleeping rooms
- (2) Outside of each separate sleeping area, in the immediate vicinity of the sleeping rooms
- (3) On each level of the dwelling unit, including basements [101:24.3.4.1.1]

13.7.2.14.3 Dwelling units shall be protected by an approved smoke detection system in accordance with Section 13.7 and equipped with an approved means of occupant notification. [101:24.3.4.1.2]

13.7.2.14.4 In existing one- and two-family dwellings, approved smoke alarms powered by batteries shall be permitted. [101:24.3.4.1.3]

13.7.2.14.5 Carbon monoxide alarms or carbon monoxide detectors in accordance with 13.7.1.5 and 13.7.2.14.5 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 13.7.2.14.7
- (2) Dwelling units containing fuel burning appliances [101:24.3.4.2.1]

13.7.2.14.6* Where required by 13.7.2.14.5, carbon monoxide alarms or carbon monoxide detectors shall be installed in the following locations:

- (1) Outside of each separate dwelling unit sleeping area in the immediate vicinity of the sleeping rooms
- (2) On every occupiable level of the dwelling unit, including basements, and excluding attics and crawl spaces [101:24.3.4.2.2]

13.7.2.14.7 Carbon monoxide alarms and carbon monoxide detectors as specified in 13.7.2.14.5(1) shall not be required in the following locations:

- (1) In garages
- (2) Within dwelling units with communicating attached garages that are open parking structures as defined by the building code
- (3) Within dwelling units with communicating attached garages that are mechanically ventilated in accordance with the mechanical code [101:24.3.4.2.3]

13.7.2.15 New Residential Board and Care Occupancies.

13.7.2.15.1 Small Facilities with Sleeping Accommodations for Not More Than 16 Residents.

13.7.2.15.1.1 Fire Alarm Systems. A manual fire alarm system shall be provided in accordance with Section 13.7 and NFPA 101. [101:32.2.3.4.1]

13.7.2.15.1.2 Smoke Alarms.

13.7.2.15.1.2.1 Approved smoke alarms shall be provided in accordance with 13.7.1.4.9. [101:32.2.3.4.3.1]

13.7.2.15.1.2.2 Smoke alarms shall be installed on all levels, including basements but excluding crawl spaces and unfinished attics. [101:32.2.3.4.3.2]

13.7.2.15.1.2.3 Additional smoke alarms shall be installed in all living areas, as defined in 3.3.21.5 in NFPA 101. [101:32.2.3.4.3.3]

13.7.2.15.1.2.4 Each sleeping room shall be provided with an approved smoke alarm in accordance with 13.7.1.4.9. [101:32.2.3.4.3.4]

13.7.2.15.2 Large Facilities.

13.7.2.15.2.1 General. A fire alarm system shall be provided in accordance with Section 13.7 and NFPA 101. [101:32.3.3.4.1]

13.7.2.15.2.2 Smoke Alarms. Approved smoke alarms shall be installed in accordance with 13.7.1.4.9 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]

13.7.2.15.2.3 Smoke Detection Systems.

13.7.2.15.2.3.1 Corridors and spaces open to the corridors, other than those meeting 13.7.2.15.2.3.2, 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. [101:32.3.3.4.8.1]

13.7.2.15.2.3.2 Smoke detection systems shall not be required in unenclosed corridors, passageways, balconies, colonnades, or other arrangements with one or more sides along the long dimension fully or extensively open to the exterior at all times. [101:32.3.3.4.8.3]

13.7.2.15.2.4 Emergency Forces Notification. Emergency forces notification shall meet the following requirements:

- (1) Fire department notification shall be accomplished with 13.7.1.4.11.
- (2) Smoke detection devices or smoke detection systems shall be permitted to initiate a positive alarm sequence in accordance with 13.7.1.4.10.4 for not more than 120 seconds. [101:32.3.3.4.6]

13.7.2.16 Existing Residential Board and Care Occupancies.

13.7.2.16.1 Small Facilities with Sleeping Accommodations for Not More Than 16 Residents.

13.7.2.16.1.1 Fire Alarm Systems. A manual fire alarm system shall be provided in accordance with Section 13.7 and NFPA 101, unless the provisions of 13.7.2.16.1.2 or 13.7.2.16.1.3 are met. [101:33.2.3.4.1]

13.7.2.16.1.2 A fire alarm system shall not be required where interconnected smoke alarms complying with 13.7.2.16.1.4 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]

13.7.2.16.1.3 Other manually activated continuously sounding alarms acceptable to the AHJ shall be permitted in lieu of a fire alarm system. [101:33.2.3.4.1.2]

13.7.2.16.1.4* Smoke Alarms.

13.7.2.16.1.4.1 Approved smoke alarms shall be provided in accordance with 13.7.1.4.9, unless otherwise indicated in 13.7.2.16.1.4.5 and 13.7.2.16.1.4.6. [101:33.2.3.4.3.1]

13.7.2.16.1.4.2 Smoke alarms shall be installed on all levels, including basements but excluding crawl spaces and unfinished attics. [101:33.2.3.4.3.2]

13.7.2.16.1.4.3 Additional smoke alarms shall be installed for living rooms, dens, day rooms, and similar spaces. [101:33.2.3.4.3.3]

13.7.2.16.1.4.4 Smoke alarms shall be powered from the building electrical system and, when activated, shall initiate an alarm that is audible in all sleeping areas. [101:33.2.3.4.3.5]

13.7.2.16.1.4.5 Smoke alarms in accordance with 13.7.2.16.1.4.1 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 13.7.1.4.9, that are powered by the building electrical system. [101:33.2.3.4.3.6]

13.7.2.16.1.4.6 Smoke alarms in accordance with 13.7.2.16.1.4.1 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. [101:33.2.3.4.3.7]

13.7.2.16.2 Large Facilities.

13.7.2.16.2.1 General. A fire alarm system in accordance with Section 9.6 of NFPA 101 shall be provided, unless all of the following conditions are met:

- (1) The facility has an evacuation capability of prompt or slow.
- (2) Each sleeping room has exterior exit access in accordance with 7.5.3 of NFPA 101.
- (3) The building does not exceed three stories in height.

[101:33.3.3.4.1]

13.7.2.16.2.2 Smoke Alarms. Smoke alarms shall be provided in accordance with 13.7.2.16.2.2.1, 13.7.2.16.2.2.2, or 13.7.2.16.2.2.3. [101:33.3.3.4.7]

13.7.2.16.2.2.1 Each sleeping room shall be provided with an approved smoke alarm in accordance with 13.7.1.4.9 that is powered from the building electrical system. [101:33.3.3.4.7.1]

13.7.2.16.2.2.2 Existing battery-powered smoke alarms, rather than building electrical service-powered smoke alarms, shall be accepted where, in the opinion of the AHJ, the facility has demonstrated that testing, maintenance, and battery replacement programs ensure the reliability of power to the smoke alarms. [101:33.3.3.4.7.2]

13.7.2.16.2.2.3 Sleeping room smoke alarms shall not be required in facilities having an existing corridor smoke detection system that complies with Section 13.7 and is connected to the building fire alarm system. [101:33.3.3.4.7.3]

13.7.2.16.2.3 Smoke Detection Systems.

13.7.2.16.2.3.1 All living areas, as defined in 3.3.21.5 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 13.7.2.16.2.3.2 and 13.7.2.16.2.3.3. [101:33.3.3.4.8.1]

13.7.2.16.2.3.2 Smoke detection systems shall not be required in living areas of buildings having a prompt or slow evacuation capability protected throughout by an approved automatic sprinkler system installed in accordance with 33.3.3.5 of NFPA 101. [101:33.3.3.4.8.2]

13.7.2.16.2.3.3 Smoke detection systems shall not be required in unenclosed corridors, passageways, balconies, colonnades, or other arrangements with one or more sides along the long dimension fully or extensively open to the exterior at all times. [101:33.3.3.4.8.3]

13.7.2.16.2.4 Emergency Forces Notification. [101:33.3.3.4.6]

13.7.2.16.2.4.1* Where the existing fire alarm system does not provide for automatic emergency forces notification in accordance with 13.7.1.4.11, provisions shall be made for the immediate notification of the public fire department by either telephone or other means, or, where there is no public fire department, notification shall be made to the private fire brigade. [101:33.3.3.4.6.1]

13.7.2.16.2.4.2 Where a new fire alarm system is installed, or the existing fire alarm system is replaced, emergency forces notification shall be provided in accordance with 13.7.1.4.11. [101:33.3.3.4.6.2]

13.7.2.17 New Mercantile Occupancies.

13.7.2.17.1 Class A mercantile occupancies shall be provided with a fire alarm system in accordance with Section 13.7 and NFPA 101. [101:36.3.4.1]

13.7.2.17.2 Malls shall be provided with a fire alarm system in accordance with Section 13.7. [101:36.4.4.4.1]

13.7.2.17.3 Bulk merchandising retail buildings shall be provided with a fire alarm system in accordance with Section 13.7. [101:36.4.5.4.1]

13.7.2.17.4 Emergency forces notification shall be provided in Class A mercantile occupancies, malls, and bulk merchandising retail buildings, and shall include notifying both of the following:

- (1) Fire department in accordance with 13.7.1.4.11
- (2) Local emergency organization, if provided [101:36.3.4.3.2] [101:36.4.4.4.3.2] [101:36.4.5.4.4]

13.7.2.18 Existing Mercantile Occupancies.

13.7.2.18.1 Class A mercantile occupancies shall be provided with a fire alarm system in accordance with Section 13.7 and NFPA 101. [101:37.3.4.1]

13.7.2.18.2 Malls shall be provided with a fire alarm system in accordance with Section 13.7. [101:37.4.4.4.1]

13.7.2.18.3 Bulk merchandising retail buildings shall be provided with a fire alarm system in accordance with Section 13.7. [101:37.4.5.4.1]

13.7.2.18.4 Emergency Forces Notification. Emergency forces notification shall be provided and shall include notifying both of the following:

- (1) Fire department in accordance with 13.7.1.4.11
- (2) Local emergency organization, if provided

[101:37.3.4.3.2]

13.7.2.19 New Business Occupancies. A fire alarm system in accordance with Section 13.7 and NFPA 101 shall be provided in all 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]

13.7.2.20 Existing Business Occupancies. A fire alarm system in accordance with Section 13.7 and NFPA 101 shall be provided in all 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 100 or more occupants above or below the level of exit discharge.
- (3) The occupancy is subject to 1000 or more total occupants. [101:39.3.4.1]

13.7.2.21 Industrial Occupancies. A fire alarm system shall be required in accordance with Section 13.7 and NFPA 101 for industrial occupancies, unless the total occupant load of the building is under 100 persons and unless, of these, fewer than 25 persons are above or below the level of exit discharge. [101:40.3.4.1]

13.7.2.22 Storage Occupancies.

13.7.2.22.1 General. A fire alarm system shall be required in accordance with Section 13.7 and NFPA 101 for storage occupancies, except as modified by 13.7.2.22.1.1, 13.7.2.22.1.2, and 13.7.2.22.1.3. [101:42.3.4.1]

13.7.2.22.1.1 Storage occupancies limited to low hazard contents shall not be required to have a fire alarm system. [101:42.3.4.1.1]

13.7.2.22.1.2 Storage occupancies with ordinary or high hazard contents not exceeding an aggregate floor area of 100,000 ft² (9300 m²) shall not be required to have a fire alarm system. [101:42.3.4.1.2]

13.7.2.22.1.3 Storage occupancies protected throughout by an approved automatic sprinkler system in accordance with Section 13.3 shall not be required to have a fire alarm system. [101:42.3.4.1.3]

13.7.2.22.2 A fire alarm system shall be required in accordance with Section 13.7 for parking structures, except as modified by 13.7.2.22.2.1, 13.7.2.22.2.2, and 13.7.2.22.2.3. [101:42.8.3.4.1]

13.7.2.22.2.1 Parking structures not exceeding an aggregate floor area of 100,000 ft² (9300 m²) shall not be required to have a fire alarm system. [101:42.8.3.4.1.1]

13.7.2.22.2.2 Open parking structures shall not be required to have a fire alarm system. [101:42.8.3.4.1.2]

13.7.2.22.2.3 Parking structures protected throughout by an approved automatic sprinkler system in accordance with Section 13.3 shall not be required to have a fire alarm system. [101:42.8.3.4.1.3]

13.7.2.23 New Day-Care Occupancies.

13.7.2.23.1 Day-care occupancies, other than day-care occupancies housed in one room having at least one door opening directly to the outside at grade plane or to an exterior exit access balcony in accordance with 14.10.3, shall be provided with a fire alarm system in accordance with Section 13.7 and NFPA 101. [101:16.3.4.1]

13.7.2.23.2 Detection. A smoke detection system in accordance with Section 13.7 and NFPA 101 shall be installed in day-care occupancies, other than those housed in one room having at least one door opening directly to the outside at grade plane or to an exterior exit access balcony in accordance with 14.10.3, and such system shall comply with both of the following:

- (1) Detectors shall be installed on each story in front of the doors to the stairways and in the corridors of all floors occupied by the day-care occupancy.
- (2) Detectors shall be installed in lounges, recreation areas, and sleeping rooms in the day-care occupancy. [101:16.3.4.5]

13.7.2.23.3 Emergency Forces Notification. Emergency forces notification shall be accomplished in accordance with 13.7.1.4.11. [101:16.3.4.4]

13.7.2.23.4 Day-Care Homes.

13.7.2.23.4.1 Smoke alarms shall be installed within day-care homes in accordance with 13.7.1.4.9 and NFPA 101. [101:16.6.3.4.1]

13.7.2.23.4.2 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 Section 13.7. [101:16.6.3.4.2]

13.7.2.23.4.3 Single-station or multiple-station smoke alarms or smoke detectors shall be provided in all rooms used for sleeping in accordance with 13.7.1.4.9. [101:16.6.3.4.3]

13.7.2.23.4.4 Single station or multiple station carbon monoxide alarms or detectors shall be provided in accordance with 13.7.1.5 in day-care homes where client sleeping occurs and one or both of the following conditions exists:

- (1) Fuel-fired equipment is present
- (2) An enclosed parking structure is attached to the day-care home [101:16.6.3.4.5]

13.7.2.24 Existing Day-Care Occupancies.

13.7.2.24.1 Day-care occupancies, other than day-care occupancies housed in one room, shall be provided with a fire alarm system in accordance with 13.7.1 and NFPA 101. [101:17.3.4.1]

13.7.2.24.2 Detection. A smoke detection system in accordance with Section 13.7 shall be installed in day-care occupancies, other than those housed in one room or those housing clients capable of self-preservation where no sleeping facilities are provided, and such system shall comply with both of the following:

- (1) Detectors shall be installed on each story in front of the doors to the stairways and in the corridors of all floors occupied by the day-care occupancy.
- (2) Detectors shall be installed in lounges, recreation areas, and sleeping rooms in the day-care occupancy. [101:17.3.4.5]

13.7.2.24.3 Emergency Forces Notification. [101:17.3.4.4]

13.7.2.24.3.1 Emergency forces notification, other than for day-care occupancies with not more than 100 clients, shall be accomplished in accordance with 13.7.1.4.11. [101:17.3.4.4.1]

13.7.2.24.3.2 Emergency forces notification shall be accomplished in accordance with 13.7.1.4.11 where the existing fire alarm system is replaced. [101:17.3.4.4.2]

13.7.2.24.4 Day-Care Homes.

13.7.2.24.4.1 Smoke alarms shall be installed within day-care homes in accordance with 13.7.1.4.9 and NFPA 101. [101:17.6.3.4.1]

13.7.2.24.4.2 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 Section 13.7. [101:17.6.3.4.2]

13.7.2.24.4.3 Single-station or multiple-station smoke alarms or smoke detectors shall be provided in all rooms used for sleeping in accordance with 13.7.1.4.9, other than as permitted by 13.7.2.24.4.4. [101:17.6.3.4.3]

13.7.2.24.4.4 Approved existing battery-powered smoke alarms, rather than house electrical service-powered smoke alarms required by 13.7.2.24.4.3, shall be permitted where the facility has testing, maintenance, and battery replacement programs that ensure reliability of power to the smoke alarms. [101:17.6.3.4.4]

13.7.2.25 New Ambulatory Health Care Occupancies.

13.7.2.25.1 Ambulatory health care facilities shall be provided with fire alarm systems in accordance with Section 13.7 and NFPA 101, except as modified by 20.3.4.2 through 20.3.4.4 of NFPA 101. [101:20.3.4.1]

13.7.2.25.2 Fire department notification shall be accomplished in accordance with 13.7.1.4.11. [101:20.3.4.3.2.1]

13.7.2.26 Existing Ambulatory Health Care Occupancies.

13.7.2.26.1 Ambulatory health care facilities shall be provided with fire alarm systems in accordance with Section 13.7 and NFPA 101, except as modified by 21.3.4.2 through 21.3.4.4 of NFPA 101. [101:21.3.4.1]

13.7.2.26.2 Fire department notification shall be accomplished in accordance with 13.7.1.4.11. [101:21.3.4.3.2.1]

13.7.2.26.3 Smoke detection devices or smoke detection systems equipped with reconfirmation features shall not be required to automatically notify the fire department, unless the alarm condition is reconfirmed after a period not exceeding 120 seconds. [101:21.3.4.3.2.2]

13.7.2.27 Special Structures and High-Rise Buildings.

13.7.2.27.1 Detection, Alarm, and Communications Systems. Towers 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]

13.7.2.27.2 New High-Rise Buildings.

13.7.2.27.2.1* A fire alarm system using an approved emergency voice/alarm communication system shall be installed in accordance with Section 13.7 and NFPA 101. [101:11.8.4.1]

13.7.2.27.2.2 Two-way telephone service shall be in accordance with 13.7.2.27.2.2.1 and 13.7.2.27.2.2.2. [101:11.8.4.2]

13.7.2.27.2.2.1 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]

13.7.2.27.2.2.2* The requirement of 13.7.2.27.2.2.1 shall not apply where the fire department radio system is approved as an equivalent system. [101:11.8.4.2.2]

13.7.3 Fire Alarm Systems.

13.7.3.1 General.

13.7.3.1.1 Equipment.

13.7.3.1.1.1 Equipment constructed and installed in conformity with this Code shall be listed for the purpose for which it is used. [72:10.3.1]

13.7.3.1.1.2 System components shall be installed, tested, and maintained in accordance with the manufacturer's published instructions and this Code. [72:10.3.2]

13.7.3.1.2 All devices and appliances that receive their power from the initiating device circuit or signaling line circuit of a control unit shall be listed for use with the control unit. [72:10.3.3]

13.7.3.2 Documentation.

13.7.3.2.1 Approval and Acceptance.

13.7.3.2.1.1 The AHJ shall be notified prior to installation or alteration of equipment or wiring. [72:10.18.1.1]

13.7.3.2.1.2* At the AHJ's request, complete information regarding the system or system alterations, including specifications, type of system or service, shop drawings, input/output matrix, battery calculations, and notification appliance circuit voltage drop calculations, shall be submitted for approval. [72:10.18.1.2]

13.7.3.2.1.3 Before requesting final approval of the installation, if required by the AHJ, the installing contractor shall furnish a written statement stating that the system has been installed in accordance with approved plans and tested in accordance with the manufacturer's published instructions and the appropriate NFPA requirements. [72:10.18.1.3]

13.7.3.2.1.4* The record of completion form, Figure 10.18.2.1.1 of NFPA 72, shall be permitted to be a part of the written statement required in 13.7.3.2.1.3. When more than one contractor has been responsible for the installation, each contractor shall complete the portions of the form for which that contractor had responsibility. [72:10.18.1.4]

13.7.3.2.1.5 The record of completion form, Figure 10.18.2.1.1 of NFPA 72, shall be permitted to be a part of the documents that support the requirements of 13.7.3.2.2.4. [72:10.18.1.5]

13.7.3.2.2 Completion Documents.**13.7.3.2.2.1 Preparation.**

13.7.3.2.2.1.1* The preparation of a record of completion, Figure 10.18.2.1.1 of *NFPA 72*, shall be the responsibility of the qualified and experienced person described in 10.4.2 of *NFPA 72*. [72:10.18.2.1.1]

13.7.3.2.2.1.2 The preparation of a record of completion, Figure 10.18.2.1.1 of *NFPA 72*, shall be in accordance with 13.7.3.2.2.1.2(A) through 13.7.3.2.2.1.2(H). [72:10.18.2.1.2]

(A) Parts 1 through 14 of the record of completion shall be completed after the system is installed and the installation wiring has been checked. [72:10.18.2.1.2.1]

(B) Parts 15 and 16 of the record of completion shall be completed after the operational acceptance tests have been completed. [72:10.18.2.1.2.2]

(C) A preliminary copy of the record of completion shall be given to the system owner and, if requested, to other AHJs after completion of the installation wiring tests. [72:10.18.2.1.2.3]

(D) A final copy of the record of completion shall be provided after completion of the operational acceptance tests. [72:10.18.2.1.2.4]

(E) One copy of the record of completion shall be stored at the fire alarm control unit or other approved location. [72:10.18.2.1.2.5]

(F) This copy shall be updated to reflect all system additions or modifications and maintained in a current condition at all times. [72:10.18.2.1.2.6]

(G) Where not stored at the main fire alarm control unit, the location of these documents shall be identified at the main fire alarm control unit. [72:10.18.2.1.2.7]

(H) If the documents are located in a separate enclosure or cabinet, the separate enclosure or cabinet shall be prominently labeled FIRE ALARM DOCUMENTS. [72:10.18.2.1.2.8]

13.7.3.2.2.2 Revision. All fire alarm system modifications made after the initial installation shall be recorded on a revised version of the original record of completion. [72:10.18.2.2]

13.7.3.2.2.2.1 All changes from the original information shall be shown. [72:10.18.2.2.1]

13.7.3.2.2.2.2 The revised record of completion shall include a revision date. [72:10.18.2.2.2]

13.7.3.2.2.3 Documentation Required. Every system shall include the following documentation, which shall be delivered to the owner or the owner's representative upon final acceptance of the system:

- (1)* An owner's manual and manufacturer's published instructions covering all system equipment
- (2) Record drawings
- (3) For software-based systems, record copy of the site-specific software
- (4) A written sequence of operation [72:10.18.2.3]

13.7.3.2.2.4* Verification of Compliant Installation. Where required, compliance of the completed installation with the requirements of this *Code* and *NFPA 72*, as implemented via the referring code(s), specifications, and/or other criteria applicable to the specific installation, shall be certified by a qualified and impartial third-party organization acceptable to the AHJ. [72:10.18.2.4]

13.7.3.2.2.4.1 Verification shall ensure that the installed system includes all components and functions, that those components and functions are installed and operate as required, that the system has been 100 percent acceptance tested in accordance with Chapter 14 of *NFPA 72*, and that all required documentation has been provided to the system owner.

Exception: Where the installation is an extension, modification, or reconfiguration of an existing system, the verification shall be required for the new work only, and reacceptance testing in accordance with Chapter 14 of NFPA 72 shall be acceptable. [72:10.18.2.4.1]

13.7.3.2.2.4.2 For supervising station systems, the verification shall also ascertain proper arrangement, transmission, and receipt of all signals required to be transmitted off-premises.

Exception: Where the installation is an extension, modification, or reconfiguration of an existing system, the verification shall be required for the new work only, and reacceptance testing in accordance with Chapter 14 of NFPA 72 shall be acceptable. [72:10.18.2.4.2]

13.7.3.2.2.4.3 Verification shall include written confirmation that any required corrective actions have been completed. [72:10.18.2.4.3]

13.7.3.2.3 Records.

13.7.3.2.3.1 A complete record of the tests and operations of each system shall be kept until the next test and for 1 year thereafter. [72:10.18.3.1]

13.7.3.2.3.2 The record shall be available for examination and, if required, reported to the AHJ. Archiving of records by any means shall be permitted if hard copies of the records can be provided promptly when requested. [72:10.18.3.2]

13.7.3.2.3.3 If off-premises monitoring is provided, records of all signals, tests, and operations recorded at the supervising station shall be maintained for not less than 1 year. [72:10.18.3.3]

13.7.3.2.4* Testing Frequency. Unless otherwise permitted by other sections of the *Code* and *NFPA 72*, testing shall be performed in accordance with the schedules in Table 13.7.3.2.4, or more often if required by the AHJ. [72:14.4.5]

13.7.3.2.4.1 Devices or equipment that are inaccessible for safety considerations (e.g., continuous process operations, energized electrical equipment, radiation, and excessive height) shall be permitted to be tested during scheduled shutdowns if approved by the AHJ. Extended intervals shall not exceed 18 months. [72:14.4.5.1]

13.7.3.2.4.2 If automatic testing is performed at least weekly by a remotely monitored fire alarm control unit specifically listed for the application, the manual testing frequency shall be permitted to be extended to annually. Table 13.7.3.2.4 shall apply. [72:14.4.5.2]

13.7.3.3 Manually Actuated Alarm-Initiating Devices.

13.7.3.3.1 Manual fire alarm boxes shall be used only for fire alarm initiating purposes. [72:17.14.1]

13.7.3.3.1.1* Unless installed in an environment that precludes the use of red paint or red plastic, manual fire alarm boxes shall be red in color. [72:17.14.1.1]

Table 13.7.3.2.4 Testing Frequencies

Component		Initial/ Reacceptance	Monthly	Quarterly	Semiannually	Annually	NFPA 72 Table 14.4.2.2 Reference
1.	Control equipment — building systems connected to supervising station						1, 7, 18, 19
	(a) Functions	X	—	—	—	X	—
	(b) Fuses	X	—	—	—	X	—
	(c) Interfaced equipment	X	—	—	—	X	—
	(d) Lamps and LEDs	X	—	—	—	X	—
	(e) Primary (main) power supply	X	—	—	—	X	—
	(f) Transponders	X	—	—	—	X	—
2.	Control equipment — building systems not connected to a supervising station						1
	(a) Functions	X	—	X	—	—	—
	(b) Fuses	X	—	X	—	—	—
	(c) Interfaced equipment	X	—	X	—	—	—
	(d) Lamps and LEDs	X	—	X	—	—	—
	(e) Primary (main) power supply	X	—	X	—	—	—
	(f) Transponders	X	—	X	—	—	—
3.	Engine-driven generator — central station facilities and fire alarm systems	X	X	—	—	—	—
4.	Engine-driven generator — public emergency alarm reporting systems	X (weekly)	—	—	—	—	—
5.	Batteries — central station facilities						
	(a) Lead-acid type						6b
	(1) Charger test (Replace battery as needed.)	X	—	—	—	X	—
	(2) Discharge test (30 minutes)	X	X	—	—	—	—
	(3) Load voltage test	X	X	—	—	—	—
	(4) Specific gravity	X	—	—	X	—	—
	(b) Nickel-cadmium type						6c
	(1) Charger test (Replace battery as needed.)	X	—	X	—	—	—
	(2) Discharge test (30 minutes)	X	—	—	—	X	—
	(3) Load voltage test	X	—	—	—	X	—
	(c) Sealed lead-acid type						6d
	(1) Charger test (Replace battery within 5 years after manufacture or more frequently as needed.)	X	X	X	—	—	—
	(2) Discharge test (30 minutes)	X	X	—	—	—	—
	(3) Load voltage test	X	X	—	—	—	—
6.	Batteries — fire alarm systems						
	(a) Lead-acid type						6b
	(1) Charger test (Replace battery as needed.)	X	—	—	—	X	—
	(2) Discharge test (30 minutes)	X	—	—	X	—	—
	(3) Load voltage test	X	—	—	X	—	—
	(4) Specific gravity	X	—	—	X	—	—
	(b) Nickel-cadmium type						6c
	(1) Charger test (Replace battery as needed.)	X	—	—	—	X	—
	(2) Discharge test (30 minutes)	X	—	—	—	X	—
	(3) Load voltage test	X	—	—	X	—	—
	(c) Primary type (dry cell)						6a
	(1) Age test	X	X	—	—	—	—
	(d) Sealed lead-acid type						6d
	(1) Charger test (Replace battery within 5 years after manufacture or more frequently as needed.)	X	—	—	—	X	—
	(2) Discharge test (30 minutes)	X	—	—	—	X	—
	(3) Load voltage test	X	—	—	X	—	—

Table 13.7.3.2.4 Continued

							NFPA 72 Table 14.4.2.2 Reference
Component	Initial/ Reacceptance	Monthly	Quarterly	Semiannually	Annually		
7. Power supply — public emergency alarm reporting systems							
(a) Lead-acid type batteries						6b	
(1) Charger test (Replace battery as needed.)	X	—	—	—	X	—	
(2) Discharge test (2 hours)	X	—	X	—	—	—	
(3) Load voltage test	X	—	X	—	—	—	
(4) Specific gravity	X	—	—	X	—	—	
(b) Nickel-cadmium type batteries						6c	
(1) Charger test (Replace battery as needed.)	X	—	—	—	X	—	
(2) Discharge test (2 hours)	X	—	—	—	X	—	
(3) Load voltage test	X	—	X	—	—	—	
(c) Sealed lead-acid type batteries						6d	
(1) Charger test (Replace battery within 5 years after manufacture or more frequently if needed.)	X	—	—	—	X	—	
(2) Discharge test (2 hours)	X	—	—	—	X	—	
(3) Load voltage test	X	—	X	—	—	—	
(d) Wired system — voltage tests	X (daily)	—	—	—	—	7d	
8. Fiber-optic cable power	X	—	—	—	X	13b	
9. Control unit trouble signals	X	—	—	—	X	10	
10. Conductors — metallic	X	—	—	—	—	12	
11. Conductors — nonmetallic	X	—	—	—	—	13	
12. In-building fire emergency voice/alarm communications equipment	X	—	—	—	X	20	
Retransmission equipment							
13. (The requirements of 10.4.10 of NFPA 72 shall apply.)	X	—	—	—	—	—	
14. Remote annunciators	X	—	—	—	X	11	
15. Initiating devices*						14	
(a) Duct detectors	X	—	—	—	X	—	
(b) Electromechanical releasing device	X	—	—	—	X	—	
(c) Fire extinguishing system(s) or suppression system(s) switches	X	—	—	—	X	—	
(d) Fire-gas and other detectors	X	—	—	—	X	—	
(e) Heat detectors (The requirements of 14.4.5.5 of NFPA 72 shall apply.)	X	—	—	—	X	—	
(f) Manual fire alarm boxes	X	—	—	—	X	—	
(g) Radiant energy fire detectors	X	—	—	X	—	—	
(h) System smoke detectors — functional test	X	—	—	—	X	—	
(i) Smoke detectors — sensitivity testing in other than one- and two-family dwellings (The requirements of 14.4.5.3 of NFPA 72 shall apply.)	—	—	—	—	—	—	
(j) Single- and multiple-station smoke alarms (The requirements for monthly testing in accordance with 14.4.6 of NFPA 72 shall also apply.)	X	—	—	—	X	—	
(k) Single- and multiple-station heat alarms	X	—	—	—	X	—	
(l) Supervisory signal devices							
(1) Valve supervisory switches	X	—	—	X	—	—	
(2) Pressure supervisory indicating devices	X	—	X	—	—	—	
(3) Water level supervisory indicating devices	X	—	X	—	—	—	
(4) Water temperature supervisory indicating devices	X	—	X	—	—	—	

(continues)

Table 13.7.3.2.4 *Continued*

Component		Initial/ Reacceptance	Monthly	Quarterly	Semiannually	Annually	NFPA 72 Table 14.4.2.2 Reference
15.	Initiating devices* (continued)						
	(5) Room temperature supervisory indicating devices	X	—	X	—	—	—
	(6) Other suppression system supervisory initiating devices	X	—	X	—	—	—
	(7) Other supervisory initiating	X	—	—	—	X	—
	(m) Waterflow devices	X	—	—	X	—	—
16.	Guard's tour equipment	X	—	—	—	X	24
17.	Combination systems						
	(a) Fire extinguisher electronic monitoring device/systems	X	—	—	—	X	21a
	(b) Carbon monoxide detectors/systems	X	—	—	—	X	—
18.	Interface equipment and emergency control functions	X	—	—	—	X	22, 23
19.	Special hazard equipment	X	—	—	—	X	17
20.	Alarm notification appliances						15
	(a) Audible devices	X	—	—	—	X	—
	(b) Audible textual notification appliances	X	—	—	—	X	—
	(c) Visible devices	X	—	—	—	X	—
21.	Exit marking notification appliances	X	—	—	—	X	16
22.	Supervising station alarm systems — transmitters	X	—	—	—	X	18
23.	Special procedures	X	—	—	—	X	25
24.	Supervising station alarm systems — receivers						19
	(a) DACR	X	X	—	—	—	—
	(b) DARR	X	X	—	—	—	—
	(c) McCulloh systems	X	X	—	—	—	—
	(d) Two-way RF multiplex	X	X	—	—	—	—
	(e) RASSR	X	X	—	—	—	—
	(f) RARSR	X	X	—	—	—	—
	(g) Private microwave	X	X	—	—	—	—
25.	Public emergency alarm reporting system transmission equipment						—
	(a) Publicly accessible alarm box	X	—	—	X	—	8a
	(b) Auxiliary box	X	—	—	—	X	8b
	(c) Master box	—	—	—	—	—	8c
	(1) Manual operation	X	—	—	X	—	—
	(2) Auxiliary operation	X	—	—	—	X	—
26.	Mass notification system — protected premise, supervised						27
	(a) Control unit functions and no diagnostic failures are indicated	X	—	—	—	X	27
	(b) Audible/visible functional test	X	—	—	—	X	27
	(c) Secondary Power	X	—	—	—	X	27
	(d) Verify content of prerecorded messages	X	—	—	—	X	27
	(e) Verify activation of correct prerecorded messages	X	—	—	—	X	27
	(f) Verify activation of correct prerecorded message based on a targeted area	X	—	—	—	X	27
	(g) Verify control unit security mechanism is functional	X	—	—	—	X	27

Table 13.7.3.2.4 *Continued*

Component		Initial/ Reacceptance	Monthly	Quarterly	Semiannually	Annually	NFPA 72 Table 14.4.2.2 Reference
27.	Mass notification system — protected premise, nonsupervised systems installed prior to adoption of this <i>Code</i>						27
	(a) Control unit functions and no diagnostic failures are indicated	X		—	X	—	27
	(b) Audible/visible functional test	X		—	X	—	27
	(c) Secondary power	X		—	X	—	27
	(d) Verify content of prerecorded messages	X		—	X	—	27
	(e) Verify activation of correct prerecorded message based on a selected event	X		—	X	—	27
	(f) Verify activation of correct prerecorded message based on a targeted area	X		—	X	—	27
	(g) Verify control unit security mechanism is functional	X		—	X	—	27
28.	Mass notification system — wide-area (UFC 4-02-01)						27
	(a) Control unit functions and no diagnostic failures are indicated	X	—	—	—	X	27
	(b) Control unit reset	X	—	—	—	X	27
	(c) Control unit security	X	—	—	—	X	27
	(d) Audible/visible functional test	X	—	—	—	X	27
	(e) Software backup	X	—	—	—	X	27
	(f) Secondary power test	X	—	—	—	X	27
	(g) Antenna	X	—	—	—	X	27
	(h) Tranceivers	X	—	—	—	X	27
	(i) Verify content of prerecorded message	X	—	—	—	X	27
	(j) Verify activation of correct prerecorded message based on a selected event	X	—	—	—	X	27
	(k) Verify activation of correct prerecorded message base on a targeted area	X	—	—	—	X	27
	(l) Verify control unit security mechanism is functional	X	—	—	—	X	27

*See A.13.7.3.2.4.

[72: Table 14.4.5]

13.7.3.3.1.2 Manual pull stations for initiating other than fire alarm shall be permitted if the devices are differentiated from the manual fire alarm boxes by a color other than red and labeling. [72:17.14.1.2]

13.7.3.3.1.3 Manual fire alarm boxes shall be mounted on a background of contrasting color. [72:17.14.1.3]

13.7.3.3.2 Combination manual fire alarm boxes and guard's signaling stations shall be permitted. [72:17.14.2]

13.7.3.3.3 Each manual fire alarm box shall be securely mounted. [72:17.14.3]

13.7.3.3.4 The operable part of each manual fire alarm box shall be not less than 42 in. (1.07 m) and not more than 48 in. (1.22 m) above floor level. [72:17.14.4]

13.7.3.3.5 Manual fire alarm boxes shall be installed so that they are conspicuous, unobstructed, and accessible. [72:17.14.5]

13.7.3.3.6 Manual fire alarm boxes shall be located within 60 in. (1.52 m) of the exit doorway opening at each exit on each floor. [72:17.14.6]

13.7.3.3.7 Manual fire alarm boxes shall be mounted on both sides of grouped openings over 40 ft (12.2 m) in width, and within 60 in. (1.52 m) of each side of the opening. [72:17.14.7]

13.7.3.3.8* Additional manual fire alarm boxes shall be provided so that the travel distance to the nearest fire alarm box will not be in excess of 200 ft (61.0 m), measured horizontally on the same floor. [72:17.14.8]

13.7.3.3.9 When fire alarm systems are not monitored, an approved permanent sign shall be installed adjacent to each manual fire alarm box. The sign shall read as follows:

Local alarm only:

- (1) Activate alarm
- (2) Exit building
- (3) Call fire department

13.7.3.4* Indication of Central Station Service. The prime contractor shall conspicuously indicate that the alarm system providing service at a protected premises complies with all the requirements of this *Code* through the use of a systematic follow-up program under the control of the organization that has listed the prime contractor. [72:26.3.4]

13.7.3.4.1 Documentation indicating *Code* compliance of the alarm system shall be issued by the organization that has listed the prime contractor. [72:26.3.4.1]

13.7.3.4.2 The documentation shall include, at a minimum, the following information:

- (1) Name of the prime contractor involved with the ongoing *Code* compliance of the central station service
- (2)* Full description of the alarm system as installed
- (3) Issue and expiration dates of the documentation
- (4) Name, address, and contact information of the organization issuing the document
- (5) Identification of the AHJs for the central station service installation [72:26.3.4.2]

13.7.3.4.3 The documentation shall be physically posted within 3 ft (1 m) of the control unit, and copies of the documentation shall be made available to the AHJs upon request. [72:26.3.4.3]

13.7.3.4.4 A central repository of issued documentation, accessible to the AHJ, shall be maintained by the organization that has listed the prime contractor. [72:26.3.4.4]

13.7.3.4.5* Alarm system service that does not comply with all the requirements of Section 26.3 of *NFPA 72* shall not be designated as central station service. [72:26.3.4.5]

13.7.3.4.6* For the purpose of Section 26.3 of *NFPA 72*, the subscriber shall notify the prime contractor, in writing, of the identity of the AHJs. [72:26.3.4.6]

13.7.3.4.7 The AHJs identified in 13.7.3.4.2(5) shall be notified of expiration or cancellation by the organization that has listed the prime contractor. [72:26.3.4.7]

13.7.3.4.8 The subscriber shall surrender expired or canceled documentation to the prime contractor within 30 days of the termination date. [72:26.3.4.8]

13.7.3.5 Automatic Fire Detection and Alarm Service.

13.7.3.5.1 Automatic fire detectors shall be located, maintained, and tested in accordance with *NFPA 72*.

13.7.4 Automatic Fire Detectors.

13.7.4.1 Installation.

13.7.4.1.1 These requirements shall apply to all initiating devices. [72:17.4.1]

13.7.4.1.2 Initiating devices shall not be installed in inaccessible areas. [72:17.4.2]

13.7.4.1.3 Where subject to mechanical damage, an initiating device shall be protected. A mechanical guard used to protect a smoke, heat, or radiant energy-sensing detector shall be listed for use with the detector. [72:17.4.3]

13.7.4.1.4 Initiating devices shall be supported independently of their attachment to the circuit conductors. [72:17.4.4]

13.7.4.1.5 Initiating devices shall be installed in a manner that provides accessibility for periodic maintenance. [72:17.4.5]

13.7.4.1.6 Initiating devices shall be installed in all areas, compartments, or locations where required by other NFPA codes and standards or as required by other governing laws, codes, or standards. [72:17.4.6]

13.7.4.1.7 Duct Detector Installation.

13.7.4.1.7.1 Smoke detectors shall be installed, tested, and maintained in accordance with *NFPA 72*. [90A:6.4.4.1]

13.7.4.1.7.2 In addition to the requirements of 6.4.3 of *NFPA 90A, Standard for the Installation of Air-Conditioning and Ventilating Systems*, where an approved fire alarm system is installed in a building, the smoke detectors required by the provisions of Section 6.4 of *NFPA 90A* shall be connected to the fire alarm system in accordance with the requirements of *NFPA 72*. [90A:6.4.4.2]

13.7.4.1.7.2.1 Smoke detectors used solely for closing dampers or for heating, ventilating, and air-conditioning system shutdown shall not be required to activate the building evacuation alarm. [90A:6.4.4.2.1]

13.7.4.1.7.3 Where smoke detectors required by Section 6.4 of *NFPA 90A* are installed in a building not equipped with an approved fire alarm system as specified by 13.7.4.1.7.2, the following shall occur:

- (1) Smoke detector activation required by Section 6.4 of *NFPA 90A* shall cause a visual and audible signal in a normally occupied area.
- (2) Smoke detector trouble conditions shall be indicated visually or audibly in a normally occupied area and shall be identified as air duct detector trouble. [90A:6.4.4.3]

13.7.4.1.7.4 Smoke detectors powered separately from the fire alarm system for the sole function of stopping fans shall not require standby power. [90A:6.4.4.4]

13.7.4.2 Requirements for Smoke and Heat Detectors.

13.7.4.2.1 Recessed Mounting. Unless tested and listed for recessed mounting, detectors shall not be recessed into the mounting surface. [72:17.5.1]

13.7.4.3 Location.

13.7.4.3.1* Unless otherwise modified by 17.6.3.2.2, 17.6.3.3.2, or 17.6.3.7 of *NFPA 72*, spot-type heat-sensing fire detectors shall be located on the ceiling not less than 4 in. (100 mm) from the sidewall or on the sidewalls between 4 in. and 12 in. (100 mm and 300 mm) from the ceiling. [72:17.6.3.1.3.1]

13.7.4.3.2 Unless otherwise modified by 17.6.3.2.2, 17.6.3.3.2, or 17.6.3.7 of *NFPA 72*, line-type heat detectors shall be located on the ceiling or on the sidewalls not more than 20 in. (510 mm) from the ceiling. [72:17.6.3.1.3.2]

13.7.4.3.3* Spot-Type Smoke Detectors.

13.7.4.3.3.1* Spot-type smoke detectors shall be located on the ceiling or, if on a sidewall, between the ceiling and 12 in. (300 mm) down from the ceiling to the top of the detector. [72:17.7.3.2.1]

13.7.4.3.3.2* To minimize dust contamination, smoke detectors, where installed under raised floors, shall be mounted only in an orientation for which they have been listed. [72:17.7.3.2.2]

13.7.4.3.3.3 On smooth ceilings, spacing for spot-type smoke detectors shall be in accordance with 13.7.4.3.3.3.1 through 13.7.4.3.3.3.5. [72:17.7.3.2.3]

13.7.4.3.3.3.1* In the absence of specific performance-based design criteria, smooth ceiling smoke detector spacing shall be a nominal 30 ft (9.1 m). [72:17.7.3.2.3.1]

13.7.4.3.3.3.2 In all cases, the manufacturer's published instructions shall be followed. [72:17.7.3.2.3.2]

13.7.4.3.3.3.3 Other spacing shall be permitted to be used depending on ceiling height, different conditions, or response requirements. [72:17.7.3.2.3.3]

13.7.4.3.3.3.4 For the detection of flaming fires, the guidelines in Annex B of *NFPA 72* shall be permitted to be used. [72:17.7.3.2.3.4]

13.7.4.3.3.3.5* For smooth ceilings, all points on the ceiling shall have a detector within a distance equal to 0.7 times the selected spacing. [72:17.7.3.2.3.5]

13.7.4.3.3.4* For solid joist and beam construction, spacing for spot-type smoke detectors shall be in accordance with 13.7.4.3.3.4.1 through 13.7.4.3.3.4.5. [72:17.7.3.2.4]

13.7.4.3.3.4.1 Solid joists shall be considered equivalent to beams for smoke detector spacing guidelines. [72:17.7.3.2.4.1]

13.7.4.3.3.4.2 For level ceilings, the following shall apply:

- (1) For ceilings with beam depths of less than 10 percent of the ceiling height ($0.1 H$), smooth ceiling spacing shall be permitted. Spot-type smoke detectors shall be permitted to be located on ceilings or on the bottom of beams.
- (2) For ceilings with beam depths equal to or greater than 10 percent of the ceiling height ($0.1 H$), the following shall apply:
 - (a) Where beam spacing is equal to or greater than 40 percent of the ceiling height ($0.4 H$), spot-type detectors shall be located on the ceiling in each beam pocket.
 - (b) Where beam spacing is less than 40 percent of the ceiling height ($0.4 H$), the following shall be permitted for spot detectors:
 - i. Smooth ceiling spacing in the direction parallel to the beams and at one-half smooth ceiling spacing in the direction perpendicular to the beams
 - ii. Location of detectors either on the ceiling or on the bottom of the beams
- (3)* For beam pockets formed by intersecting beams, including waffle or pan-type ceilings, the following shall apply:
 - (a) For beam depths less than 10 percent of the ceiling height ($0.1 H$), spacing shall be in accordance with 13.7.4.3.3.4.2(1).
 - (b) For beam depths greater than or equal to 10 percent of the ceiling height ($0.1 H$), spacing shall be in accordance with 13.7.4.3.3.4.2(2).
- (4)* For corridors 15 ft (4.6 m) in width or less having ceiling beams or solid joists perpendicular to the corridor length, the following shall apply:
 - (a) Smooth ceiling spacing shall be permitted.
 - (b) Location of spot-type smoke detectors on ceilings, sidewalls, or the bottom of beams or solid joists
- (5) For rooms of 900 ft² (84 m²) or less, the following shall be permitted:
 - (a) Use of smooth ceiling spacing
 - (b) Location of spot-type smoke detectors on ceilings or on the bottom of beams [72:17.7.3.2.4.2]

13.7.4.3.3.4.3* For sloping ceilings with beams running parallel up slope, the following shall apply:

- (1) Spot-type detector(s) shall be located on the ceiling within beam pocket(s).

- (2) The ceiling height shall be taken as the average height over slope.
- (3) Spacing shall be measured along a horizontal projection of the ceiling.
- (4) Smooth ceiling spacing shall be permitted within beam pocket(s) parallel to the beams.
- (5) For beam depths less than or equal to 10 percent of the ceiling height ($0.1 H$), spot-type detectors shall be located with smooth ceiling spacing perpendicular to the beams.
- (6) For beam depths greater than 10 percent of the ceiling height ($0.1 H$), the following shall apply for spacing perpendicular to the beams:
 - (a) For beam spacing greater than or equal to 40 percent of the ceiling height ($0.4 H$), spot-type detectors shall be located in each beam pocket.
 - (b) For beam spacing less than 40 percent of the ceiling height ($0.4 H$), spot-type detectors shall not be required in every beam pocket but shall be spaced not greater than 50 percent of smooth ceiling spacing. [72:17.7.3.2.4.3]

13.7.4.3.3.4.4* For sloping ceilings with beams running perpendicular across slope, the following shall apply:

- (1) Spot-type detector(s) shall be located at the bottom of the beams.
- (2) The ceiling height shall be taken as the average height over slope.
- (3) Spacing shall be measured along a horizontal projection of the ceiling.
- (4) Smooth ceiling spacing shall be permitted within beam pocket(s).
- (5) For beam depths less than or equal to 10 percent of the ceiling height ($0.1 H$), spot-type detectors shall be located with smooth ceiling spacing.
- (6) For beam depths greater than 10 percent of the ceiling height ($0.1 H$), spot-type detectors shall not be required to be located closer than ($0.4 H$) and shall not exceed 50 percent of smooth ceiling spacing. [72:17.7.3.2.4.4]

13.7.4.3.3.4.5* For sloped ceilings with beam pockets formed by intersecting beams, the following shall apply:

- (1) Spot-type detector(s) shall be located at the bottom of the beams.
- (2) The ceiling height shall be taken as the average height over slope.
- (3) Spacing shall be measured along a horizontal projection of the ceiling.
- (4) For beam depths less than or equal to 10 percent of the ceiling height ($0.1 H$), spot-type detectors shall be spaced with not more than three beams between detectors and shall not exceed smooth ceiling spacing.
- (5) For beam depths greater than 10 percent of the ceiling height ($0.1 H$), spot-type detectors shall be placed with not more than two beams between detectors, but shall not be required to be spaced closer than ($0.4 H$), and shall not exceed 50 percent of smooth ceiling spacing. [72:17.7.3.2.4.5]

13.7.4.3.3.4.6 For sloped ceilings with solid joists, the detectors shall be located on the bottom of the joist. [72:17.7.3.2.4.6]

13.7.4.3.4 Air Sampling-Type Smoke Detector.

13.7.4.3.4.1 Each sampling port of an air sampling-type smoke detector shall be treated as a spot-type detector for the purpose of location and spacing. [72:17.7.3.6.1]

13.7.4.3.4.2 Maximum air sample transport time from the farthest sampling port to the detector shall not exceed 120 seconds. [72:17.7.3.6.2]

13.7.4.3.4.3* Sampling pipe networks shall be designed on the basis of, and shall be supported by, sound fluid dynamic principles to ensure required performance. [72:17.7.3.6.3]

13.7.4.3.4.4 Sampling pipe network design details shall include calculations showing the flow characteristics of the pipe network and each sample port. [72:17.7.3.6.4]

13.7.4.3.4.5 Air-sampling detectors shall give a trouble signal if the airflow is outside the manufacturer's specified range. [72:17.7.3.6.5]

13.7.4.3.4.6* The sampling ports and in-line filter, if used, shall be kept clear in accordance with the manufacturer's published instructions. [72:17.7.3.6.6]

13.7.4.3.4.7 Air-sampling network piping and fittings shall be airtight and permanently fixed. [72:17.7.3.6.7]

13.7.4.3.4.8 Sampling system piping shall be conspicuously identified as "SMOKE DETECTOR SAMPLING TUBE — DO NOT DISTURB," as follows:

- (1) At changes in direction or branches of piping
- (2) At each side of penetrations of walls, floors, or other barriers
- (3) At intervals on piping that provide visibility within the space, but no greater than 20 ft (6.1 m) [72:17.7.3.6.8]

13.7.4.3.5* Projected Beam-Type Smoke Detectors.

13.7.4.3.5.1 Projected beam-type smoke detectors shall be located in accordance with the manufacturer's published instructions. [72:17.7.3.7.1]

13.7.4.3.5.2 The effects of stratification shall be evaluated when locating the detectors. [72:17.7.3.7.2]

13.7.4.3.5.3 The beam length shall not exceed the maximum permitted by the equipment listing. [72:17.7.3.7.3]

13.7.4.3.5.4 If mirrors are used with projected beams, the mirrors shall be installed in accordance with the manufacturer's published instructions. [72:17.7.3.7.4]

13.7.4.3.5.5 A projected beam-type smoke detector shall be considered equivalent to a row of spot-type smoke detectors for level and sloping ceiling applications. [72:17.7.3.7.5]

13.7.4.3.5.6 Projected beam-type detectors and mirrors shall be mounted on stable surfaces to prevent false or erratic operation due to movement. [72:17.7.3.7.6]

13.7.4.3.5.7 The beam shall be designed so that small angular movements of the light source or receiver do not prevent operation due to smoke and do not cause nuisance alarms. [72:17.7.3.7.7]

13.7.4.3.5.8* The light path of projected beam-type detectors shall be kept clear of opaque obstacles at all times. [72:17.7.3.7.8]

13.7.4.3.6 For solid joist and beam construction, spacing for spot-type smoke detectors shall be in accordance with 13.7.4.3.3.4.1 through 13.7.4.3.3.4.6. [72:17.7.3.2.4]

13.7.4.3.7 For sloped ceilings with solid joists, the detectors shall be located on the bottom of the joist. [72:17.7.3.2.4.6]

13.7.4.3.8* Protection During Construction.

13.7.4.3.8.1 Where detectors are installed for signal initiation during construction, they shall be cleaned and verified to be operating in accordance with the listed sensitivity, or they shall be replaced prior to the final commissioning of the system. [72:17.7.1.11.1]

13.7.4.3.8.2 Where detectors are installed but not operational during construction, they shall be protected from construction debris, dust, dirt, and damage in accordance with the manufacturer's recommendations and verified to be operating in accordance with the listed sensitivity, or they shall be replaced prior to the final commissioning of the system. [72:17.7.1.11.2]

13.7.4.3.8.3 Where detection is not required during construction, detectors shall not be installed until after all other construction trades have completed cleanup. [72:17.7.1.11.3]

13.7.4.3.9 Ceiling Tiles and Ceiling Assemblies. Where automatic detectors are installed, ceilings necessary for the proper actuation of the fire protection device in accordance with *NFPA 72* shall be maintained.

13.7.4.3.10 High Air Movement Areas.

13.7.4.3.10.1 Location. Smoke detectors shall not be located directly in the airstream of supply registers. [72:17.7.6.3.2]

13.7.4.3.10.2* Spacing.

13.7.4.3.10.2.1 Spot-type smoke detector spacing shall be in accordance with Table 17.7.6.3.3.1 and Figure 17.7.6.3.3.1 of *NFPA 72*. [72:17.7.6.3.3.1]

13.7.4.3.10.2.2 Air-sampling or projected beam smoke detectors shall be installed in accordance with the manufacturer's published instructions. [72:17.7.6.3.3.2]

13.7.4.4 Inspection, Testing, and Maintenance.

13.7.4.4.1 The inspection, testing, and maintenance for fire alarm and fire detection systems shall be in accordance with Chapter 10 of *NFPA 72*.

13.7.4.5 Heat Detectors.

13.7.4.5.1 Fixed-Temperature, Rate-of-Rise, Rate-of-Compensation, Restorable Line, Spot Type (Excluding Pneumatic Tube Type). Heat test shall be performed with a heat source per the manufacturer's published inspections. A test method shall be used that is specified in the manufacturer's published instructions for the installed equipment, or other method shall be used that will not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector. [72: Table 14.4.2.2, 14(d)1]

13.7.4.5.2 Fixed-Temperature, Nonrestorable Line Type. Heat test shall not be performed. Functionality shall be tested mechanically and electrically. Loop resistance shall be measured and recorded. Changes from acceptance test shall be investigated. [72: Table 14.4.2.2, 14(d)2]

13.7.4.5.3 Nonrestorable (General). Heat tests shall not be performed. Functionality shall be tested mechanically and electrically. [72: Table 14.4.2.2, 14(d)4]

13.7.4.5.4 Restorable Line Type, Pneumatic Tube Only. Heat tests shall be performed (where test chambers are in circuit), or a test with pressure pump shall be conducted. [72: Table 14.4.2.2, 14(d)5]

13.7.4.6 Smoke Detectors.

13.7.4.6.1 In Other Than One- and Two-Family Dwellings, System Detectors and Single- or Multiple-Station Smoke Alarms. Smoke detectors/smoke alarms shall be tested in place to ensure smoke entry into the sensing chamber and an alarm response. Testing with smoke or listed aerosol, acceptable to the manufacturer of the aerosol or the manufacturer of the smoke detector/smoke alarm and identified in their published instructions, shall be permitted as acceptable test methods. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, into the sensing chamber shall be permitted. Any of the following tests shall be performed to ensure that each smoke detector is within its listed and marked sensitivity range:

- (1) Calibrated test method
- (2) Manufacturer's calibrated sensitivity test instrument
- (3) Listed control equipment arranged for the purpose
- (4) Smoke detector/control unit arrangement whereby the detector causes a signal at the control unit when its sensitivity is outside its listed sensitivity range
- (5) Other calibrated sensitivity test method approved by the AHJ [72: Table 14.4.2.2, 14(g)1]

13.7.4.6.2 Projected Beam Type. The detector shall be tested by introducing smoke, other aerosol, or an optical filter into the beam path. [72: Table 14.4.2.2, 14(g)7]

13.7.4.6.3 A functional test shall be performed on all smoke detectors upon initial installation and at least annually as required by Table 13.7.3.2.4. [72: Table 14.4.5, 15(h)]

13.7.4.7* In other than one- and two-family dwellings, sensitivity of smoke detectors and single- and multiple-station smoke alarms shall be tested in accordance with 13.7.4.7.1 through 13.7.4.7.7. [72:14.4.5.3]

13.7.4.7.1 Sensitivity shall be checked within 1 year after installation. [72:14.4.5.3.1]

13.7.4.7.2 Sensitivity shall be checked every alternate year thereafter unless otherwise permitted by compliance with 13.7.4.7.3. [72:14.4.5.3.2]

13.7.4.7.3 After the second required calibration test, if sensitivity tests indicate that the device has remained within its listed and marked sensitivity range (or 4 percent obscuration light gray smoke, if not marked), the length of time between calibration tests shall be permitted to be extended to a maximum of 5 years. [72:14.4.5.3.3]

13.7.4.7.3.1 If the frequency is extended, records of nuisance alarms and subsequent trends of these alarms shall be maintained. [72:14.4.5.3.3.1]

13.7.4.7.3.2 In zones or in areas where nuisance alarms show any increase over the previous year, calibration tests shall be performed. [72:14.4.5.3.3.2]

13.7.4.7.4 To ensure that each smoke detector or smoke alarm is within its listed and marked sensitivity range, it shall be tested using any of the following methods:

- (1) Calibrated test method
- (2) Manufacturer's calibrated sensitivity test instrument
- (3) Listed control equipment arranged for the purpose
- (4) Smoke detector/fire alarm control unit arrangement whereby the detector causes a signal at the fire alarm control unit where its sensitivity is outside its listed sensitivity range

- (5) Other calibrated sensitivity test methods approved by the AHJ [72:14.4.5.3.4]

13.7.4.7.5 Unless otherwise permitted by 13.7.4.7.6, smoke detectors or smoke alarms found to have a sensitivity outside the listed and marked sensitivity range shall be cleaned and recalibrated or be replaced. [72: 14.4.5.3.5]

13.7.4.7.6 Smoke detectors or smoke alarms listed as field adjustable shall be permitted to either be adjusted within the listed and marked sensitivity range, cleaned, and recalibrated, or be replaced. [72: 14.4.5.3.6]

13.7.4.7.7 The detector or smoke alarm sensitivity shall not be tested or measured using any device that administers an unmeasured concentration of smoke or other aerosol into the detector or smoke alarm. [72:14.4.5.3.7]

13.7.5* Impaired and Nuisance Alarm Prone Systems.

13.7.5.1 Impaired fire alarm systems shall include, but shall not be limited to, required systems that are not fully operational, are no longer monitored as required by the AHJ, or are under renovation or repair.

13.7.5.2 The system owner or designated representative shall immediately notify the AHJ in an approved manner when a fire alarm system is impaired.

13.7.5.3 The AHJ shall be authorized to require standby fire personnel or an approved fire watch at premises in which required fire alarm systems are impaired in accordance with 1.7.16.

13.7.5.4 Fire alarm systems that have produced five or more nuisance alarms in a 365-day period shall be classified as chronic nuisance alarm prone systems.

13.7.5.5* The AHJ shall be authorized to require central station service be provided for chronic nuisance alarm prone systems.

13.7.5.6* Fire alarm supervising stations and fire alarm service companies shall immediately notify the AHJ when any of the following conditions exists:

- (1) A fire alarm system is impaired.
- (2) Required system monitoring is no longer being provided.
- (3) Required testing, service, and maintenance is no longer being provided.
- (4) A fire alarm system cannot be serviced or repaired to make it fully operational.
- (5) A fire alarm system cannot be serviced or repaired to eliminate chronic nuisance alarms.

13.7.5.7 The system owner shall replace required fire alarm systems that cannot be serviced or repaired to eliminate system impairments or chronic nuisance alarms.

13.8 Other Fire Protection Systems. Where other fire protection systems are required to be installed by the provisions of this *Code*, or are installed with the approval of the AHJ as an alternative or equivalency, the design and installation of the system shall comply with the appropriate standards listed in Table 13.8. The system shall be tested and maintained in accordance with Section 10.4.

13.9 Non-Listed Fire Protection or Suppression Devices and Equipment.

13.9.1 It shall be unlawful to market, sell, advertise, or distribute any device or equipment as suitable for fire protection or fire suppression purposes unless the device or equipment is listed for such purpose by a nationally recognized testing laboratory or as otherwise permitted by 13.9.2.

Table 13.8 Other Required Fire Protection Systems

Type of System	NFPA Standard
Low-, medium-, and high-expansion foam systems	NFPA 11, <i>Standard for Low-, Medium-, and High-Expansion Foam</i>
Carbon dioxide systems	NFPA 12, <i>Standard on Carbon Dioxide Extinguishing Systems</i>
Halon 1301 systems	NFPA 12A, <i>Standard on Halon 1301 Fire Extinguishing Systems</i>
Sprinklers in one- and two-family dwellings and manufactured homes	NFPA 13D, <i>Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes</i>
Sprinklers in residential occupancies up to and including four stories in height	NFPA 13R, <i>Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height</i>
Water spray systems	NFPA 15, <i>Standard for Water Spray Fixed Systems for Fire Protection</i>
Deluge foam-water sprinkler, foam-water spray systems, and closed-head foam-water sprinkler systems	NFPA 16, <i>Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems</i>
Dry chemical extinguishing systems	NFPA 17, <i>Standard for Dry Chemical Extinguishing Systems</i>
Wet chemical extinguishing systems	NFPA 17A, <i>Standard for Wet Chemical Extinguishing Systems</i>
Water mist systems	NFPA 750, <i>Standard on Water Mist Fire Protection Systems</i>
Clean agent fire-extinguishing systems	NFPA 2001, <i>Standard on Clean Agent Fire Extinguishing Systems</i>
Aerosol extinguishing systems	NFPA 2010, <i>Standard for Fixed Aerosol Fire Extinguishing Systems</i>

13.9.2 The requirements of 13.9.1 shall not apply where NFPA standards, other adopted standards, or the adopted code allow the use of non-listed fire protection or suppression equipment.

Chapter 14 Means of Egress

14.1 Application. Means of egress in new and existing buildings shall comply with this *Code* and NFPA 101, *Life Safety Code*.

14.2 Exit Access Corridors. Corridors used as exit access and serving an area having an occupant load exceeding 30 shall be separated from other parts of the building by walls having not less than a 1-hour fire resistance rating in accordance with Section 12.7, unless otherwise permitted by the following:

- (1) This requirement shall not apply to existing buildings, provided that the occupancy classification does not change.
- (2) This requirement shall not apply where otherwise provided in Chapters 11 through 43 of NFPA 101. [101:7.1.3.1]

14.3 Exits.

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.
- (5) The minimum 2-hour 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(7).
- (6)* Structural elements, or portions thereof, that support exit components and either penetrate into a fire resistance-rated assembly or are installed within a 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).
- (7) In Type III, Type IV, and Type V construction, as defined in NFPA 220, *Standard on Types of Building Construction* (see 8.2.1.2 of NFPA 101), fire-retardant-treated wood enclosed in noncombustible or limited-combustible materials shall be permitted.
- (8) Openings in the separation shall be protected by fire door assemblies equipped with door closers complying with 14.5.4.
- (9)* 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) Openings in exit passageways in mall buildings as provided in Chapters 36 and 37 of NFPA 101 shall be permitted.