

**CHAPTER 9: FIRE PROTECTION SYSTEMS**

This replaces all Chapter 9 amendments and includes many changes (not highlighted).

**901.1** Add these notes:

**Note 1.** Throughout Chapter 9, when reference to the *International Plumbing Code* is made the user shall refer to 248 CMR 10.00: *Uniform State Plumbing Code*.

**Note 2.** Throughout Chapter 9, reference to sections of the *International Fire Code (IFC)* for fire prevention requirements shall be considered reference to 527 CMR Board of Fire Prevention Regulations. The fire official enforces the provisions of 527 CMR. Reference to sections of the *International Fire Code (IFC)* 2009 edition for building code requirements are adopted, except that retroactive requirements of the IFC are not adopted. The building official enforces 780 CMR and all adopted IFC requirements. Also see MGL c. 148, § 9.

**Note 3.** Throughout Chapter 9, when references to Chapter 27: *Electrical* and/or NFPA 70 are made, the user shall refer to 527 CMR 12.00: *Massachusetts Electrical Code (Amendments)*.

**Note 4.** Throughout Chapter 9, where reference is made to the terms “fire official”, “fire department”, “head of the fire department” or “fire code official”, such is to be construed as meaning the “local fire chief or his/her designee”.

**Note 5.** In subsections 904.2, 907.1.1, 909.7, 909.8, 909.9, 909.10, 909.19, 909.19 Exception, and 910.4, the term “fire official” or “*building official*” is to be substituted with the terms “*building official* in conjunction and cooperation with the fire official”. The fire official may appeal a *building official* action per Chapter 1: *Scope and Administration*.

**Note 6.** In subsection 909.20.6.3, the term “*building official*” is to be substituted with the term “*building official* and fire official”.

**Note 7.** In subsection 903.1.1, the term “fire code official” is to be substituted with the term “*building official* and fire official”.

**901.2** Replace the exception as follows:**Exceptions:**

1. Any fire protection system or portion thereof not required by this code shall be permitted to be installed for partial or complete protection provided that such system meets the requirements of this code.
2. Where alternative fire protection designs, which vary from any prescriptive requirements of this Chapter, are to be utilized, the owner shall engage an independent *registered design professional*, to review said alternative design. The scope of the review shall include, but not be limited to:
  - a. Design assumptions, methodologies, and resulting proposed system designs, to determine whether or not:
    - i. the proposed fire protection systems and any other systems which are affected by the alternative design, are consistent with the general objectives and prescriptive provisions of this Chapter;
    - ii. they all conform to accepted engineering practice.
  - b. Preparation of a written report to the *building official* as to the appropriateness of the proposed design specifically listing any variances from the prescriptive provisions of this Chapter and describing, in detail, the design provisions used to achieve compliance.

If the reviewing engineer concurs with the proposed design, the owner shall make application for a variance, to the State Building Code Appeals Board per Chapter 1: *Scope and Administration*. In addition to all supporting information and materials, the reviewing engineering’s report required per this exception shall be included in the application for variance. A building permit shall not be issued until the variance, if required, has been granted, or unless the building permit is issued in part per Chapter 1: *Scope and Administration*.

When a variance is granted per this exception for a bulk merchandising retail building as defined in Chapter 4: *Special Detailed Requirements Based on Use and Occupancy*, and when the condition is common to future buildings of the owner, the BBRs, upon request of the owner, may provide that the variance shall be applicable to such future buildings. If such request is made, a quorum of the BBRs shall hear the appeal. Each such application to a future building will be subject to determination as prescribed per Chapter 1: *Scope and Administration* by the *building official* in conjunction with the fire official that its use is in conformity with the terms of the variance.

9.00: continued

**901.2.1** Add new subsection:

**901.2.1 Document Submittal Process.** This process includes three tiers of the minimum document submittal requirements. This process does not preclude the permit applicant from submitting additional documents; for example shop drawings along with the *construction documents* at time of permit application.

1. **Tier One, Construction Documents** - Prior to issuance of a building permit, *construction documents* for the fire protection system must be submitted in accordance with Chapter 1: *Scope and Administration* and a building permit obtained prior to the installation of fire protection systems or modifications, alterations, additions or deletions to an existing fire protection system. The *construction documents* shall contain sufficient information to completely describe each of the fire protection system(s) for which a permit is to be issued. The *construction documents* shall include the following:

- a. Each system shall be described in a narrative report, which contains:
    - i. design methodology for the protection of the occupancy and hazards in accordance with this code and applicable NFPA Standards and,
    - ii. sequence of operation of all fire protection systems and operations and,
    - iii. testing criteria to be used for final system acceptance.
  - b. Building and site access for fire-fighting and/or rescue vehicle(s) and personnel.
  - c. Fire hydrant(s) location and water supply information.
  - d. Type/description and design layout of the automatic sprinkler system(s).
  - e. Automatic sprinkler system(s) control equipment location.
  - f. Type/description and design layout of the automatic standpipe system(s).
  - g. Standpipe system hose valve(s) type and location.
  - h. Fire department siamese connection type(s) and location.
  - i. Type/description and design layout of the fire protective signaling system(s).
  - j. Fire protective signaling system(s) control equipment and remote annunciator location.
  - k. Type/description and design layout of the smoke control or exhaust system(s).
  - l. Smoke control or exhaust system(s) control equipment location.
  - m. Building life safety system features (auxiliary functions) required to be integrated as part of the fire protective signaling system(s).
  - n. Type/description and design layout of the fire extinguishing system(s).
  - o. Fire extinguishing system(s) control equipment location.
  - p. Fire protection system(s) equipment room location.
  - q. Fire protection system(s) equipment identification and operation signs.
  - r. Fire protection system(s) alarm/ supervisory signal transmission method and location.
  - e. Fire command center location.
  - t. Type/description and location of any emergency alarm system.
  - u. Type/description and location of any alternative fire suppression system or protection.
  - v. Type/description and location of any carbon monoxide protection.
2. **Tier Two, Shop Drawings** - Prior to installation of fire protection systems, shop drawings, where applicable, shall be submitted to the *building official* and fire official and shall contain, but not be limited to; detailed design layout, equipment specifications, system sequence of operation, and analysis to substantiate the design. Shop drawings shall note the name(s), license number(s) and license expiration date(s) of the contractor(s) installing the fire protection systems.

**Exception.** For shop drawings of Fire Alarm and Detection Systems *see* section 907.1.2 for applicable requirements.

3. **Tier Three, Record Drawings** - As built plans shall be provided to the building owner for all fire protection and life safety systems that are sealed as reviewed and approved by the *registered design professional* or legally recognized professional performing Construction Control. Where changes to original shop drawings are minor, a list of as-built changes shall be permitted to be submitted where sealed and reviewed and approved by the *registered design professional* or legally recognized professional performing Construction Control.

9.00: continued

**901.3** Replace as follows:

**901.3 Maintenance.** All water based fire protection systems shall be maintained in accordance with NFPA 25 as listed in Chapter 35: *Referenced Standards*. All other *fire protection systems* shall be maintained in accordance with the requirements of the applicable reference standards and standards listed in Chapter 35: *Referenced Standards*. The owner of every building or structure shall be responsible for the care and maintenance of all *fire protection systems*, including equipment and devices, to ensure the safety and welfare of the occupants. No person shall shut off, disconnect, obstruct, remove or destroy, or cause or permit to be shut off, disconnected, obstructed, removed or destroyed, any part of any sprinkler system, water main, hydrant or other device used for fire protection or carbon monoxide detection and alarm in any building owned, leased or occupied by such person or under his control or supervision, without first procuring a written permit so to do from the head of the fire department of the city or town wherein such building is situated in accordance with M.G.L. c. 148, § 27A.

When installations of *fire protection systems* are interrupted for repairs or other necessary reasons, the owner, tenant or lessee shall immediately advise the local fire department and shall diligently prosecute the restoration of the protection.

**901.5** Revise to read as follows:

**901.5 Acceptance Tests.** *Fire protection systems* shall be tested in accordance with the requirements of this code and NFPA Standards and approved testing criteria and operational sequence as submitted in section 901.2.1, Tier One, Item a. When required, the tests shall be conducted in the presence of the *building official* and fire official or their designee.

**901.5.1** Add subsection:

**901.5.1 Certificate of Occupancy.** Prior to the issuance of a Certificate of Occupancy and prior to witness of acceptance testing the following documents must be submitted to the building and fire officials, or designees.

1. Certification from the *registered design professional*, or other legally recognized professional, responsible for the *construction documents* per section 107.6, stating that the *fire protection systems* have been installed in accordance with applicable codes and standards, in accordance with the approved *construction documents* and that the record drawings indicate any deviations, if any.
2. Confirmation by the building owner or the owner's authorized representative that they have received the as-built record drawings.
3. Material, Test, Performance, and Completion Certificates, properly executed by the installing contractor in accordance with the applicable NFPA standards.

**Note.** In lieu of witnessing a satisfactory functional test, the *building official* and fire official or designees, may accept a final performance test report from a *registered design professional*, or other legally recognized professional, as an acceptance test. Said report shall certify that complete and satisfactory functional tests of all *fire protection systems*, in accordance with the applicable codes and standards, and that the approved testing criteria and operational sequence, have been witnessed.

**901.6.1** Delete.

**901.6.2** Delete.

**901.7** Replace as follows:

**901.7 Signs.** All signs required to identify fire protection equipment, equipment rooms and equipment locations shall be constructed of durable materials, be permanently installed and be readily visible. Letters and numbers shall contrast with the sign background, shall be at least two inches in height and shall have an appropriate width-to-height ratio to permit the sign to be read easily from a distance of ten feet. The sign and location shall be approved by the local fire department.

9.00: continued

**901.7.1** Add subsection:

**901.7.1 Sprinkler Control Valve Room Signs.** Where sprinkler control valves are located in a separate room or building, a sign shall be provided on the entrance door. The lettering shall be at least 2½ inches (63.5 mm) in height and shall otherwise conform to section 901.7 and shall read "Sprinkler Control Valves."

**902.1** Replace or add definitions as follows:

**CARBON MONOXIDE DETECTOR.** A listed device that activates an alarm upon detection of carbon monoxide.

**FIRE AREA.** The aggregate area of the building regardless of subdivisions by fire barriers and horizontal assemblies.

**MAINTENANCE OF FIRE PROTECTION SYSTEMS.** Replacement or repair of any component or components of a *fire protection system*, where such does not affect system performance and compatibility. No building permit is required for maintenance. Other permits, however, may be required pursuant to M.G.L. c. 148, § 27A and 527 CMR.

**MODIFICATIONS, ALTERATIONS, ADDITIONS OR DELETIONS TO FIRE PROTECTION SYSTEMS.** Any changes which affect the performance of the *fire protection system*. Such changes require a building permit and are subject to other permitting requirements pursuant to M.G.L. c. 148, § 27A.

**NIGHT CLUBS.** *See* section 303.1.1

**903.2** Replace this section as follows:

**903.2 Where Required.** Automatic sprinkler systems in new buildings and structures shall be provided in the locations described in Table 903.2 and this Section.

**Note.** Automatic sprinkler systems may be required by M.G.L. c. 148, § 26A, 26A½, 26G, 26G½, 26H or 26I, or M.G.L. c. 272 §§ 86 through 86d

**903.2** Replace the exception as follows:

**Exceptions:** Automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an approved automatic fire detection system and notification in accordance with section 907 that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from any room merely because it is damp, of fire-resistance-rated construction or contains electrical equipment.

1. Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided those spaces or areas are equipped throughout with an automatic smoke detection and notification system in accordance with section 907.2 and are separated from the remainder of the building by not less than 1-hour fire barriers constructed in accordance with section 707 or not less than two-hour horizontal assemblies constructed in accordance with section 712, or both.
2. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard and protected by an alternative automatic fire-extinguishing system in accordance with Section 904.
3. Portions of buildings that comply with Chapter 4 for open parking structures less than 70 feet in height above *grade plane*.
4. Machine rooms of traction/drum hydraulic elevators, elevator hoistways, or elevator pits. Such elevator machine rooms, hoistways, or pits shall be constructed to meet the fire-resistance rating specified in Table 601 and otherwise as required by the applicable sections of Chapter 7. Where Table 601 requires a higher fire-resistance rating for elevator machine rooms, hoistways, or pits, such rating must be provided unless such ratings are governed by other sections of this code. For elevator installation within atriums also *see* Chapter 4 for additional fire-resistance rating guidance. Where the elevator machine room is determined to be a true penthouse roof structure, also refer to section 1509.0 for additional fire-resistance rating requirements.

9.00: continued

5. Noncombustible and limited combustible concealed spaces and plenums that contain electrical, data, communications and other cables that are of the types and in the configurations permitted in such spaces by 527 CMR 12.00: *Massachusetts Electrical Code (Amendments)*.
6. Transformer Vaults where all the following conditions are satisfied:
  - a. The cable within the vault is flame retardant or limited combustible.
  - b. The dielectric fluid is a limited combustible fluid.
  - c. The vault is enclosed in three hour fire resistance rated construction.
  - d. The vault is at grade or no more than one level below grade. Access to the vault is directly from the exterior or via a dedicated two hour passageway.
  - e. The vault is protected with automatic smoke detection connected to the building fire alarm system which notifies the fire department upon activation.
  - f. The room is limited to the sole use of the transformer equipment and is limited in size to accommodate said equipment only. Storage is prohibited in the vault enclosure.
  - g. The vault is provided with spill containment.
  - h. An emergency fire plan has been developed with and approved by the fire department.
  - i. Continuous ventilation is provided for the vault enclosure in accordance with the ventilation requirements of NFPA 30.
  - j. The ventilation equipment is dedicated to serve the vault only.
  - k. Standby emergency power, in addition to the normal power source, is provided for the ventilation equipment.
  - l. The vault is no larger in area than 2400 sq. ft.
7. Transformer Vaults where an alternative suppression system is provided for the vault in accordance with section 904 and Exception 6. conditions i., j., and k. are met.

903.2.1 through 903.2.10 Replace these subsections with the Table 903.2:

**TABLE 903.2 OCCUPANCY AUTOMATIC SPRINKLER REQUIREMENTS**

Building having occupancy	Provide automatic fire sprinkler system throughout building if one of the following conditions will exist ( <i>see</i> Note a):		
	Building aggregate area	Building occupant load	Occupancy located
A-1	>0 sq. ft.	>0	Any level
A-2 [Nightclub]	>5,000 sq. ft.	≥50	Any floor other than level of exit discharge for A-2 Use
A-2 [other than Nightclub]	>5,000 sq. ft.	≥100	Any floor other than level of exit discharge for A-2 Use
A-3	>5,000 sq. ft.	≥300	Any floor other than level of exit discharge for A-3 Use
A-4	>7,500 sq. ft.	≥300	Any floor other than level of exit discharge for A-4 Use
A-5	<i>See</i> Note b		
B	>12,000 sq. ft.	---	---
B [Ambulatory Health Care]	<i>See</i> Note c		
E	>12,000 sq. ft.	---	---
E [below level of exit discharge]	<i>See</i> Note d		
F-1	>12,000 sq. ft.	---	More than 3 stories above grade plane
F-1 [Woodworking Operations]	<i>See</i> Note e		
H	>0 sq. ft.	>0	Any level
Pyroxylin Plastics	<i>See</i> Note f		
I <sup>a</sup>	>0 sq. ft.	>0	Any level
M [other than bulk merchandising and upholstered furniture display/sale]	>12,000 sq. ft.	---	More than 3 stories above grade plane

9.00: continued

**TABLE 903.2 OCCUPANCY AUTOMATIC SPRINKLER REQUIREMENTS - continued**

Building having occupancy	Provide automatic fire sprinkler system throughout building if one of the following conditions will exist ( <i>see Note a</i> ):		
	Building aggregate area	Building occupant load	Occupancy located
M [bulk merchandising]	>0 sq. ft.	>0	Any level
M [upholstered furniture display/sale]	>0 sq. ft.	>0	Any level
R <sup>a</sup>	>0 sq. ft.	>0	Any level
S-1	>12,000 sq. ft.	---	More than 3 stories above grade plane
S-1 [with commercial trucks/bus storage]	>5,000 sq. ft.	---	More than 3 stories above grade plane
S-1 [with repair garage, building more than 2 stories above grade]	>10,000 sq. ft.	---	In basement or more than 3 stories above grade plane
S-1 [with repair garage, building 1 story above grade]	>12,000 sq. ft.	---	In basement
S-1 [with commercial truck/bus repair garage]	>5,000 sq. ft.	---	In basement or more than 3 stories above grade plane
S-1 [with tire storage]	<i>See Note g</i>		
S-2	<i>See Note h &amp; Note i</i>		
<p>Note a -</p> <ol style="list-style-type: none"> <li>For Use Group R and I-I Buildings with an aggregate building area of 12,000 sq. ft. or more, and Mixed Use Buildings containing R-Uses, the sprinkler system shall be designed and installed throughout the structure in accordance with NFPA 13.</li> <li>For the purposes of section 903.2, the aggregate building area shall be the combined area of all stories of the building and fire walls shall not be considered to create separate buildings.</li> <li>Buildings of entire R-Use, other than R-1 Occupancies and R-2 Dormitories, having no more than three dwelling units and also less than 12,000 aggregate sq. ft. shall be permitted to have an <i>automatic fire suppression</i> system installed in accordance with section 903.3.1.3, provided that every <i>automatic sprinkler system</i> shall have at least one automatic water supply or a stored water supply source in accordance with NFPA-13D where the minimum quantity of stored water shall equal the water demand rate times 20 minutes.</li> <li>Townhouses are required to be protected by automatic sprinkler systems.</li> </ol> <p>Note b - Group A-5. An <i>automatic sprinkler system</i> shall be provided in concession stands, retail areas, press boxes and other accessory use areas in excess of 1,000 square feet (93 m<sup>2</sup>).</p> <p>Note c - Group B ambulatory health care facilities. An <i>automatic sprinkler system</i> shall be installed throughout all fire areas containing a Group B ambulatory health care facility occupancy when either of the following conditions exists at any time:</p> <ol style="list-style-type: none"> <li>Four or more care recipients are incapable of self-preservation.</li> <li>One or more care recipients who are incapable of self-preservation are located at other than the <i>level of exit discharge</i> serving such an occupancy.</li> </ol> <p>Note d - Group E. An <i>automatic sprinkler system</i> shall be installed throughout every portion of educational buildings below the lowest <i>level of exit discharge</i> serving that portion of the building.</p> <p>Note e - Group F [Woodworking Operations]. An <i>automatic sprinkler system</i> shall be installed throughout buildings where there is a woodworking operation in excess of 2,500 square feet (232 m<sup>2</sup>) in area that generates finely divided combustible waste or uses finely divided combustible materials.</p> <p>Note f - Pyroxylin Plastics. An <i>automatic sprinkler system</i> shall be provided in buildings, or portions thereof, where cellulose nitrate film or pyroxylin plastics are manufactured, stored or handled in quantities exceeding 100 pounds (45 kg).</p> <p>Note g - Bulk storage of tires. An <i>automatic sprinkler system</i> shall be provided throughout buildings and structures where the area for the storage of tires exceeds 20,000 cubic feet (566 m<sup>3</sup>).</p> <p>Note h - Group S-2. An <i>automatic sprinkler system</i> shall be provided for Group S-2 occupancies as follows:</p> <ol style="list-style-type: none"> <li>Throughout buildings classified as Group S-2 Enclosed Parking.</li> <li>Throughout Group S-2 Enclosed Parking located beneath other groups.</li> </ol> <p>Note i - Commercial Parking Garages. An <i>automatic sprinkler system</i> shall be provided throughout buildings having storage of commercial trucks or buses where the aggregate floor area used for parking exceeds 5,000 square feet (464 m<sup>2</sup>).</p>			

9.00: continued

**903.3.1.1.1** Replace as follows:

**903.3.1.1.1 Exempt Locations.** See 903.2 Exceptions 1. through 7. and section 903.1.1.

**903.3.1.3** Replace as follows:

**903.3.1.3 NFPA 13D Sprinkler Systems.** Only where allowed and utilized in accordance with Table 903.2 Note a, *automatic sprinkler systems* shall be permitted to be installed in accordance with NFPA 13D.

**903.3.5** Add note:

**Note.** See 248 CMR and 310 CMR for backflow preventer requirements.

**903.3.5.1.2** Replace as follows:

**903.3.5.1.2 Combination Services.** A single combination water supply shall be permitted provided that the domestic and/or commercial demand is added to the sprinkler demand as required by NFPA 13, NFPA 13D or NFPA 13R as applicable.

**903.4.1** Replace as follows:

**903.4.1 Monitoring.** Alarm, supervisory and trouble signals shall be distinctly different and shall be automatically transmitted to one of the following NFPA 72 locations:

1. UL listed or FM approved central supervising station, or
2. Approved proprietary supervising station or approved remote supervising station, or
3. Alarm signals to an approved Auxiliary Fire Alarm System in accordance with NFPA 72, with supervisory signals supervised by method a or b identified above, or at a *constantly attended location* approved by the local fire department, having personnel on duty trained to recognize the type of signal received and to take prescribed action. This shall be permitted to be a location different from that at which alarm signals are received.

**903.4.2** Replace as follows:

**903.4.2 Alarms.** Approved audible and visual alarm devices shall be connected to every water sprinkler system. Such alarm devices shall be activated by waterflow (equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system) and shall be located in an approved location on the exterior of the building and throughout the building in accordance with the requirements of section 907.

**903.4.4** Add subsection:

**903.4.4 Re-transmission of Alarm Signals Received by Central Stations and Received by Those Operating Approved Remote/Proprietary Station Fire Alarm System Supervising Stations.** In all cases, central stations and those operating approved remote/proprietary station fire alarm system supervising stations shall re transmit alarm signals within 90 seconds of receipt, to the fire department having jurisdiction.

**903.5** Add note:

**Note.** See section 901.3.

**904.5.1** Add subsection:

**904.5.1 Discharge Test.** All systems shall be tested by a discharge of expellant gas through the piping and nozzles with observations being made of the flow of expellant gas through all nozzles as well as observing for leakage and continuity of piping with free unobstructed flow.

9.00: continued

**904.6.1** Add subsection:

**904.6.1 Discharge Test.** All systems shall be tested by a discharge of expellant gas through the piping and nozzles with observations being made of the flow of expellant gas through all nozzles as well as observing for leakage and continuity of piping with free unobstructed flow.

**904.12** Add subsection:

**904.12 Water Spray Fixed Systems.** Water spray fixed systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 15 and the listings contained therein.

**904.13** Add subsection:

**904.13 Water Mist Systems.** Water mist systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 750 and the listings contained therein.

**905.3.8** Add subsection:

**905.3.8 High-piled Combustible Storage.** A class I automatic wet or manual standpipe system shall be provided in all exit passageways of areas containing high-piled combustible storage.

**905.3.9** Add subsection:

**905.3.9 Travel Distance.** A class I automatic wet or manual wet standpipe system shall be provided in all buildings where any portion of the building floor area is more than 400 feet of travel from the nearest point of fire department vehicle access. Vehicle access travel distance is actual distance measure along and/or around the building exterior and shall not be reduced by the addition of fire walls/party walls which otherwise would define individual buildings.

**905.10** Replace as follows:

**905.10 During Construction.** Standpipes systems required during construction and demolition operations shall be provided in accordance with section 3311.0 and NFPA 241.

**907.1.2.1** Add subsection:

**907.1.2.1 Installer Identification.** Shop drawings shall note the name(s), license number(s) and license expiration date(s) of the contractor(s) installing the *fire protection systems*.

**907.2.1.1** Replace as follows and delete the exceptions:

**907.2.1.1 System Initiation in Group A Occupancies with an Occupant Load of 300 or More.** Activation of the fire alarm in Group A occupancies with an occupant load of 300 or more shall initiate a signal using an emergency voice/alarm communications system in accordance with section 907.5.2.2.

**907.2.1.2** Add subsection:

**907.2.1.2 A-2 Nightclub Use – Entertainment System Response.** The activation of any *fire protection system* element (signaling system, detection, sprinklering, *etc.*) shall automatically:

1. Cause immediate illumination of all areas and components of the required means of egress, and additionally;
2. Cause immediate full activation of all other house lighting; and
3. Cause immediate stopping of any and all sounds and visual distractions (public address systems, entertainment and dance lighting, music, *etc.*) that conflict/compete with the fire protective signaling system.



9.00: continued

**907.2.3** Replace as follows:

**907.2.3 Group E.** A manual fire alarm system that activates the occupant notification system with emergency voice/alarm communication capabilities in accordance with section 907.5 shall be installed in Group E Occupancies. When automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system.

**Exception.** A manual fire alarm system is not required in Group E occupancies with an *occupant load* of less than 50.

**907.2.8.3.1** Add subsection:

**907.2.8.3.1 Annunciation.** In buildings that are not equipped throughout with an *automatic sprinkler system* installed in accordance with section 903.3.1.1 or section 903.3.1.2, the smoke detectors in guestrooms shall be connected to the buildings fire alarm systems for the purpose of notifying the guestroom occupants and shall be annunciated by guestroom at a constantly attended location from which the fire alarm system is capable of being manually activated.

**907.2.9.1** Replace item 3. as follows:

3. The building contains more than 12 dwelling units or sleeping units.

**907.2.11** Replace as follows:

**907.2.11 Single- and Multiple-station Smoke Alarms.** Listed single- and multiple-station photoelectric type smoke alarms shall be installed in accordance with the provisions of this code and the household fire warning equipment provisions of NFPA 72. Section 907.2.8 shall not preclude the installation of a fully addressable fire alarm system where system detectors and alarm notification devices can perform the functions as required in section 907.2.11.

**907.2.15** Add exception as follows:

**Exception.** Buildings sprinklered throughout with automatic sprinklers

**907.2.24** Add subsection:

**907.2.24 Other Sleeping Areas.** An automatic smoke detection system shall be provided for all sleeping areas, and means of egress from sleeping areas in buildings not otherwise required to have smoke detectors by section 907.2.1 through 907.2.23 where any space is used for sleeping purpose.

**907.3.3** Replace as follows:

**907.3.3 Elevator Emergency Operation.** Automatic fire detectors installed for elevator emergency operation shall be installed in accordance with the provisions of 524 CMR 17.00: *Power Passenger and Freight Elevators (For Installations Made Prior to July 1, 1989)*, 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2004 and the Massachusetts Modifications of That Code* and NFPA 72.

**907.3.4** Replace as follows:

**907.3.4 Wiring.** The wiring to the auxiliary devices and equipment used to accomplish the above fire safety functions shall be monitored for integrity in accordance with 527 CMR 12.00: *Massachusetts Electrical Code (Amendments)* and NFPA 72.

**907.4.1** Delete exception 2. only.

**907.5.2.2.5** Add subsection:

**907.5.2.2.5 Evacuation.** Where the head of the fire department or his/her designee determines that partial or selective evacuation is not desired but rather total evacuation is required, then a distinctive signal in *lieu* of a voice alarm is permitted.

9.00: continued

**907.5.2.3** Add a second sentence as follows:

Also refer to 521 CMR 40.00: *Alarms* for visible alarm requirements in buildings, or portions thereof, open to the public.

**907.6.5** Replace as follows:

**907.6.5 Monitoring.** Fire alarm systems required by section 907 shall be monitored in accordance with section 903.4.1

**Exception.** Monitoring by a supervising station is not required for:

1. Single and multiple station smoke alarms.
2. Smoke detectors in Group I-3 Occupancies.
3. *Automatic sprinkler systems* and single- and multi-station smoke detectors in one- and two-family dwellings.
4. Smoke detectors in patient sleeping rooms in occupancies in Group I-2.

**909.2** Replace as follows:

**909.2 General Design Requirements.** Buildings, structures or parts thereof required by this code to have a smoke control system or systems shall have such systems designed in accordance with the applicable requirements of section 909 and the generally accepted and well-established principles of engineering relevant to the design. The *construction documents* shall include sufficient information and detail to adequately describe the elements of the design necessary for the proper implementation of the smoke control systems. These documents shall be accompanied by sufficient information and analysis to demonstrate compliance with these provisions.

An independent third party review is required for smoke control system designs incorporating performance analysis under section 909 (design fire analysis, rational analysis, timed egress analysis), or the smoke control methods of sections 909.6, 909.7, or 909.8 or other alternative design method selected by the *registered design professional*. The independent third party reviewer shall prepare a written report documenting the review, and submit it to the *registered design professional* and the building and fire officials. If all parties concur that the analyses are appropriate, the design may be approved pursuant to section 104.11.

**909.4.6.1** Add subsection:

**909.4.6.1 Exhaust Method Smoke Control.** When the exhaust method of section 909.8 is used, the rational analysis shall evaluate exposure of occupants exiting a space to smoke or tenability thresholds. Occupant exposure to smoke or tenability thresholds shall be determined by a timed egress analysis using a minimum duration of 1.5 times the calculated egress time. The smoke control system shall remain operational for the required duration.

**909.6** Replace as follows:

**909.6 Pressurization Method.** When approved by the fire official, the primary mechanical means of controlling smoke shall be by pressure differences across smoke barriers. Maintenance of a tenable environment is not required in the smoke control zone of fire origin.

**909.15** Replace as follows:

**909.15 Control Diagrams.** Identical control diagrams showing all devices in the system and identifying their location and function shall be maintained current and kept on file with the Fire Official and shall be kept on site adjacent to the fire alarm panel in a format and manner approved by the fire chief.

**909.18.8.3.1** Replace as follows:

**909.18.8.3.1 Report Filing.** A copy of the final report shall be filed with the fire code official and *building official* and an identical copy shall be maintained in an *approved* location at the building.

9.00: continued

**909.20.6.1.1** I Add subsection:

**909.20.6.1.1 Intake Duct Detection.** An in duct smoke detector shall be installed just downstream of the fresh air fan. Activation of this detector shall annunciate at the control panel and shall shut down the fan for that particular smoke proof enclosure.

**909.21** Add subsection:

**909.21 Maintenance.** Smoke control systems shall be maintained to ensure to a reasonable degree that the system is capable of controlling smoke for the duration required. The system shall be maintained in accordance with the manufacturer's instructions and sections 909.21.1 through 909.21.5.

**909.21.1 Schedule.** A routine maintenance and operational testing program shall be initiated immediately after the smoke control system has passed the acceptance tests. A written schedule for routine maintenance and operational testing shall be established.

**909.21.2 Written Record.** A written record of smoke control system testing and maintenance shall be maintained on the premises. The written record shall include the date of the maintenance, identification of servicing personnel, and notification of any unsatisfactory condition and the corrective action taken, including parts replaced.

**909.21.3 Testing.** Operational testing of the smoke control system shall include all equipment such as initiating devices, fans, dampers, controls, doors and windows.

**909.21.4 Dedicated Smoke Control Systems.** Dedicated smoke control systems shall be operated for each control sequence semiannually. The system shall also be tested under standby power conditions.

**909.21.5 Nondedicated Smoke Control Systems.** Dedicated smoke control systems shall be operated for each control sequence annually. The system shall also be tested under standby power conditions.

**912.6** Add subsection:

**912.6 Connections.** Fire department connections shall be such that attachment to any one water sprinkler connection will serve all sprinklers, and attachment to any one standpipe connection will serve all standpipes within the building.

**913.6** Add subsection:

**913.6 Second Power Source.** All electric driven fire pumps shall be provided with emergency power from an on-site emergency generator system set when the fire pump is installed as protection for a building or structure with any one of the following characteristics:

1. High-rise building
2. Use Group A with a total occupant load of more than 300 occupants.
3. Use Group E with a total occupant load of more than 300 occupants.
4. Use Group H
5. Use Group I having surgery or treatment areas.

**915.1** Replace as follows:

**915.1 General.** Emergency responder radio coverage shall be provided in all new buildings in accordance with sections 915.2 and 915.3.

**915.2** Add subsection:

**915.2 Emergency Responder Radio Coverage in Buildings.** All buildings shall have approved radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building. This section shall not require improvement of the existing public safety communication systems.

**Exceptions:**

1. Where approved by the fire official, a wired communication system in accordance with section 907.2.13.2 shall be permitted to be installed or maintained in *lieu* of an approved radio coverage system.

9.00: continued

2. Where it is determined by the fire official that the radio coverage system is not needed.

**915.3** Add subsection:

**915.3 Emergency Responder Radio Coverage in Buildings** shall be designed and installed in accordance with NFPA 72.

**916** Add section:

## **916 CARBON MONOXIDE PROTECTION**

**916.1 General.** Carbon monoxide protection shall be provided in accordance with 527 CMR 31.00: *Carbon Monoxide Alarms* and 248 CMR as listed in Chapter 35: *Referenced Standards*, in addition to this Code. Carbon monoxide alarms, carbon monoxide detectors and combination smoke/carbon monoxide alarms and combination smoke/carbon monoxide detectors described in sections 916.1.1 through 916.1.4 shall be installed and maintained in accordance with the provisions of this code, 527 CMR 31.00, 248 CMR, NFPA 72 and NFPA 720.

**916.1.1 Carbon Monoxide Alarms.** Single- or multiple-station carbon monoxide alarms shall be listed and labeled in accordance with ANSI/UL 2034.

**916.1.2 Carbon Monoxide Detectors.** Carbon monoxide detectors shall be listed and labeled in accordance with ANSI/UL 2075.

**916.1.3 Combination Smoke/Carbon Monoxide Alarms.** Combination smoke/carbon monoxide alarms shall be listed and labeled in accordance with ANSI/UL 217 and ANSI/UL 2034. The smoke alarm shall utilize photoelectric sensing technology.

**916.1.4 Combination Smoke/Carbon Monoxide Detectors.** Combination smoke/carbon monoxide detectors shall be listed and labeled in accordance with ANSI/UL 268 and ANSI/UL 2075. The smoke alarm shall utilize photoelectric sensing technology.

**916.2 Primary Power to CO Alarms/Detectors.** Required carbon monoxide alarms, carbon monoxide detectors, combination smoke/carbon monoxide alarms or combination smoke/carbon monoxide detectors shall receive their power by one of the following means:

1. Listed carbon monoxide alarms shall receive their primary power from the building wiring when such wiring is served from a commercial source and without a disconnecting switch other than those required for overcurrent protection. Listed carbon monoxide alarms that are only battery-powered, plug-in or plug-in with battery backup shall not be permitted in new construction.
2. Listed carbon monoxide detectors shall receive their power from the approved control panel. The approved control panel shall receive its primary power from the building wiring when such wiring is served from a commercial source and without a disconnecting switch other than those required for overcurrent protection.
3. Listed low-power radio frequency (wireless) detectors shall be permitted to be battery powered when the battery is electrically supervised and shall be capable of sending an alarm signal to the approved control panel for a minimum of seven days after sending the initial battery depletion signal.

**916.2.1 Secondary Power to CO Alarms/Detectors.** All CO alarms/detectors shall have secondary (standby power supplied from monitored batteries or other recognized sources of secondary power in accordance with NFPA 72. For fire alarm control units (panels), the panel battery can serve as the source of secondary electrical power. For wireless systems, the panel battery can serve as the source of secondary electrical power.

**916.3 Interconnection.** Where more than one listed carbon monoxide alarm or combination smoke/carbon monoxide alarm is required to be installed within a dwelling unit they shall be interconnected in such a manner that the activation of one carbon monoxide alarm or combination smoke/carbon monoxide detector shall activate the carbon monoxide audible notification devices throughout the individual dwelling unit by the detector or separate notification device.

9.00: continued

**916.4 Installation Requirements.** All carbon monoxide alarms, carbon monoxide detectors, combination smoke/carbon monoxide alarms or combination smoke/carbon monoxide detectors shall be UL 2034 listed or UL 2075 listed, as applicable, and installed in accordance with the provisions of this code, the manufacturer's instructions, the listing criteria, 527 CMR 12.00: *Massachusetts Electrical Code (Amendments)* and NFPA 720.

**916.5 Alarm Signal Precedence.** Carbon monoxide alarms/detectors shall be compatible with all interconnected fire detection devices and fire alarm signals shall have precedence over carbon monoxide alarm signals in accordance with the applicable requirements of NFPA 720.

**916.5.1 Notification Devices.** Where visual and audible notification are via separate lighting and sounding devices, such devices shall be compatible with the fire protection system and installed in accordance with the requirements of 527 CMR 12.00: *Massachusetts Electrical Code (Amendments)*.

**917** Add section:

### **917 PRIVATE UNDERGROUND FIRE MAINS AND YARD HYDRANTS**

**917.1 Private Underground Fire Mains and Yard Hydrants.** Fire hydrants and underground fire mains installed on private property shall be located and installed as approved by the head of the fire department. Hydrants shall conform to the standards of the administrative authority of the jurisdiction and the fire department. Hydrants shall not be installed on a water main less than six inches in diameter. Standards of construction shall be in accordance with NFPA 24 as listed in Chapter 35: *Referenced Standards*.

(PAGES 63 AND 64 ARE RESERVED FOR FUTURE USE.)