

1301:7-7-09 Fire protection systems.**(A) Section 901 General**

(1) 901.1 Scope. The provisions of this *rule* shall specify where fire protection systems are required and shall apply to the design, installation, inspection, operation, testing and maintenance of all fire protection systems. *The requirements in this rule for fire protection systems in structures regulated by the building code as listed in rule 1301:7-7-80 of the Administrative Code submitted for plan review in accordance with this paragraph are subject to and do not supersede or otherwise conflict with the requirements of paragraph (D)(2)(a)(104.2.1) of rule 1301:7-7-01 of the Administrative Code.*

(2) 901.2 Construction documents. *Notwithstanding the requirements of paragraph (D)(2)(a)(104.2.1) of rule 1301:7-7-01 of the Administrative Code, the fire code official shall have the authority to require construction documents and calculations for all fire protection systems and to require permits be obtained for the installation, rehabilitation or modification of any fire protection system. Construction documents for fire protection systems shall be submitted for review prior to system installation. At locations or in structures not regulated by the building code as listed in rule 1301:7-7-80 of the Administrative Code, the construction documents shall be reviewed and approved by the fire code official prior to system installation.*

(3) 901.3 Permits. Permits shall be required as set forth in *rule 1301:7-7-01 of the Administrative Code and as required by the building code as listed in rule 1301:7-7-80 of the Administrative Code.*

(4) 901.4 Installation. Fire protection systems shall be maintained in accordance with the original installation standards for that system. Required *fire protection* systems shall be extended, altered or augmented as necessary to maintain and continue protection where the building is altered, remodeled or added to. Alterations to fire protection systems shall be done in accordance with *the building code as listed in rule 1301:7-7-80 of the Administrative Code and applicable standards.*

(a) 901.4.1 Required fire protection systems. Fire protection systems required by this code or the *building code as listed in rule 1301:7-7-80 of the Administrative Code* shall be installed, repaired, operated, tested and maintained in accordance with this code. A fire protection system for which a design option, exception or reduction to the provisions of this code or the *building code as listed in rule 1301:7-7-80 of the Administrative Code* has been granted shall be considered a required system.

(b) 901.4.2 Nonrequired fire protection systems. A fire protection system or portion thereof not required by this code or the *building code as listed in rule 1301:7-7-80 of the Administrative Code* shall be allowed to be furnished for partial or complete protection provided such installed system meets the applicable requirements of this code and the *building code as listed in rule 1301:7-7-80 of the Administrative Code.*

(c) 901.4.3 Fire areas. Where buildings, or portions thereof, are divided into fire areas so as not to exceed the limits established for requiring a fire protection system in accordance with this *rule*, such fire areas shall be separated by fire barriers constructed in accordance with section 707 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code* or horizontal assemblies constructed in accordance with section 711 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*, or both, having a fire-resistance rating of not less than that determined in accordance with section 707.3.10 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code.*

(d) 901.4.4 Additional fire protection systems. In occupancies of a hazardous nature, where special hazards exist in addition to the normal hazards of the occupancy, or where the fire code official determines that access for fire apparatus is unduly difficult, the fire code official shall have the authority to require additional safeguards. Such safeguards include, but shall not be limited to, the following: automatic fire detection systems, fire alarm systems, automatic fire-extinguishing systems, standpipe systems, or portable or fixed extinguishers.

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Fire protection equipment required under this *paragraph* shall be installed in accordance with this code and the applicable referenced standards.

(e) 901.4.5 Appearance of equipment. Any device that has the physical appearance of life safety or fire protection equipment but that does not perform that life safety or fire protection function shall be prohibited.

(f) 901.4.6 Pump and riser room size. Where provided, fire pump rooms and automatic sprinkler system riser rooms shall be designed with adequate space for all equipment necessary for the installation, as defined by the manufacturer, with sufficient working space around the stationary equipment. Clearances around equipment to elements of permanent construction, including other installed equipment and appliances, shall be sufficient to allow inspection, service, repair or replacement without removing such elements of permanent construction or disabling the function of a required fire-resistance-rated assembly. Fire pump and automatic sprinkler system riser rooms shall be provided with a door(s) and an unobstructed passageway large enough to allow removal of the largest piece of equipment.

(5) 901.5 Installation acceptance testing. Fire detection and alarm systems, fire-extinguishing systems, fire hydrant systems, fire standpipe systems, fire pump systems, private fire service mains and all other fire protection systems and appurtenances thereto shall be subject to acceptance tests as contained in the installation standards and as approved by the fire code official in accordance with this code and the building official in accordance with section 901.5 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.

1. The fire code official shall be notified by the responsible person of any scheduled acceptance testing of a fire protection system not less than forty-eight hours prior to the occurrence of such acceptance test. Advanced notice of the test schedule shall be given to the building official in accordance with section 901.5 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.
2. When required by the fire code official all acceptance testing shall be conducted in the presence of the fire code official.
3. When required by the fire code official all acceptance testing shall be conducted in the presence of the person who installed the equipment or, if it is not possible for the actual installer to be present, the acceptance testing shall be conducted in the presence of another qualified representative of the company that installed the equipment.

(a) 901.5.1 Statement of compliance. Before requesting final inspection of the installation, where required by the fire code official, the installing contractor shall furnish a written statement to the fire code official that the subject fire protection system has been installed in accordance with plans approved by the building code official and has been tested in accordance with the manufacturer's specifications and the appropriate installation standard. Any deviations from the design standards shall be noted and copies of the approvals for such deviations shall be attached to the written statement.

(b) 901.5.2 Occupancy. It shall be unlawful to occupy any portion of a building or structure until the required fire detection, alarm and suppression systems have been tested, inspected and approved by the fire code official in accordance with this code and the building official in accordance with section 901.5 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.

(6) 901.6 Inspection, testing and maintenance. Fire detection, alarm and extinguishing systems, mechanical smoke exhaust systems, and smoke and heat vents shall be maintained in an operative condition at all times, and shall be replaced or repaired where defective. Nonrequired fire protection systems and equipment shall be inspected, tested and maintained or removed. Any discontinuance or removal of nonrequired fire protection equipment shall be approved by the fire code official. Such approval shall be conditioned upon receipt of verification of building official determination that such fire protection equipment is nonrequired.

(a) **901.6.1 Standards.** Fire protection systems shall be inspected, tested and maintained in accordance with the referenced standards listed in Table 901.6.1 *of this rule*.

Table 901.6.1
Fire protection system maintenance standards

<u>System</u>	<u>Standard</u>
<u>Portable fire extinguishers</u>	<u>NFPA 10 as listed in rule 1301:7-7-80 of the Administrative Code</u>
<u>Carbon dioxide fire-extinguishing systems</u>	<u>NFPA 12 as listed in rule 1301:7-7-80 of the Administrative Code</u>
<u>Halon 1301 fire-extinguishing systems</u>	<u>NFPA 12A as listed in rule 1301:7-7-80 of the Administrative Code</u>
<u>Dry-chemical extinguishing systems</u>	<u>NFPA 17 as listed in rule 1301:7-7-80 of the Administrative Code</u>
<u>Wet-chemical extinguishing systems</u>	<u>NFPA 17A as listed in rule 1301:7-7-80 of the Administrative Code</u>
<u>Water-based fire protection systems</u>	<u>NFPA 25 as listed in rule 1301:7-7-80 of the Administrative Code</u>
<u>Fire alarm systems</u>	<u>NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code</u>
<u>Smoke and heat vents</u>	<u>NFPA 204 as listed in rule 1301:7-7-80 of the Administrative Code</u>
<u>Water-mist systems</u>	<u>NFPA 750 as listed in rule 1301:7-7-80 of the Administrative Code</u>
<u>Clean-agent extinguishing systems</u>	<u>NFPA 2001 as listed in rule 1301:7-7-80 of the Administrative Code</u>

(b) **901.6.2 Records.** Records of all system inspections, tests and maintenance required by the referenced standards shall be maintained.

(i) **901.6.2.1 Records information.** Initial records shall include the name of the installation contractor, type of components installed, the manufacturer of the components, location and number of components installed per floor. Records shall also include the manufacturer's operation and maintenance instruction manuals. Such records shall be maintained for the life of the installation. *Acceptance testing records (original documents) shall be retained for the life of the system.*

(c) **901.6.3 Annual inspection tag for fire protection systems.** *An inspection tag shall be attached to each fire protection system near the main control valve, main panel, or other such appropriate and visible location as determined by the fire code official. The annual inspection tag shall contain the following information:*

1. *The individual performing the work and the state fire marshal installer certification number(s) (when applicable);*
2. *Date of test;*
3. *Results of inspection and test;*
4. *Deficiencies or impairments noted (yes or no).*

(i) **901.6.3.1** *When a sprinkler or standpipe system is found impaired or out of service, the tag requirement shall include an impairment tag in accordance with NFPA 25 as listed in rule 1301:7-7-80 of the Administrative Code.*

(7) **901.7 Systems out of service.** Where a required fire protection system is out of service, the fire department and the fire code official shall be notified immediately and, where required by the fire code official, the building shall be either evacuated or an approved fire watch shall be provided for all occupants left unprotected by the shutdown until the fire protection system has been returned to service.

Where utilized, fire watches shall be provided with not less than one approved means for notification of the fire department and their only duty shall be to perform constant patrols of the protected premises and keep watch for fires.

(a) **901.7.1 Impairment coordinator.** The building owner shall assign an impairment coordinator to comply with the requirements of this *paragraph*. In the absence of a specific designee, the owner shall be considered the impairment coordinator.

(b) **901.7.2 Tag required.** A tag shall be used to indicate that a system, or portion thereof, has been removed from service.

(c) **901.7.3 Placement of tag.** The tag shall be posted at each fire department connection, system control valve, fire alarm control unit, fire alarm annunciator and fire command center, indicating which system, or part thereof, has been removed from service. The fire code official shall specify where the tag is to be placed.

(d) **901.7.4 Preplanned impairment programs.** Preplanned impairments shall be authorized by the impairment coordinator. Before authorization is given, a designated individual shall be responsible for verifying that all of the following procedures have been implemented:

- (i) The extent and expected duration of the impairment have been determined.
- (ii) The areas or buildings involved have been inspected and the increased risks determined.
- (iii) Recommendations have been submitted to management or building owner/manager.
- (iv) The fire department has been notified.
- (v) The insurance carrier, the alarm company, the building owner/manager and other authorities having jurisdiction have been notified.
- (vi) The supervisors in the areas to be affected have been notified.
- (vii) A tag impairment system has been implemented.
- (viii) Necessary tools and materials have been assembled on the impairment site.

(e) **901.7.5 Emergency impairments.** Where unplanned impairments occur, appropriate emergency action shall be taken to minimize potential injury and damage. The impairment coordinator shall implement the steps outlined in *paragraph (A)(7)(d)(901.7.4) of this rule*.

(f) **901.7.6 Restoring systems to service.** When impaired equipment is restored to normal working order, the impairment coordinator shall verify that all of the following procedures have been implemented:

- (i) Necessary inspections and tests have been conducted to verify that affected systems are operational.
- (ii) Supervisors have been advised that protection is restored.
- (iii) The fire department has been advised that protection is restored.
- (iv) The building owner/manager, insurance carrier, alarm company and other involved parties have been advised that protection is restored.
- (v) The impairment tag has been removed.

(8) **901.8 Removal of or tampering with equipment.** It shall be unlawful for any person to remove, tamper with or otherwise disturb any fire hydrant, fire detection and alarm system, fire suppression system or other fire

appliance required by this code except for the purpose of extinguishing fire, training purposes, recharging or making necessary repairs or where approved by the fire code official.

(a) 901.8.1 Removal of or tampering with appurtenances. Locks, gates, doors, barricades, chains, enclosures, signs, tags or seals that have been installed by or at the direction of the fire code official shall not be removed, unlocked, destroyed, tampered with or otherwise vandalized in any manner.

(b) 901.8.2 Removal of existing occupant-use hose lines. The fire code official is authorized to permit the removal of existing occupant-use hoses lines where all of the following conditions exist:

- (i) Installation is not required by this code or the building code as listed in rule 1301:7-7-80 of the Administrative Code.
- (ii) The hose line would not be utilized by trained personnel or the fire department.
- (iii) The remaining outlets are compatible with local fire department fittings.

(c) 901.8.3 Notification of termination of supervisory services. The responsible person shall notify the local fire code official of the termination of any supervisory service within twenty-four (24) hours of such termination.

(9) 901.9 Termination of monitoring service. For fire alarm systems required to be monitored by this code, notice shall be made to the fire code official whenever alarm monitoring services are terminated. Notice shall be made in writing, to the fire code official by the monitoring service provider being terminated.

(10) 901.10 Recall of fire protection components. Any fire protection system component regulated by this code that is the subject of a voluntary or mandatory recall under federal law shall be replaced with approved, listed components in compliance with the referenced standards of this code. The fire code official shall be notified in writing by the building owner when the recalled component parts have been replaced.

(B) Section 902 Definitions

(1) 902.1 Definitions. The following terms are defined in rule 1301:7-7-02 of the Administrative Code.

“Alarm notification appliance.”

“Alarm signal.”

“Alarm verification feature.”

“Annunciator.”

“Audible alarm notification appliance.”

“Automatic.”

“Automatic fire-extinguishing system.”

“Automatic smoke detection system.”

“Automatic sprinkler system.”

“Automatic water mist system.”

"Average ambient sound level."

"Carbon dioxide extinguishing system."

"Clean agent."

"Commercial motor vehicle."

"Constantly attended location."

"Deluge system."

"Detector, heat."

"Dry-chemical extinguishing agent."

"Elevator group."

"Emergency alarm system."

"Emergency voice/alarm communications."

"Fire alarm box, manual."

"Fire alarm control unit."

"Fire alarm signal."

"Fire alarm system."

"Fire area."

"Fire detector, automatic."

"Fire protection system."

"Fire safety functions."

"Fixed base operator (FBO)."

"Foam-extinguishing system."

"Halogenated extinguishing system."

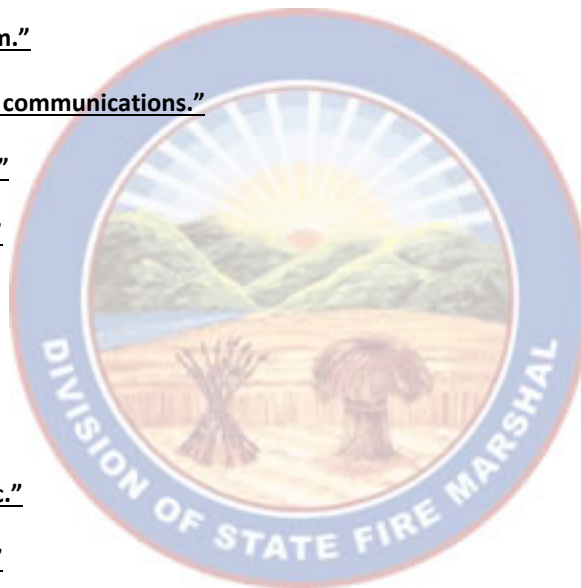
"Impairment coordinator."

"Initiating device."

"Manual fire alarm box."

"Multiple-station alarm device."

"Multiple-station smoke alarm."



"Notification zone."

"Nuisance alarm."

"Private garage."

"Record drawings."

"Single-station smoke alarm."

"Sleeping unit."

"Smoke alarm."

"Smoke detector."

"Standpipe system, classes of."

"Class I system."

"Class II system."

"Class III system."

"Standpipes, types of."

"Automatic dry."

"Automatic wet."

"Manual dry."

"Manual wet."

"Semiautomatic dry."

"Supervising station."

"Supervisory service."

"Supervisory signal."

"Supervisory signal-initiating device."

"Tires, bulk storage of."

"Transient aircraft."

"Trouble signal."

"Visible alarm notification appliance."



“Wet-chemical extinguishing agent.”

“Wireless protection system.”

“Zone.”

“Zone, notification.”

(C) Section 903 Automatic sprinkler systems

(1) 903.1 General. Automatic sprinkler systems shall comply with this *paragraph*.

(a) 903.1.1 Alternative protection. Alternative automatic fire-extinguishing systems complying with *paragraph (D)(904) of this rule may be installed in lieu of automatic sprinkler protection where recognized by the applicable standard and approved by the fire code official pursuant to paragraph (A)(1)(901.1) of this rule. At locations or in structures not regulated by the building code as listed in rule 1301:7-7-80 of the Administrative Code, the alternative automatic fire-extinguishing system shall be approved by the fire code official prior to system installation.*

(2) 903.2 Where required. Approved automatic sprinkler systems in new buildings and structures shall be provided in the locations *where required by the building code as listed in rule 1301:7-7-80 of the Administrative Code and as described in this paragraph. The requirements for automatic sprinkler systems in new buildings contained in this rule are subject to and do not supersede or otherwise conflict with the requirements of paragraph (D)(2)(a)(104.2.1) of rule 1301:7-7-01 of the Administrative Code.*

Exception: 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 system in accordance with *paragraph (G)(2)(907.2) of this rule and are separated from the remainder of the building by not less than 1-hour fire barriers constructed in accordance with section 707 of the building code as listed in rule 1301:7-7-80 of the Administrative Code or not less than 2-hour horizontal assemblies constructed in accordance with section 711 of the building code as listed in rule 1301:7-7-80 of the Administrative Code, or both.*

(a) 903.2.1 Group A. An automatic sprinkler system shall be provided throughout buildings and portions thereof used as Group A occupancies as provided in this *paragraph*. For Group A-1, A-2, A-3 and A-4 occupancies, the automatic sprinkler system shall be provided throughout the story where the fire area containing the Group A-1, A-2, A-3 or A-4 occupancy is located, and throughout all stories from the Group A occupancy to, and including, the levels of exit discharge serving the Group A occupancy. For Group A-5 occupancies, the automatic sprinkler system shall be provided in the spaces indicated in *paragraph (C)(2)(a)(iv)(903.2.1.5) of this rule.*

(i) 903.2.1.1 Group A-1. An automatic sprinkler system shall be provided for fire areas containing Group A-1 occupancies and intervening floors of the building where one of the following conditions exists:

- (a)** The fire area exceeds 12,000 square feet (1115 m²).
- (b)** The fire area has an occupant load of 300 or more.
- (c)** The fire area is located on a floor other than a level of exit discharge serving such occupancies.
- (d)** The fire area contains a multi-theater complex.

(ii) 903.2.1.2 Group A-2. An automatic sprinkler system shall be provided for fire areas containing Group A-2 occupancies and intervening floors of the building where one of the following conditions exists:

- (a) The fire area exceeds 5,000 square feet (464 m²).
- (b) The fire area has an occupant load of 100 or more.
- (c) The fire area is located on a floor other than a level of exit discharge serving such occupancies.

(iii) 903.2.1.3 Group A-3. An automatic sprinkler system shall be provided for fire areas containing Group A-3 occupancies and intervening floors of the building where one of the following conditions exists:

- (a) The fire area exceeds 12,000 square feet (1115 m²).

Exception: Fire areas used exclusively for religious worship services with fixed seating.

- (b) The fire area has an occupant load of 300 or more.

Exceptions:

1. Fire areas used primarily for worship with fixed seating.
2. Fire areas without fixed seating not used for exhibition or display.

- (c) The fire area is located on a floor other than a level of exit discharge serving such occupancies.

Exception: Areas used exclusively as participant sports areas where the main floor area is located at the same level as the level of exit discharge of the main entrance and exit.

(iv) 903.2.1.4 Group A-4. An automatic sprinkler system shall be provided for fire areas containing Group A-4 occupancies and intervening floors of the building where one of the following conditions exists:

- (a) The fire area exceeds 12,000 square feet (1115 m²).
- (b) The fire area has an occupant load of 300 or more.
- (c) The fire area is located on a floor other than a level of exit discharge serving such occupancies.

Exception: Areas used exclusively as participant sport areas where the main floor area is located at the same level as the level of exit discharge of the main entrance and exit.

(v) 903.2.1.5 Group A-5. An automatic sprinkler system shall be provided for Group A-5 occupancies in the following areas: concession stands, retail areas, press boxes and other accessory use areas in excess of 1,000 square feet (93 m²).

(vi) 903.2.1.6 Assembly occupancies on roofs. Where an occupied roof has an assembly occupancy with an occupant load exceeding 100 for Group A-2 and 300 for other Group A occupancies, all floors between the occupied roof and the level of exit discharge shall be equipped with an automatic sprinkler system in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) or (C)(3)(a)(ii)(903.3.1.2) of this rule.

Exception: Open parking garages of Type I or Type II construction.

(vii) 903.2.1.7 Multiple fire areas. An automatic sprinkler system shall be provided where multiple fire areas of Group A-1, A-2, A-3 or A-4 occupancies share exit or exit access components and the combined occupant load of these fire areas is 300 or more.

(b) 903.2.2 Ambulatory care facilities. An automatic sprinkler system shall be installed throughout the entire floor containing an ambulatory care facility where either of the following conditions exist at any time:

- (i) Four or more care recipients are incapable of self-preservation, whether rendered incapable by staff or staff has accepted responsibility for care recipients already incapable.
- (ii) One or more care recipients that are incapable of self-preservation are located at other than the level of exit discharge serving such facility.

In buildings where ambulatory care is provided on levels other than the level of exit discharge, an automatic sprinkler system shall be installed throughout the entire floor where such care is provided as well as all floors below, and all floors between the level of ambulatory care and the nearest level of exit discharge, including the level of exit discharge.

(c) 903.2.3 Group E. An automatic sprinkler system shall be provided for Group E occupancies as follows:

- (i) Throughout all Group E fire areas greater than 20,000 square feet (1858 m²) in area.
- (ii) Throughout every portion of educational buildings below the lowest level of exit discharge serving that portion of the building.

Exception: An automatic sprinkler system is not required in any area below the lowest level of exit discharge serving that area where every classroom throughout the building has not fewer than one exterior exit door at ground level.

- (iii) Throughout every portion of Group E day care facilities – 2½ years or less of age.

Exception: An automatic sprinkler system is not required in day care facilities that provide care for more than five but no more than 100 children 2½ years or less of age and the day care facilities are at the level of exit discharge and where every room where care is provided has no fewer than one exterior exit door for which the exit access and exit discharge do not require the traversing of stairs.

(d) 903.2.4 Group F-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group F-1 occupancy where one of the following conditions exists:

1. A Group F-1 fire area exceeds 12,000 square feet (1115 m²).
2. A Group F-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. A Group F-1 occupancy used for the manufacture of upholstered furniture or mattresses exceeds 2,500 square feet (232 m²).

(i) 903.2.4.1 Woodworking operations. An automatic sprinkler system shall be provided throughout all Group F-1 occupancy fire areas that contain woodworking operations in excess of 2,500 square feet in area (232 m²) that generate finely divided combustible waste or use finely divided combustible materials.

(e) 903.2.5 Group H. Automatic sprinkler systems shall be provided in high-hazard occupancies as required in paragraphs (C)(2)(e)(i)(903.2.5.1) to (C)(2)(e)(iii)(903.2.5.3) of this rule.

(i) **903.2.5.1 General.** An automatic sprinkler system shall be installed in Group H occupancies.

(ii) **903.2.5.2 Group H-5 occupancies.** An automatic sprinkler system shall be installed throughout buildings containing Group H-5 occupancies. The design of the sprinkler system shall be not less than that required under the *building code as listed in rule 1301:7-7-80 of the Administrative Code* for the occupancy hazard classifications in accordance with Table 903.2.5.2 of this rule.

Where the design area of the sprinkler system consists of a corridor protected by one row of sprinklers, the maximum number of sprinklers required to be calculated is 13.

Table 903.2.5.2
Group H-5 sprinkler design criteria

<u>Location</u>	<u>Occupancy hazard classification</u>
<u>Fabrication areas</u>	<u>Ordinary hazard group 2</u>
<u>Service corridors</u>	<u>Ordinary hazard group 2</u>
<u>Storage rooms without dispensing</u>	<u>Ordinary hazard group 2</u>
<u>Storage rooms with dispensing</u>	<u>Extra hazard group 2</u>
<u>Corridors</u>	<u>Ordinary hazard group 2</u>

(iii) **903.2.5.3 Pyroxylin plastics.** An automatic sprinkler system 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).

(f) **903.2.6 Group I.** An automatic sprinkler system shall be provided throughout buildings with a Group I fire area.

Exceptions:

1. An automatic sprinkler system installed in accordance with *paragraph (C)(3)(a)(ii)(903.3.1.2) of this rule* shall be permitted in Group I-1 Condition 1 facilities.
2. An automatic sprinkler system is not required where Group I-4 day care facilities are at the level of exit discharge and where every room where care is provided has not fewer than one exterior exit door.
3. In buildings where Group I-4 day care is provided on levels other than the level of exit discharge, an automatic sprinkler system in accordance with *paragraph (C)(3)(a)(i)(903.3.1.1) of this rule* shall be installed on the entire floor where care is provided, all floors between the level of care and the level of exit discharge and all floors below the level of exit discharge other than areas classified as an open parking garage.
4. An automatic sprinkler system is not required in day care facilities that provide care for more than five but no more than 100 children 2½ years or less of age and the day care facilities are at the level of exit discharge and where every room where care is provided has no fewer than one exterior exit door for which the exit access and exit discharge do not require the traversing of stairs.

(g) **903.2.7 Group M.** An automatic sprinkler system shall be provided throughout buildings containing a Group M occupancy where one of the following conditions exists:

1. A Group M fire area exceeds 12,000 square feet (1115m²).
2. A Group M fire area is located more than three stories above grade plane.

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3. The combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. A Group M occupancy used for the display and sale of upholstered furniture or mattresses exceeds 5,000 square feet (464 m²).

(i) **903.2.7.1 High-piled storage.** An automatic sprinkler system shall be provided as required in rule 1301:7-7-32 of the Administrative Code in all buildings of Group M where storage of merchandise is in high-piled or rack storage arrays.

(h) **903.2.8 Group R.** An automatic sprinkler system installed in accordance with paragraph (C)(3)(903.3) of this rule shall be provided throughout all buildings with a Group R fire area.

Exception: Group R-2. An automatic sprinkler system is not required in buildings of Group R-2 permitted to have a single exit per section 1006.3.2 of the building code as listed in rule 1301:7-7-80 of the Administrative Code where:

1. The building is not used as an "SRO" occupancy as defined in rule 1301:7-7-02 of the Administrative Code, and
2. The exit is constructed as an exterior stair per section 1027 of the building code as listed in rule 1301:7-7-80 of the Administrative Code, and
3. The dwelling units egress directly into an exit, and,
4. Two-hour fire barriers divide the building into fire areas with a maximum of two dwelling units per floor and not more than six dwelling units per fire area, and
5. All dwelling units in the fire area must have separations as required by section 708.1 of the building code as listed in rule 1301:7-7-80 of the Administrative Code for dwelling units, and
6. The building is limited to a basement and two stories above grade plane, and
7. The building contains no more than four dwelling units per floor and no more than twelve dwelling units per building.

(i) **903.2.8.1 Group R-3.** An automatic sprinkler system installed in accordance with paragraph (C)(3)(a)(iii)(903.3.1.3) of this rule shall be permitted in Group R-3 occupancies.

(ii) **[F] 903.2.8.2 Group R-4 Condition 1.** An automatic sprinkler system installed in accordance with paragraph (C)(3)(a)(iii)(903.3.1.3) of this rule shall be permitted in Group R-4 Condition 1 occupancies.

(iii) **[F] 903.2.8.3 Group R-4 Condition 2.** An automatic sprinkler system installed in accordance with paragraph (C)(3)(a)(ii)(903.3.1.2) of this rule shall be permitted in Group R-4 Condition 2 occupancies. Attics shall be protected in accordance with paragraph (C)(2)(g)(iii)(a)(903.2.8.3.1) or (C)(2)(g)(iii)(b)(903.2.8.3.2) of this rule.

(a) **[F] 903.2.8.3.1 Attics used for living purposes, storage or fuel-fired equipment.** Attics used for living purposes, storage or fuel-fired equipment shall be protected throughout with an automatic sprinkler system installed in accordance with paragraph (C)(3)(a)(ii)(903.3.1.2) of this rule.

(b) [F] 903.2.8.3.2 Attics not used for living purposes, storage or fuel-fired equipment. Attics not used for living purposes, storage or fuel-fired equipment shall be protected in accordance with one of the following:

(i) Attics protected throughout by a heat detector system arranged to activate the building fire alarm system in accordance with paragraph (G)(2)(i)(907.2.10) of this rule.

(ii) Attics constructed of noncombustible materials.

(iii) Attics constructed of fire-retardant-treated wood framing complying with section 2303.2 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.

(iv) The automatic sprinkler system shall be extended to provide protection throughout the attic space.

(iv) 903.2.8.4 Care facilities. An automatic sprinkler system installed in accordance with paragraph (C)(3)(a)(iii)(903.3.1.3) of this rule shall be permitted in care facilities with five or fewer individuals in a single-family dwelling.

(i) 903.2.9 Group S-1. An automatic sprinkler system shall be provided throughout all buildings containing a Group S-1 occupancy where one of the following conditions exists:

1. A Group S-1 fire area exceeds 12,000 square feet (1115 m²).
2. A Group S-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 24,000 square feet (2230 m²).
4. A Group S-1 fire area used for the storage of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m²).
5. A Group S-1 occupancy used for the storage of upholstered furniture or mattresses exceeds 2,500 square feet (232 m²).

(i) 903.2.9.1 Repair garages. An automatic sprinkler system shall be provided throughout all buildings used as repair garages in accordance with section 406.8 of the building code as listed in rule 1301:7-7-80 of the Administrative Code, as shown:

- (a) Buildings having two or more stories above grade plane, including basements, with a fire area containing a repair garage exceeding 10,000 square feet (929 m²).
- (b) Buildings no more than one story above grade plane, with a fire area containing a repair garage exceeding 12,000 square feet (1115 m²).
- (c) Buildings with repair garages servicing vehicles parked in basements.
- (d) A Group S-1 fire area used for the repair of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m²).

(ii) 903.2.9.2 Bulk storage of tires. Buildings and structures where the area for the storage of tires exceeds 20,000 cubic feet (566 m³) shall be equipped throughout with an automatic sprinkler system in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule.

(j) **903.2.10 Group S-2 enclosed parking garages.** An automatic sprinkler system shall be provided throughout buildings classified as enclosed parking garages in accordance with section 406.6 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code* where either of the following conditions exists.

1. Where the fire area of the enclosed parking garage exceeds 12,000 square feet (1115 m²).
2. Where the enclosed parking garage is located beneath other groups.

Exception: Enclosed parking garages located beneath Group R-3 occupancies.

(i) **903.2.10.1 Commercial parking garages.** An automatic sprinkler system shall be provided throughout buildings used for storage of commercial motor vehicles where the fire area exceeds 5,000 square feet (464 m²).

(k) **903.2.11 Specific buildings areas and hazards.** In all occupancies other than Group U, an automatic sprinkler system shall be installed for building design or hazards in the locations set forth in *paragraphs (C)(2)(k)(i)(903.2.11.1) to (C)(2)(k)(vi)(903.2.11.6) of this rule.*

(i) **903.2.11.1 Stories without openings.** An automatic sprinkler system shall be installed throughout all stories, including basements, of all buildings where the floor area exceeds 1,500 square feet (139.4 m²) and where there is not provided not fewer than one of the following types of exterior wall openings:

1. Openings below grade that lead directly to ground level by an exterior stairway complying with *paragraph (K)(1011) of rule 1301:7-7-10 of the Administrative Code* or an outside ramp complying with *paragraph (L)(1012) of rule 1301:7-7-10 of the Administrative Code*. Openings shall be located in each 50 linear feet (15 240 mm), or fraction thereof, of exterior wall in the story on at least one side. The required openings shall be distributed such that the lineal distance between adjacent openings does not exceed 50 feet (15 240 mm).
2. Openings entirely above the adjoining ground level totaling not less than 20 square feet (1.86 m²) in each 50 linear feet (15 240 mm), or fraction thereof, of exterior wall in the story on at least one side. The required openings shall be distributed such that the lineal distance between adjacent openings does not exceed 50 feet (15 240 mm). The height of the bottom of the clear opening shall not exceed 44 inches (1118 mm) measured from the floor.

(a) **903.2.11.1.1 Opening dimensions and access.** Openings shall have a minimum dimension of not less than 30 inches (762 mm). Such openings shall be accessible to the fire department from the exterior and shall not be obstructed in a manner that fire-fighting or rescue cannot be accomplished from the exterior.

(b) **903.2.11.1.2 Openings on one side only.** Where openings in a story are provided on only one side and the opposite wall of such story is more than 75 feet (22 860 mm) from such openings, the story shall be equipped throughout with an approved automatic sprinkler system or openings as specified above shall be provided on not fewer than two sides of the story.

(c) **903.2.11.1.3 Basements.** Where any portion of a basement is located more than 75 feet (22 860 mm) from openings required by *paragraph (C)(2)(k)(i)(903.2.11.1) of this rule*, the basement shall be equipped throughout with an approved automatic sprinkler system.

(ii) **903.2.11.2 Rubbish and linen chutes.** An automatic sprinkler system shall be installed at the top of rubbish and linen chutes and in their terminal rooms. Chutes shall have additional sprinkler heads installed at alternate floors and at the lowest intake. Where a rubbish chute extends through a building more than one floor below the lowest intake, the extension shall have sprinklers installed that are recessed from the drop area of the chute and protected from freezing in accordance with *paragraph (C)(3)(a)(i)(903.3.1.1) of this rule.*

Such sprinklers shall be installed at alternate floors beginning with the second level below the last intake and ending with the floor above the discharge. Chute sprinklers shall be accessible for servicing.

(iii) 903.2.11.3 Buildings 55 feet or more in height. An automatic sprinkler system shall be installed throughout buildings that have one or more stories with an occupant load of 30 or more located 55 feet (16 764 mm) or more above the lowest level of fire department vehicle access, measured to the finished floor.

Exceptions:

1. Open parking structures.
2. Occupancies in Group F-2.

(iv) 903.2.11.4 Ducts conveying hazardous exhausts. Where required by the *mechanical code as listed in rule 1301:7-7-80 of the Administrative Code*, automatic sprinklers shall be provided in ducts conveying hazardous exhaust, flammable or combustible materials.

Exception: Ducts where the largest cross-sectional diameter of the duct is less than 10 inches (254 mm).

(v) 903.2.11.5 Commercial cooking operations. An automatic sprinkler system shall be installed in commercial kitchen exhaust hood and duct systems where an automatic sprinkler system is used to comply with paragraph (D)(904) of this rule.

(vi) 903.2.11.6 Other required suppression systems. In addition to the requirements of paragraph (C)(2)(903.2) of this rule, the provisions indicated in Table 903.2.11.6 of this rule require the installation of a fire suppression system for certain buildings and areas.

Table 903.2.11.6
Additional required fire-extinguishing systems

<u>Section</u>	<u>Subject</u>
<u>914.2.1</u>	<u>Covered and open mall buildings</u>
<u>914.3.1</u>	<u>High rise buildings</u>
<u>914.4.1</u>	<u>Atriums</u>
<u>914.5.1</u>	<u>Underground structures</u>
<u>914.6.1</u>	<u>Stages</u>
<u>914.7.1</u>	<u>Special amusement buildings</u>
<u>914.8.2</u>	<u>Airport traffic control towers</u>
<u>914.8.3, 914.8.6</u>	<u>Aircraft hangars</u>
<u>914.9</u>	<u>Flammable finishes</u>
<u>914.10</u>	<u>Drying rooms</u>
<u>914.11.1</u>	<u>Ambulatory care facilities</u>
<u>1029.6.2.3</u>	<u>Smoke-protected assembly seating</u>
<u>1103.5.1</u>	<u>Pyroxylin plastic storage in existing buildings</u>
<u>1103.5.2</u>	<u>Existing Group I-2 occupancies</u>
<u>1103.5.3</u>	<u>Existing Group I-2 Condition 2 occupancies</u>
<u>1103.5.4</u>	<u>Pyroxylin plastics</u>
<u>2108.2</u>	<u>Dry cleaning plants</u>
<u>2108.3</u>	<u>Dry cleaning machines</u>
<u>2309.3.2.6.2</u>	<u>Hydrogen motor fuel-dispensing area canopies</u>
<u>2404.2</u>	<u>Spray finishing in Group A, E, I or R</u>
<u>2404.4</u>	<u>Spray booths and spray rooms</u>

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<u>2405.2</u>	<u>Dip-tank rooms in Group A, I or R</u>
<u>2405.4.1</u>	<u>Dip tanks</u>
<u>2405.9.4</u>	<u>Hardening and tempering tanks</u>
<u>2703.10</u>	<u>HPM facilities</u>
<u>2703.10.1.1</u>	<u>HPM work station exhaust</u>
<u>2703.10.2</u>	<u>HPM gas cabinets and exhausted enclosures</u>
<u>2703.10.3</u>	<u>HPM exit access corridor</u>
<u>2703.10.4</u>	<u>HPM exhaust ducts</u>
<u>2703.10.4.1</u>	<u>HPM noncombustible ducts</u>
<u>2703.10.4.2</u>	<u>HPM combustible ducts</u>
<u>2807.3</u>	<u>Lumber production conveyor enclosures</u>
<u>2808.7</u>	<u>Recycling facility conveyor enclosures</u>
<u>3006.1</u>	<u>Class A and B ovens</u>
<u>3006.2</u>	<u>Class C and D ovens</u>
<u>Table 3206.2</u>	<u>Storage fire protection</u>
<u>3206.4</u>	<u>Storage</u>
<u>3704.5</u>	<u>Storage of more than 1,000 cubic feet of loose combustible fibers</u>
<u>5003.8.4.1</u>	<u>Gas rooms</u>
<u>5003.8.5.3</u>	<u>Exhausted enclosures</u>
<u>5004.5</u>	<u>Indoor storage of hazardous materials</u>
<u>5005.1.8</u>	<u>Indoor dispensing of hazardous materials</u>
<u>5104.4.1</u>	<u>Aerosol warehouses</u>
<u>5106.3.2</u>	<u>Aerosol display and merchandising areas</u>
<u>5306.2.1</u>	<u>Exterior medical gas storage room</u>
<u>5306.2.2</u>	<u>Interior medical gas storage room</u>
<u>5306.2.3</u>	<u>Medical gas storage cabinet</u>
<u>5606.5.2.1</u>	<u>Storage of smokeless propellant</u>
<u>5606.5.2.3</u>	<u>Storage of small arms primers</u>
<u>5704.3.7.5.1</u>	<u>Flammable and combustible liquid storage rooms</u>
<u>5704.3.8.4</u>	<u>Flammable and combustible liquid storage warehouses</u>
<u>5705.3.7.3</u>	<u>Flammable and combustible liquid Group H-2 or H-3 areas</u>
<u>6004.1.2</u>	<u>Gas cabinets for highly toxic and toxic gas</u>
<u>6004.1.3</u>	<u>Exhausted enclosures for highly toxic and toxic gas</u>
<u>6004.2.2.6</u>	<u>Gas rooms for highly toxic and toxic gas</u>
<u>6004.3.3</u>	<u>Outdoor storage for highly toxic and toxic gas</u>
<u>6504.1.1</u>	<u>Pyroxylin plastic storage cabinets</u>
<u>6504.1.3</u>	<u>Pyroxylin plastic storage vaults</u>
<u>6504.2</u>	<u>Pyroxylin plastic storage and manufacturing</u>
<u>The building code as listed in rule 1301:7-7-80 of the Administrative Code</u>	<u>Sprinkler system requirements as set forth in section 903.2.11.6 of the building code as listed in rule 1301:7-7-80 of the Administrative Code</u>

For SI: 1 cubic foot = 0.023 m³.

(l) **903.2.12 During construction.** Automatic sprinkler systems required during construction, alteration and demolition operations shall be provided in accordance with *paragraph (M)(3313) of rule 1301:7-7-33 of the Administrative Code.*

(3) **903.3 Installation requirements.** Automatic sprinkler systems shall be designed and installed in accordance with *paragraphs (C)(3)(a)(903.3.1) to (C)(3)(h)(903.3.8) of this rule.*

Note: for copyright claim information, please see the notice on the last page of this rule.

(a) **903.3.1 Standards.** Sprinkler systems shall be designed and installed in accordance with *paragraph (C)(3)(a)(i)(903.3.1.1) of this rule*, unless otherwise permitted by *paragraphs (C)(3)(a)(ii)(903.3.1.2) and (C)(3)(a)(iii)(903.3.1.3) of this rule* and other rules of this code, as applicable.

(i) **903.3.1.1 NFPA 13 sprinkler systems.** Where the provisions of this code require that a building or portion thereof be equipped throughout with an automatic sprinkler system in accordance with this *paragraph*, sprinklers shall be installed throughout in accordance with NFPA 13 *as listed in rule 1301:7-7-80 of the Administrative Code* except as provided in *paragraph (C)(3)(a)(i)(a)(903.3.1.1.1) and (C)(3)(a)(i)(b)(903.3.1.1.2) of this rule*.

(a) **903.3.1.1.1 Exempt locations.** 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 in accordance with *paragraph (G)(2)(907.2) of this rule* that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from a room merely because it is damp, of fire-resistance-rated construction or contains electrical equipment.

- (i) A room where the application of water, or flame and water, constitutes a serious life or fire hazard.
- (ii) A room or space where sprinklers are considered undesirable because of the nature of the contents, where approved by the fire code official *pursuant to paragraph (A)(1)(901.1) of this rule*. At locations or in structures not regulated by the building code as listed in rule 1301:7-7-80 of the Administrative Code, the exempt location shall be approved by the fire code official prior to system installation.
- (iii) Generator and transformer rooms separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a fire-resistance rating of not less than 2 hours.
- (iv) Rooms or areas that are of noncombustible construction with wholly noncombustible contents.
- (v) Fire service access elevator machine rooms and machinery spaces.
- (vi) Machine rooms, machinery spaces, control rooms and control spaces associated with occupant evacuation elevators designed in accordance with section 3008 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.

(b) **903.3.1.1.2 Bathrooms.** In Group R occupancies, other than Group R-4 occupancies, sprinklers shall not be required in bathrooms that do not exceed 55 square feet (5 m²) in area and are located within individual dwelling units or sleeping units, provided that walls and ceilings, including the walls and ceilings behind a shower enclosure or tub, are of non-combustible or limited-combustible materials with a 15-minute thermal barrier rating.

(ii) **903.3.1.2 NFPA 13R sprinkler systems.** Automatic sprinkler systems in Group I-1, I-4 and R occupancies up to and including four stories in height in buildings not exceeding 60 feet (18 288 mm) in height above grade plane shall be permitted to be installed throughout in accordance with NFPA 13R *as listed in rule 1301:7-7-80 of the Administrative Code*.

The number of stories of Group R occupancies constructed in accordance with sections 510.2 and 510.4 of the building code as listed in rule 1301:7-7-80 of the Administrative Code shall be measured from the horizontal assembly creating separate buildings.

(a) **903.3.1.2.1 Balconies and decks.** Sprinkler protection shall be provided for exterior balconies, decks and ground floor patios of dwelling units and sleeping units where the building is of Type V construction, provided there is a roof or deck above. Sidewall sprinklers that are used to protect such areas shall be

permitted to be located such that their deflectors are within 1 inch (25 mm) to 6 inches (152 mm) below the structural members and a maximum distance of 14 inches (356 mm) below the deck of the exterior balconies and decks that are constructed of open wood joist construction.

(b) **903.3.1.2.2 Open-ended corridors.** Sprinkler protection shall be provided in open-ended corridors and associated exterior stairways and ramps as specified in *paragraph (AA)(6)(1027.6)*, *Exception 3 of rule 1301:7-7-10 of the Administrative Code.*

(iii) **903.3.1.3 NFPA 13D sprinkler systems.** Automatic sprinkler systems *installed in buildings of Groups I-1, R-3, Group R-4 Condition 1 and townhouses* shall be permitted to be installed throughout in accordance with *NFPA 13D as listed in rule 1301:7-7-80 of the Administrative Code.*

(b) **903.3.2 Quick-response and residential sprinklers.** Where automatic sprinkler systems are required by this code, quick-response or residential automatic sprinklers shall be installed in all of the following areas in accordance with *paragraph (C)(3)(a)(903.3.1) of this rule* and their listings:

- (i) Throughout all spaces within a smoke compartment containing care recipient sleeping units in Group I-2 in accordance with the *building code as listed in rule 1301:7-7-80 of the Administrative Code.*
- (ii) Throughout all spaces within a smoke compartment containing treatment rooms in ambulatory care facilities.
- (iii) Dwelling units and sleeping units in Group I-1 and R occupancies.
- (iv) Light-hazard occupancies as defined in NFPA 13 as listed in rule 1301:7-7-80 of the Administrative Code.

(c) **903.3.3 Obstructed locations.** Automatic sprinklers shall be installed with due regard to obstructions that will delay activation or obstruct the water distribution pattern. Automatic sprinklers shall be installed in or under covered kiosks, displays, booths, concession stands or equipment that exceeds 4 feet (1219 mm) in width. Not less than a 3-foot (914 mm) clearance shall be maintained between automatic sprinklers and the top of piles of combustible fibers.

Exception: Kitchen equipment under exhaust hoods protected with a fire-extinguishing system in accordance with *paragraph (D)(904) of this rule.*

(d) **903.3.4 Actuation.** Automatic sprinkler systems shall be automatically actuated unless specifically provided for in this code.

(e) **903.3.5 Water supplies.** Water supplies for automatic sprinkler systems shall comply with this *paragraph* and the standards referenced in *paragraph (C)(3)(a)(903.3.1) of this rule.* The potable water supply shall be protected against backflow in accordance with the requirements of this *paragraph* and the *plumbing code as listed in rule 1301:7-7-80 of the Administrative Code.* For connections to public waterworks systems, the water supply test used for design of fire protection systems shall be adjusted to account for seasonal and daily pressure fluctuations based on information from the water supply authority and as approved by the fire code official.

(i) **903.3.5.1 Domestic services.** Where the domestic service provides the water supply for the automatic sprinkler system, the supply shall be in accordance with this *paragraph.*

(ii) **903.3.5.2 Residential combination services.** A single combination water supply shall be allowed provided that the domestic demand is added to the sprinkler demand as required by NFPA 13R as listed in rule 1301:7-7-80 of the Administrative Code.

(f) **903.3.6 Hose threads.** Fire hose threads and fittings used in connection with automatic sprinkler systems shall be as prescribed by the fire code official.

(g) **903.3.7 Fire department connections.** Fire department connections for automatic sprinkler systems shall be installed in accordance with *paragraph (L)(912) of this rule.*

(i) **903.3.7.1 Locking fire department connection ("FDC") caps.** Where required by the fire code official and the responding fire department carries appropriate key wrenches for removal, locking "FDC" caps on fire department connections for water-based fire protection systems shall be provided.

(h) **903.3.8 Limited area sprinkler systems.** Limited area sprinkler systems shall be in accordance with the standards listed in *paragraph (C)(3)(a)(903.3.1) of this rule* except as provided in *paragraphs (C)(3)(h)(i)(903.3.8.1) to (C)(3)(h)(v)(903.3.8.5) of this rule.*

(i) **903.3.8.1 Number of sprinklers.** Limited area sprinkler systems shall not exceed *nineteen* sprinklers in any single fire area.

(ii) **903.3.8.2 Occupancy hazard classification.** Only areas classified by NFPA 13 as listed in rule 1301:7-7-80 of the Administrative Code as Light Hazard or Ordinary Hazard Group 1 shall be permitted to be protected by limited area sprinkler systems.

(iii) **903.3.8.3 Piping arrangement.** Where a limited area sprinkler system is installed in a building with an automatic wet standpipe system, sprinklers shall be supplied by the standpipe system. Where a limited area sprinkler system is installed in a building without an automatic wet standpipe system, water shall be permitted to be supplied by the plumbing system provided that the plumbing system is capable of simultaneously supplying domestic and sprinkler demands.

(iv) **903.3.8.4 Supervision.** Control valves shall not be installed between the water supply and sprinklers unless the valves are of an approved indicating type that are supervised or secured in the open position.

(v) **903.3.8.5 Calculations.** Hydraulic calculations in accordance with NFPA 13 as listed in rule 1301:7-7-80 of the Administrative Code shall be provided to demonstrate that the available water flow and pressure are adequate to supply all sprinklers installed in any single fire area with discharge densities corresponding to the hazard classification.

(4) **903.4 Sprinkler system supervision and alarms.** Valves controlling the water supply for automatic sprinkler systems, pumps, tanks, water levels and temperatures, critical air pressures and waterflow switches on all sprinkler systems shall be electrically supervised by a listed fire alarm control unit.

Exceptions:

1. Limited area systems in accordance with *paragraph (C)(3)(h)(903.3.8) of this rule.*
2. Automatic sprinkler systems installed in accordance with NFPA 13R as listed in rule 1301:7-7-80 of the Administrative Code where a common supply main is used to supply both domestic water and the automatic sprinkler system, and a separate shutoff valve for the automatic sprinkler system is not provided.
3. Jockey pump control valves that are sealed or locked in the open position.
4. Control valves to commercial kitchen hoods, paint spray booths or dip tanks that are sealed or locked in the open position.

5. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.
6. Trim valves to pressure switches in dry, pre-action and deluge sprinkler systems that are sealed or locked in the open position.

(a) 903.4.1 Monitoring. Alarm, supervisory and trouble signals shall be distinctly different and shall be automatically transmitted to an approved supervising station or, where approved by the fire code official *pursuant to paragraph (A)(1)(901.1) of this rule*, shall sound an audible signal at a constantly attended location. *At locations or in structures not regulated by the building code as listed in rule 1301:7-7-80 of the Administrative Code, the constantly attended location shall be approved by the fire code official prior to system installation.*

Exceptions:

1. Underground key or hub valves in roadway boxes provided by the municipality or public utility are not required to be monitored.
2. Backflow prevention device test valves located in limited area sprinkler system supply piping shall be locked in the open position. In occupancies required to be equipped with a fire alarm system, the backflow preventer valves shall be electrically supervised by a tamper switch installed in accordance with NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code and separately annunciated.

(b) 903.4.2 Alarms. An approved audible device, located on the exterior of the building in an approved location, shall be connected to each automatic sprinkler system. Such sprinkler waterflow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Where a fire alarm system is installed, actuation of the automatic sprinkler system shall actuate the building fire alarm system.

Exception: *Waterflow alarms are not required for limited area sprinkler systems installed in accordance with paragraph (C)(3)(e)(i)(a)(903.3.5.1.1) of this rule.*

(c) 903.4.3 Floor control valves. Approved supervised indicating control valves shall be provided at the point of connection to the riser on each floor in high-rise buildings.

(5) 903.5 Testing and maintenance. Sprinkler systems shall be tested and maintained in accordance with *paragraph (A)(901) of this rule.*

(6) 903.6 Where required in existing buildings and structures. An automatic sprinkler system shall be provided in existing buildings and structures where required in *rule 1301:7-7-11 of the Administrative Code.*

(D) Section 904 Alternative automatic fire-extinguishing systems

(1) 904.1 General. Automatic fire-extinguishing systems, other than automatic sprinkler systems, shall be designed, installed, inspected, tested and maintained in accordance with the provisions of this *paragraph* and the applicable referenced standards.

(a) 904.1.1 Certification of service personnel for fire-extinguishing equipment. Service personnel providing or conducting maintenance on automatic fire-extinguishing systems, other than automatic sprinkler systems, shall possess a valid certificate issued by an approved governmental agency, or other approved organization for the type of system and work performed.

(2) 904.2 Where permitted. Automatic fire-extinguishing systems installed as an alternative to the required automatic sprinkler systems of *paragraph (C)(903) of this rule* shall be approved by the fire code official pursuant to *paragraph (A)(1)(901.1) of this rule*. *At locations or in structures not regulated by the building code as listed in*

rule 1301:7-7-80 of the Administrative Code, the alternative automatic fire-extinguishing system shall be approved by the fire code official prior to system installation.

(a) 904.2.1 Restriction on using automatic sprinkler system exceptions or reductions. Automatic fire-extinguishing systems shall not be considered alternatives for the purposes of exceptions or reductions allowed for automatic sprinkler system or by other requirements of this code.

(b) 904.2.2 Commercial hood and duct systems. Each required commercial kitchen exhaust hood and duct system required by paragraph (I)(609) of rule 1301:7-7-06 of the Administrative Code to have a Type I hood shall be protected with an approved automatic fire-extinguishing system installed in accordance with this code.

(3) 904.3 Installation. Automatic fire-extinguishing systems shall be installed in accordance with this paragraph.

(a) 904.3.1 Electrical wiring. Electrical wiring shall be in accordance with NFPA 70 as listed in rule 1301:7-7-80 of the Administrative Code.

(b) 904.3.2 Actuation. Automatic fire-extinguishing systems shall be automatically actuated and provided with a manual means of actuation in accordance with paragraph (D)(12)(a)(904.12.1) of this rule.

(c) 904.3.3 System interlocking. Automatic equipment interlocks with fuel shutoffs, ventilation controls, door closers, window shutters, conveyor openings, smoke and heat vents and other features necessary for proper operation of the fire-extinguishing system shall be provided as required by the design and installation standard utilized for the hazard.

(d) 904.3.4 Alarms and warning signs. Where alarms are required to indicate the operation of automatic fire-extinguishing systems, distinctive audible, visible alarms and warning signs shall be provided to warn of pending agent discharge. Where exposure to automatic-extinguishing agents poses a hazard to persons and a delay is required to ensure the evacuation of occupants before agent discharge, a separate warning signal shall be provided to alert occupants once agent discharge has begun. Audible signals shall be in accordance with paragraph (G)(5)(b)(907.5.2) of this rule.

(e) 904.3.5 Monitoring. Where a building fire alarm system is installed, automatic fire-extinguishing systems shall be monitored by the building fire alarm system in accordance with NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code.

(4) 904.4 Inspection and testing. Automatic fire-extinguishing systems shall be inspected and tested in accordance with the provisions of this paragraph prior to acceptance.

(a) 904.4.1 Inspection. Prior to conducting final acceptance tests, the following items shall be inspected:

- (i) Hazard specification for consistency with design hazard.
- (ii) Type, location and spacing of automatic- and manual-initiating devices.
- (iii) Size, placement and position of nozzles or discharge orifices.
- (iv) Location and identification of audible and visible alarm devices.
- (v) Identification of devices with proper designations.
- (vi) Operating instructions.

(b) 904.4.2 Alarm testing. Notification appliances, connections to fire alarm systems and connections to approved supervising stations shall be tested in accordance with this *paragraph* and *paragraph (G)(907) of this rule* to verify proper operation.

(i) 904.4.2.1 Audible and visible signals. The audibility and visibility of notification appliances signaling agent discharge or system operation, where required, shall be verified.

(c) 904.4.3 Monitor testing. Connections to protected premises and supervising station fire alarm systems shall be tested to verify proper identification and retransmission of alarms from automatic fire-extinguishing systems.

(5) 904.5 Wet-chemical systems. Wet-chemical extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 17A *as listed in rule 1301:7-7-80 of the Administrative Code* and their listing. Records of inspections and testing shall be maintained.

(a) 904.5.1 System test. Systems shall be inspected and tested for proper operation at six-month intervals. Tests shall include a check of the detection system, alarms and releasing devices, including manual stations and other associated equipment. Extinguishing system units shall be weighed and the required amount of agent verified. Stored pressure-type units shall be checked for the required pressure. The cartridge of cartridge-operated units shall be weighed and replaced at intervals indicated by the manufacturer.

(b) 904.5.2 Fusible link maintenance. Fixed temperature-sensing elements shall be maintained *in accordance with NFPA 17A as listed in rule 1301:7-7-80 of the Administrative Code* to ensure proper operation of the system.

(6) 904.6 Dry-chemical systems. Dry-chemical extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 17 *as listed in rule 1301:7-7-80 of the Administrative Code* and their listing. Records of inspections and testing shall be maintained.

(a) 904.6.1 System test. Systems shall be inspected and tested for proper operation at six-month intervals. Tests shall include a check of the detection system, alarms and releasing devices, including manual stations and other associated equipment. Extinguishing system units shall be weighed, and the required amount of agent verified. Stored pressure-type units shall be checked for the required pressure. The cartridge of cartridge-operated units shall be weighed and replaced at intervals indicated by the manufacturer.

(b) 904.6.2 Fusible link maintenance. Fixed temperature-sensing elements shall be maintained to ensure proper operation of the system.

(7) 904.7 Foam systems. Foam-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 11 and NFPA 16 *as listed in rule 1301:7-7-80 of the Administrative Code* and their listing. Records of inspections and testing shall be maintained.

(a) 904.7.1 System test. Foam-extinguishing systems shall be inspected and tested at intervals in accordance with NFPA 25 *as listed in rule 1301:7-7-80 of the Administrative Code*.

(8) 904.8 Carbon dioxide systems. Carbon dioxide extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 12 *as listed in rule 1301:7-7-80 of the Administrative Code* and their listing. Records of inspections and testing shall be maintained.

(a) 904.8.1 System test. Systems shall be inspected and tested for proper operation at 12-month intervals.

(b) 904.8.2 High-pressure cylinders. High-pressure cylinders shall be weighed and the date of the last hydrostatic test shall be verified at six-month intervals. Where a container shows a loss in original content of more than 10 *per cent*, the cylinder shall be refilled or replaced.

(c) **904.8.3 Low-pressure containers.** The liquid-level gauges of low-pressure containers shall be observed at one-week intervals. Where a container shows a content loss of more than 10 *per cent*, the container shall be refilled to maintain the minimum gas requirements.

(d) **904.8.4 System hoses.** System hoses shall be examined at 12-month intervals for damage. Damaged hoses shall be replaced or tested. At five-year intervals, all hoses shall be tested.

(i) **904.8.4.1 Test procedure.** Hoses shall be tested at not less than 2,500 pounds per square inch (psi) (17 238 kPa) for high-pressure systems and at not less than 900 psi (6206 kPa) for low-pressure systems.

(e) **904.8.5 Auxiliary equipment.** Auxiliary and supplementary components, such as switches, door and window releases, interconnected valves, damper releases and supplementary alarms, shall be manually operated at 12-month intervals to ensure that such components are in proper operating condition.

(9) **904.9 Halon systems.** Halogenated extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 12A *as listed in rule 1301:7-7-80 of the Administrative Code* and their listing. Records of inspections and testing shall be maintained.

(a) **904.9.1 System test.** Systems shall be inspected and tested for proper operation at 12-month intervals.

(b) **904.9.2 Containers.** The extinguishing agent quantity and pressure of containers shall be checked at six-month intervals. Where a container shows a loss of original weight of more than 5 *per cent* or a loss in original pressure (adjusted for temperature) of more than 10 *per cent*, the container shall be refilled or replaced. The weight and pressure of the container shall be recorded on a tag attached to the container.

(c) **904.9.3 System hoses.** System hoses shall be examined at 12-month intervals for damage. Damaged hoses shall be replaced or tested. At five-year intervals, all hoses shall be tested.

(i) **904.9.3.1 Test procedure.** For Halon 1301 systems, hoses shall be tested at not less than 1,500 psi (10 343 kPa) for 600 psi (4137 kPa) charging pressure systems and not less than 900 psi (6206 kPa) for 360 psi (2482 kPa) charging pressure systems. For Halon 1211 hand-hose line systems, hoses shall be tested at 2,500 psi (17 238 kPa) for high-pressure systems and 900 psi (6206 kPa) for low-pressure systems.

(d) **904.9.4 Auxiliary equipment.** Auxiliary and supplementary components, such as switches, door and window releases, interconnected valves, damper releases and supplementary alarms, shall be manually operated at 12-month intervals to ensure such components are in proper operating condition.

(10) **904.10 Clean-agent systems.** Clean-agent fire-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with NFPA 2001 *as listed in rule 1301:7-7-80 of the Administrative Code* and their listing. Records of inspections and testing shall be maintained.

(a) **904.10.1 System test.** Systems shall be inspected and tested for proper operation at 12-month intervals.

(b) **904.10.2 Containers.** The extinguishing agent quantity and pressure of the containers shall be checked at six-month intervals. Where a container shows a loss in original weight of more than 5 *per cent* or a loss in original pressure, adjusted for temperature, of more than 10 *per cent*, the container shall be refilled or replaced. The weight and pressure of the container shall be recorded on a tag attached to the container.

(c) **904.10.3 System hoses.** System hoses shall be examined at 12-month intervals for damage. Damaged hoses shall be replaced or tested. All hoses shall be tested at five-year intervals.

(11) 904.11 Automatic water mist systems. Automatic water mist systems shall be permitted in applications that are consistent with applicable listing or approvals and shall comply with paragraphs (D)(11)(a)(904.11.1) to (D)(11)(c)(904.11.3) of this rule.

(a) 904.11.1 Design and installation requirements. Automatic water mist systems shall be designed and installed in accordance with paragraphs (C)(11)(a)(i)(904.11.1.1) to (D)(11)(a)(iv)(904.11.1.4) of this rule.

(i) 904.11.1.1 General. Automatic water mist systems shall be designed and installed in accordance with NFPA 750 as listed in rule 1301:7-7-80 of the Administrative Code and the manufacturer's instructions.

(ii) 904.11.1.2 Actuation. Automatic water mist systems shall be automatically actuated.

(iii) 904.11.1.3 Water supply protection. Connections to a potable water supply shall be protected against backflow in accordance with the plumbing code as listed in rule 1301:7-7-80 of the Administrative Code.

(iv) 904.11.1.4 Secondary water supply. Where a secondary water supply is required for an automatic sprinkler system, an automatic water mist system shall be provided with an approved secondary water supply.

(b) 904.11.2 Water mist system supervision and alarms. Supervision and alarms shall be provided as required for automatic sprinkler systems in accordance with paragraph (C)(4)(903.4) of this rule.

(i) 904.11.2.1 Monitoring. Monitoring shall be provided as required for automatic sprinkler systems in accordance with paragraph (C)(4)(a)(903.4.1) of this rule.

(ii) 904.11.2.2 Alarms. Alarms shall be provided as required for automatic sprinkler systems in accordance with paragraph (C)(4)(b)(903.4.2) of this rule.

(iii) 904.11.2.3 Floor control valves. Floor control valves shall be provided as required for automatic sprinkler systems in accordance with paragraph (C)(4)(c)(903.4.3) of this rule.

(c) 904.11.3 Testing and maintenance. Automatic water mist systems shall be tested and maintained in accordance with paragraph (A)(6)(901.6) of this rule.

(12) 904.12 Commercial cooking systems. The automatic fire-extinguishing system for commercial cooking systems shall be of a type recognized for protection of commercial cooking equipment and exhaust systems of the type and arrangement protected. Pre-engineered automatic dry- and wet-chemical extinguishing systems shall be tested in accordance with UL 300 as listed in rule 1301:7-7-80 of the Administrative Code and listed and labeled for the intended application. Other types of automatic fire-extinguishing systems shall be listed and labeled for specific use as protection for commercial cooking operations. The system shall be installed in accordance with this code, its listing and the manufacturer's installation instructions. Automatic fire-extinguishing systems of the following types shall be installed in accordance with the referenced standard indicated, as follows:

1. Carbon dioxide extinguishing systems, NFPA 12 as listed in rule 1301:7-7-80 of the Administrative Code.
2. Automatic sprinkler systems, NFPA 13 as listed in rule 1301:7-7-80 of the Administrative Code.
3. Foam-water sprinkler system or foam-water spray systems, NFPA 16 as listed in rule 1301:7-7-80 of the Administrative Code.
4. Dry-chemical extinguishing systems, NFPA 17 as listed in rule 1301:7-7-80 of the Administrative Code.
5. Wet-chemical extinguishing systems, NFPA 17A as listed in rule 1301:7-7-80 of the Administrative Code.

Exception: Factory-built commercial cooking recirculating systems that are tested in accordance with UL 710B as listed in rule 1301:7-7-80 of the Administrative Code and listed, labeled and installed in accordance with section 304.1 of the mechanical code as listed in rule 1301:7-7-80 of the Administrative Code.

(a) 904.12.1 Manual system operation. A manual actuation device shall be located at or near a means of egress from the cooking area not less than 10 feet (3048 mm) and not more than 20 feet (6096 mm) from the kitchen exhaust system. The manual actuation device shall be installed not more than 48 inches (1200 mm) nor less than 42 inches (1067 mm) above the floor and shall clearly identify the hazard protected. The manual actuation shall require a maximum force of 40 pounds (178 N) and a maximum movement of 14 inches (356 mm) to actuate the fire suppression system.

Exception: Automatic sprinkler systems shall not be required to be equipped with manual actuation means.

(b) 904.12.2 System interconnection. The actuation of the fire extinguishing system shall automatically shut down the fuel or electrical power supply to the cooking equipment. The fuel and electrical supply reset shall be manual.

(c) 904.12.3 Carbon dioxide systems. When carbon dioxide systems are used, there shall be a nozzle at the top of the ventilating duct. Additional nozzles that are symmetrically arranged to give uniform distribution shall be installed within vertical ducts exceeding 20 feet (6096 mm) and horizontal ducts exceeding 50 feet (15 240 mm). Dampers shall be installed at either the top or the bottom of the duct and shall be arranged to operate automatically upon activation of the fire-extinguishing system. When the damper is installed at the top of the duct, the top nozzle shall be immediately below the damper. Automatic carbon dioxide fire-extinguishing systems shall be sufficiently sized to protect all hazards venting through a common duct simultaneously.

(i) 904.12.3.1 Ventilation system. Commercial-type cooking equipment protected by an automatic carbon dioxide extinguishing system shall be arranged to shut off the ventilation system upon activation.

(d) 904.12.4 Special provisions for automatic sprinkler systems. Automatic sprinkler systems protecting commercial-type cooking equipment shall be supplied from a separate, readily accessible, indicating-type control valve that is identified.

(i) 904.12.4.1 Listed sprinklers. Sprinklers used for the protection of fryers shall be tested in accordance with UL 199E as listed in rule 1301:7-7-80 of the Administrative Code, listed for that application and installed in accordance with their listing.

(e) 904.12.5 Portable fire extinguishers for commercial cooking equipment. Portable fire extinguishers shall be provided within a 30-foot (9144 mm) distance of travel from commercial-type cooking equipment. Cooking equipment involving solid fuels or vegetable or animal oils and fats shall be protected by a Class K rated portable extinguisher in accordance with paragraphs (D)(12)(e)(i)(904.12.5.1) or (D)(12)(e)(ii)(904.12.5.2) of this rule, as applicable.

(i) 904.12.5.1 Portable fire extinguishers for solid fuel cooking appliances. Solid fuel cooking appliances, whether or not under a hood, with fireboxes 5 cubic feet (0.14m³) or less in volume shall have a minimum 2.5-gallon (9 L) or two 1.5-gallon (6 L) Class K wet-chemical portable fire extinguishers located in accordance with paragraph (D)(12)(e)(904.12.5) of this rule.

(ii) 904.12.5.2 Class K portable fire extinguishers for deep fat fryers. When hazard areas include deep fat fryers, listed Class K portable fire extinguishers shall be provided as follows:

(a) For up to four fryers having a maximum cooking medium capacity of 80 pounds (36.3 kg) each: One Class K portable fire extinguisher of a minimum 1.5 gallon (6 L) capacity.

- (b) For every additional group of four fryers having a maximum cooking medium capacity of 80 pounds (36.3 kg) each: one additional Class K portable fire extinguisher of a minimum 1.5 gallon (6 L) capacity shall be provided.
- (c) For individual fryers exceeding 6 square feet (0.55 m²) in surface area: Class K portable fire extinguishers shall be installed in accordance with the extinguisher manufacturer's recommendations.

(f) 904.12.6 Operations and maintenance. Automatic fire-extinguishing systems protecting commercial cooking systems shall be maintained in accordance with *paragraphs (D)(12)(f)(i)(904.12.6.1) to (D)(12)(f)(iii)(904.12.6.3) of this rule.*

(i) 904.12.6.1 Existing automatic fire extinguishing systems. Where changes in the cooking media, positioning of cooking equipment or replacement of cooking equipment occur in existing commercial cooking systems, the automatic fire-extinguishing system shall be required to comply with the applicable provisions of *paragraphs (D)(12)(904.12) to (D)(12)(d)(904.12.4) of this rule.*

(ii) 904.12.6.2 Extinguishing system service. Automatic fire-extinguishing systems shall be serviced at least every 6 months and after activation of the system. Inspection shall be by qualified individuals, and a certificate of inspection shall be forwarded to the fire code official upon completion.

(iii) 904.12.6.3 Fusible link and sprinkler head replacement. Fusible links and automatic sprinkler heads shall be replaced at least annually, and other protection devices shall be serviced or replaced in accordance with the manufacturer's instructions.

Exception: Frangible bulbs are not required to be replaced annually.

(13) 904.13 Domestic cooking systems in Group I-2 Condition I. In Group I-2 Condition 1 occupancies where cooking facilities are installed in accordance with Section 407.2.6 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*, the domestic cooking hood provided over the cooktop or range shall be equipped with an automatic fire-extinguishing system of a type recognized for protection of domestic cooking equipment. Pre-engineered automatic extinguishing systems shall be tested in accordance with UL 300A *as listed in rule 1301:7-7-80 of the Administrative Code* and listed and labeled for the intended application. The system shall be installed in accordance with this code, its listing and the manufacturer's instructions.

(a) 904.13.1 Manual system operation and interconnection. Manual actuation and system interconnection for the hood suppression system shall be in accordance with *paragraphs (D)(12)(a)(904.12.1) and (D)(12)(b)(904.12.2) of this rule*, respectively.

(b) 904.13.2 Portable fire extinguishers for domestic cooking equipment in Group I-2 Condition 1. A portable fire extinguisher complying with *paragraph (F)(906) of this rule* shall be installed within a 30-foot (9144 mm) distance of travel from domestic cooking appliances.

(E) Section 905 Standpipe systems

(1) 905.1 General. Standpipe systems shall be provided in new buildings and structures in accordance with *paragraphs (E)(2)(905.2) to (E)(10)(905.10) of this rule*. In buildings used for high-piled combustible storage, fire protection shall be in accordance with *rule 1301:7-7-32 of the Administrative Code*.

(2) 905.2 Installation standard. Standpipe systems shall be installed in accordance with this *paragraph* and NFPA 14 *as listed in rule 1301:7-7-80 of the Administrative Code*. Fire department connections for standpipe systems shall be in accordance with *paragraph (L)(912) of this rule*.

(3) **905.3 Required installations.** Standpipe systems shall be installed where required by paragraphs (E)(3)(a)(905.3.1) to (E)(3)(h)(905.3.8) of this rule. Where these systems are installed, the hose connections shall be installed in the locations indicated in paragraphs (E)(4)(905.4), (E)(5)(905.5) and (E)(6)(905.6) of this rule. Standpipe systems are allowed to be combined with automatic sprinkler systems.

Exception: Standpipe systems are not required in Group R-3 occupancies.

(a) **905.3.1 Height.** Class III standpipe systems shall be installed throughout buildings where the floor level of the highest story is located more than 30 feet (9144 mm) above the lowest level of the fire department vehicle access, or where the floor level of the lowest story is located more than 30 feet (9144 mm) below the highest level of fire department vehicle access.

Exceptions:

1. Class I standpipes are allowed in buildings equipped throughout with an automatic sprinkler system in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) or (C)(3)(a)(ii)(903.3.1.2) of this rule.
2. Class I manual standpipes are allowed in open parking garages where the highest floor is located not more than 150 feet (45 720 mm) above the lowest level of fire department vehicle access.
3. Class I manual dry standpipes are allowed in open parking garages that are subject to freezing temperatures, provided that the hose connections are located as required for Class II standpipes in accordance with paragraph (E)(5)(905.5) of this rule.
4. Class I standpipes are allowed in basements equipped throughout with an automatic sprinkler system.
5. In determining the lowest level of fire department vehicle access, it shall not be required to consider either of the following:
 - 5.1 Recessed loading docks for four vehicles or less.
 - 5.2 Conditions where topography makes access from the fire department vehicle to the building impractical or impossible.

(b) **905.3.2 Group A.** Class I automatic wet standpipes shall be provided in nonsprinklered Group A buildings having an occupant load exceeding 1,000 persons.

Exceptions:

1. Open-air-seating spaces without enclosed spaces.
2. Class I automatic dry and semiautomatic dry standpipes or manual wet standpipes are allowed in buildings that are not high-rise buildings.

(c) **905.3.3 Covered and open mall buildings.** Covered mall and open mall buildings shall be equipped throughout with a standpipe system where required by paragraph (E)(3)(a)(905.3.1) of this rule. Mall buildings not required to be equipped with a standpipe system by paragraph (E)(3)(a)(905.3.1) of this rule shall be equipped with Class I hose connections connected to the automatic sprinkler system sized to deliver water at 250 gallons per minute (946.4 L/min) at the most hydraulically remote hose connection while concurrently supplying the automatic sprinkler system demand. The standpipe system shall be designed not to exceed a 50-pounds per square inch (psi) (345 kPa) residual pressure loss with flow of 250 gallons per minute (946.4 L/min) from the fire department connection to the hydraulically most remote hose connection. Hose connections shall be provided at each of the following locations:

- (i) Within the mall at the entrance to each exit passageway or corridor.
- (ii) At each floor-level landing within interior exit stairways opening directly on the mall.
- (iii) At exterior public entrances to the mall of a covered mall building.
- (iv) At public entrances at the perimeter line of an open mall building.
- (v) At other locations as necessary so that the distance to reach all portions of a tenant space does not exceed 200 feet (60 960 mm) from a hose connection.

(d) 905.3.4 Stages. Stages greater than 1,000 square feet (93 m²) in area shall be equipped with a Class III wet standpipe system with 1½-inch and 2½-inch (38 mm and 64 mm) hose connections on each side of the stage.

Exception: Where the building or area is equipped throughout with an automatic sprinkler system, a 1½ inch (38 mm) hose connection shall be installed in accordance with NFPA 13 as listed in rule 1301:7-7-80 of the Administrative Code or in accordance with NFPA 14 as listed in rule 1301:7-7-80 of the Administrative Code for Class II or III standpipes.

(i) 905.3.4.1 Hose and cabinet. The 1½-inch (38 mm) hose connections shall be equipped with sufficient lengths of 1½-inch (38 mm) hose to provide fire protection for the stage area. Hose connections shall be equipped with an approved adjustable fog nozzle and be mounted in a cabinet or on a rack.

(e) 905.3.5 Underground buildings. Underground buildings shall be equipped throughout with a Class I automatic wet or manual wet standpipe system.

(f) 905.3.6 Helistops and heliports. Buildings with a rooftop helistop or heliport shall be equipped with a Class I or III standpipe system extended to the roof level on which the helistop or heliport is located in accordance with paragraph (G)(5)(2007.5) of rule 1301:7-7-20 of the Administrative Code.

(g) 905.3.7 Marinas and boatyards. Standpipes in marinas and boatyards shall comply with rule 1301:7-7-36 of the Administrative Code.

(h) 905.3.8 Rooftop gardens and landscaped roofs. Buildings or structures that have rooftop gardens or landscaped roofs and that are equipped with a standpipe system shall have the standpipe system extended to the roof level on which the rooftop garden or landscaped roof is located.

(4) 905.4 Location of Class I standpipe hose connections. Class I standpipe hose connections shall be provided in all of the following locations:

1. In every required interior exit stairway, a hose connection shall be provided for each story above or below grade plane. Hose connections shall be located at an intermediate landing between stories, unless otherwise approved by the fire code official and in accordance with the building code as listed in rule 1301:7-7-80 of the Administrative Code.
2. On each side of the wall adjacent to the exit opening of a horizontal exit.

Exception: Where floor areas adjacent to a horizontal exit are reachable from an interior exit stairway hose connection by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the horizontal exit.

3. In every exit passageway, at the entrance from the exit passageway to other areas of a building.

Exception: Where floor areas adjacent to an exit passageway are reachable from an interior exit stairway hose connection by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the entrance from the exit passageway to other areas of the building.

4. In covered mall buildings, adjacent to each exterior public entrance to the mall and adjacent to each entrance from an exit passageway or exit corridor to the mall. In open mall buildings, adjacent to each public entrance to the mall at the perimeter line and adjacent to each entrance from an exit passageway or exit corridor to the mall.
5. Where the roof has a slope less than four units vertical in 12 units horizontal (33.3-per cent slope), a hose connection shall be located to serve the roof or at the highest landing of an interior exit stairway with access to the roof provided in accordance with *paragraph (K)(12)(1011.12) of rule 1301:7-7-10 of the Administrative Code.*
6. Where the most remote portion of a nonsprinklered floor or story is more than 150 feet (45 720 mm) from a hose connection or the most remote portion of a sprinklered floor or story is more than 200 feet (60 960 mm) from a hose connection, the fire code official is authorized to require that additional hose connections be provided in approved locations.

(a) **905.4.1 Protection.** Risers and laterals of Class I standpipe systems not located within an interior exit stairway shall be protected by a degree of fire resistance equal to that required for vertical enclosures in the building in which they are located.

Exception: In buildings equipped throughout with an approved automatic sprinkler system, laterals that are not located within an interior exit stairway are not required to be enclosed within fire-resistance-rated construction.

(b) **905.4.2 Interconnection.** In buildings where more than one standpipe is provided, the standpipes shall be interconnected in accordance with NFPA 14 as listed in rule 1301:7-7-80 of the Administrative Code.

(5) **905.5 Location of Class II standpipe hose connections.** Class II standpipe hose connections shall be accessible and shall be located so that all portions of the building are within 30 feet (9144 mm) of a nozzle attached to 100 feet (30 480 mm) of hose.

(a) **905.5.1 Groups A-1 and A-2.** In Group A-1 and A-2 occupancies with occupant loads of more than 1,000, hose connections shall be located on each side of any stage, on each side of the rear of the auditorium, on each side of the balcony and on each tier of dressing rooms.

(b) **905.5.2 Protection.** Fire-resistance-rated protection of risers and laterals of Class II standpipe systems is not required.

(c) **905.5.3 Class II system 1-inch hose.** A minimum 1-inch (25 mm) hose shall be allowed to be used for hose stations in light-hazard occupancies where investigated and listed for this service and where approved by the fire code official pursuant to paragraph (A)(1)(901.1) of this rule. At locations or in structures not regulated by the building code as listed in rule 1301:7-7-80 of the Administrative Code, the 1-inch (25 mm) hose shall be approved by the fire code official prior to system installation.

(6) **905.6 Location of Class III standpipe hose connections.** Class III standpipe systems shall have hose connections located as required for Class I standpipes in paragraph (E)(4)(905.4) of this rule and shall have Class II hose connections as required in paragraph (E)(5)(905.5) of this rule.

(a) 905.6.1 Protection. Risers and laterals for Class III standpipe systems shall be protected as required for Class I systems in accordance with paragraph (E)(4)(a)(905.4.1) of this rule.

(b) 905.6.2 Interconnection. In buildings where more than one Class III standpipe is provided, the standpipes shall be interconnected in accordance with NFPA 14 as listed in rule 1301:7-7-80 of the Administrative Code.

(7) 905.7 Cabinets. Cabinets containing fire-fighting equipment, such as standpipes, fire hose, fire extinguishers or fire department valves, shall not be blocked from use or obscured from view.

(a) 905.7.1 Cabinet equipment identification. Cabinets shall be identified in an approved manner by a permanently attached sign with letters not less than 2 inches (51 mm) high in a color that contrasts with the background color, indicating the equipment contained therein.

Exceptions:

1. Doors not large enough to accommodate a written sign shall be marked with a permanently attached pictogram of the equipment contained therein.
2. Doors that have either an approved visual identification clear glass panel or a complete glass door panel are not required to be marked.

(b) 905.7.2 Locking cabinet doors. Cabinets shall be unlocked.

Exceptions:

1. Visual identification panels of glass or other approved transparent frangible material that is easily broken and allows access.
2. Approved locking arrangements.
3. Group I-3 occupancies.

(8) 905.8 Dry standpipes. Dry standpipes shall not be installed.

Exception: Where subject to freezing and in accordance with NFPA 14 as listed in rule 1301:7-7-80 of the Administrative Code.

(9) 905.9 Valve supervision. Valves controlling water supplies shall be supervised in the open position so that a change in the normal position of the valve will generate a supervisory signal at the supervising station required by paragraph (C)(4)(903.4) of this rule. Where a fire alarm system is provided, a signal shall be transmitted to the control unit.

Exceptions:

1. Valves to underground key or hub valves in roadway boxes provided by the municipality or public utility do not require supervision.
2. Valves locked in the normal position and inspected as provided in this code in buildings not equipped with a fire alarm system.

(10) 905.10 During construction. Standpipe systems required during construction and demolition operations shall be provided in accordance with paragraph (M)(3313) of rule 1301:7-7-33 of the Administrative Code.

(11) 905.11 Existing buildings. Where required in *rule 1301:7-7-11 of the Administrative Code*, existing structures shall be equipped with standpipes installed in accordance with *paragraph (E)(905) of this rule*.

(F) Section 906 Portable fire extinguishers

(1) 906.1 Where required. Portable fire extinguishers shall be installed in all of the following locations:

- (a) In new and existing Group A, B, E, F, H, I, M, R-1, R-2, R-4 and S occupancies.

Exceptions:

1. In Group R-2 occupancies, portable fire extinguishers shall be required only in locations specified in paragraphs (b) through (f) of this rule where each dwelling unit is provided with a portable fire extinguisher having a minimum rating of 1-A:10-B:C.
 2. In Group E occupancies, portable fire extinguishers shall be required only in locations specified in paragraphs (b) through (f) of this rule where each classroom is provided with a portable fire extinguisher having a minimum rating of 2-A:20-B:C.
- (b) Within 30 feet (9144 mm) of commercial cooking appliances and domestic cooking appliances in Group I-2 nursing homes.
- (c) In areas where flammable or combustible liquids are stored, used or dispensed.
- (d) On each floor of structures under construction, except Group R-3 occupancies, in accordance with paragraph (O)(1)(3315.1) of rule 1301:7-7-33 of the Administrative Code.
- (e) Where required by the paragraphs indicated in Table 906.1 of this rule.
- (f) Special-hazard areas, including but not limited to laboratories, computer rooms and generator rooms, where required by the fire code official and in accordance with the building code as listed in rule 1301:7-7-80 of the Administrative Code.

Table 906.1
Additional required portable fire extinguishers

<u>Paragraph</u>	<u>Subject</u>
<u>Paragraph (C)(5)(303.5) of rule 1301:7-7-03 of the Administrative Code</u>	<u>Asphalt kettles</u>
<u>Paragraph (G)(5)(307.5) of rule 1301:7-7-03 of the Administrative Code</u>	<u>Open burning</u>
<u>Paragraph (H)(1)(c)(308.1.3) of rule 1301:7-7-03 of the Administrative Code</u>	<u>Open flames-torches</u>
<u>Paragraph (I)(4)(309.4) of rule 1301:7-7-03 of the Administrative Code</u>	<u>Powered industrial trucks</u>
<u>Paragraph (E)(2)(2005.2) of rule 1301:7-7-20 of the Administrative Code</u>	<u>Aircraft towing vehicles</u>
<u>Paragraph (E)(3)(2005.3) of rule 1301:7-7-20 of the Administrative Code</u>	<u>Aircraft welding apparatus</u>
<u>Paragraph (E)(4)(2005.4) of rule 1301:7-7-20 of the Administrative Code</u>	<u>Aircraft fuel-servicing tank vehicles</u>
<u>Paragraph (E)(5)(2005.5) of rule 1301:7-7-20 of the Administrative Code</u>	<u>Aircraft hydrant fuel-servicing vehicles</u>

Note: for copyright claim information, please see the notice on the last page of this rule.

<u>Paragraph (E)(6)(2005.6) of rule 1301:7-7-20 of the Administrative Code</u>	<u>Aircraft fuel-dispensing stations</u>
<u>Paragraph (G)(7)(2007.7) of rule 1301:7-7-20 of the Administrative Code</u>	<u>Heliports and helistops</u>
<u>Paragraph (H)(4)(2108.4) of rule 1301:7-7-21 of the Administrative Code</u>	<u>Dry cleaning plants</u>
<u>Paragraph (E)(5)(2305.5) of rule 1301:7-7-23 of the Administrative Code</u>	<u>Motor fuel-dispensing facilities</u>
<u>Paragraph (J)(6)(d)(2310.6.4) of rule 1301:7-7-23 of the Administrative Code</u>	<u>Marine motor fuel-dispensing facilities</u>
<u>Paragraph (K)(6)(2311.6) of rule 1301:7-7-23 of the Administrative Code</u>	<u>Repair garages</u>
<u>Paragraph (D)(4)(a)(2404.4.1) of rule 1301:7-7-24 of the Administrative Code</u>	<u>Spray-finishing operations</u>
<u>Paragraph (E)(4)(b)(2405.4.2) of rule 1301:7-7-24 of the Administrative Code</u>	<u>Dip-tank operations</u>
<u>Paragraph (F)(4)(b)(2406.4.2) of rule 1301:7-7-24 of the Administrative Code</u>	<u>Powder-coating areas</u>
<u>Paragraph (D)(2)(2804.2) of rule 1301:7-7-28 of the Administrative Code</u>	<u>Lumberyards/woodworking facilities</u>
<u>Paragraph (H)(8)(2808.8) of rule 1301:7-7-28 of the Administrative Code</u>	<u>Recycling facilities</u>
<u>Paragraph (I)(5)(2809.5) of rule 1301:7-7-28 of the Administrative Code</u>	<u>Exterior lumber storage</u>
<u>Paragraph (C)(5)(2903.5) of rule 1301:7-7-29 of the Administrative Code</u>	<u>Organic-coating areas</u>
<u>Paragraph (F)(3)(3006.3) of rule 1301:7-7-30 of the Administrative Code</u>	<u>Industrial ovens</u>
<u>Paragraph (D)(12)(3104.12) of rule 1301:7-7-31 of the Administrative Code</u>	<u>Tents and membrane structures</u>
<u>Paragraph (F)(10)(3206.10) of rule 1301:7-7-32 of the Administrative Code</u>	<u>High-piled storage</u>
<u>Paragraph (O)(1)(3315.1) of rule 1301:7-7-33 of the Administrative Code</u>	<u>Buildings under construction or demolition</u>
<u>Paragraph (Q)(3)(3317.3) of rule 1301:7-7-33 of the Administrative Code</u>	<u>Roofing operations</u>
<u>Paragraph (H)(2)(3408.2) of rule 1301:7-7-34 of the Administrative Code</u>	<u>Tire rebuilding/storage</u>
<u>Paragraph (D)(2)(f)(3504.2.6) of rule 1301:7-7-35 of the Administrative Code</u>	<u>Welding and other hot work</u>
<u>Paragraph (D)(4)(3604.4) of rule 1301:7-7-36 of the Administrative Code</u>	<u>Marinas</u>
<u>Paragraph (C)(6)(3703.6) of rule 1301:7-7-37 of the Administrative Code</u>	<u>Combustible fibers</u>
<u>Paragraph (C)(2)(a)(5703.2.1) of rule 1301:7-7-57 of the Administrative Code</u>	<u>Flammable and combustible liquids, general</u>
<u>Paragraph (D)(3)(c)(i)(5704.3.3.1) of rule 1301:7-7-57 of the Administrative Code</u>	<u>Indoor storage of flammable and combustible liquids</u>
<u>Paragraph (D)(3)(g)(v)(ii)(5704.3.7.5.2) of rule 1301:7-7-57 of the Administrative Code</u>	<u>Liquid storage rooms for flammable and combustible liquids</u>

<u>Paragraph (E)(4)(i)(5705.4.9) of rule 1301:7-7-57 of the Administrative Code</u>	<u>Solvent distillation units</u>
<u>Paragraph (F)(2)(g)(5706.2.7) of rule 1301:7-7-57 of the Administrative Code</u>	<u>Farms and construction sites-flammable and combustible liquids storage</u>
<u>Paragraph (F)(4)(i)(i)(5706.4.10.1) of rule 1301:7-7-57 of the Administrative Code</u>	<u>Bulk plants and terminals for flammable and combustible liquids</u>
<u>Paragraph (F)(5)(d)(v)(5706.5.4.5) of rule 1301:7-7-57 of the Administrative Code</u>	<u>Commercial, industrial, governmental or manufacturing establishments-fuel dispensing</u>
<u>Paragraph (F)(6)(d)(5706.6.4) of rule 1301:7-7-57 of the Administrative Code</u>	<u>Tank vehicles for flammable and combustible liquids</u>
<u>Paragraph (F)(5)(g)(5906.5.7) of rule 1301:7-7-59 of the Administrative Code</u>	<u>Flammable solids</u>
<u>Paragraph (H)(2)(6108.2) of rule 1301:7-7-61 of the Administrative Code</u>	<u>LP-gas</u>

(2) 906.2 General requirements. Portable fire extinguishers shall be selected, installed and maintained in accordance with this *paragraph* and NFPA 10 as listed in rule 1301:7-7-80 of the Administrative Code.

Exceptions:

1. The distance of travel to reach an extinguisher shall not apply to the spectator seating portions of Group A-5 occupancies.
2. Thirty-day inspections shall not be required and maintenance shall be allowed to be once every 3 years for dry-chemical or halogenated agent portable fire extinguishers that are supervised by a listed and approved electronic monitoring device, provided that all of the following conditions are met:
 - 2.1 Electronic monitoring shall confirm that extinguishers are properly positioned, properly charged and unobstructed.
 - 2.2 Loss of power or circuit continuity to the electronic monitoring device shall initiate a trouble signal.
 - 2.3 The extinguishers shall be installed inside of a building or cabinet in a noncorrosive environment.
 - 2.4 Electronic monitoring devices and supervisory circuits shall be tested every 3 years when extinguisher maintenance is performed.
 - 2.5 A written log of required hydrostatic test dates for extinguishers shall be maintained by the owner to verify that hydrostatic tests are conducted at the frequency required by NFPA 10 as listed in rule 1301:7-7-80 of the Administrative Code.
3. In Group I-3, portable fire extinguishers shall be permitted to be located at staff locations.
 - (a) **906.2.1 Certification of service personnel for portable fire extinguishers.** Service personnel providing or conducting maintenance on portable fire extinguishers shall possess a valid certificate issued by an approved governmental agency, or other approved organization for the type of work performed.

(3) 906.3 Size and distribution. The size and distribution of portable fire extinguishers shall be in accordance with *paragraphs* (F)(3)(a)(906.3.1) to (F)(3)(d)(906.3.4) of this rule.

(a) 906.3.1 Class A fire hazards. Portable fire extinguishers for occupancies that involve primarily Class A fire hazards, the minimum sizes and distribution shall comply with Table 906.3(1) of this rule.

Table 906.3 (1)
Fire extinguishers for Class A fire hazards

	<u>Light (low) hazard occupancy</u>	<u>Ordinary (moderate) hazard occupancy</u>	<u>Extra (high) hazard occupancy</u>
<u>Minimum rated single extinguisher</u>	<u>2-A^c</u>	<u>2-A</u>	<u>4-A^a</u>
<u>Maximum floor area per unit of A</u>	<u>3,000 square feet</u>	<u>1,500 square feet</u>	<u>1,000 square feet</u>
<u>Maximum floor area for extinguisher^b</u>	<u>11,250 square feet</u>	<u>11,250 square feet</u>	<u>11,250 square feet</u>
<u>Maximum distance of travel to extinguisher</u>	<u>75 feet</u>	<u>75 feet</u>	<u>75 feet</u>

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m², 1 gallon = 3.785 L.

a. Two 2½-gallon water-type extinguishers shall be deemed the equivalent of one 4-A rated extinguisher.

b. Annex E.3.3 of NFPA 10 *as listed in rule 1301:7-7-80 of the Administrative Code* provides more details concerning application of the maximum floor area criteria.

c. Two water-type extinguishers each with a 1-A rating shall be deemed the equivalent of one 2-A rated extinguisher for Light (Low) Hazard Occupancies.

Table 906.3(2)^a
Flammable or combustible liquids with depths of less than or equal to 0.25-inch

<u>Type of hazard</u>	<u>Basic minimum extinguisher rating</u>	<u>Maximum distance of travel to extinguishers (feet)</u>
<u>Light (low)</u>	<u>5-B</u> <u>10-B</u>	<u>30</u> <u>50</u>
<u>Ordinary (moderate)</u>	<u>10-B</u> <u>20-B</u>	<u>30</u> <u>50</u>
<u>Extra (high)</u>	<u>40-B</u> <u>80-B</u>	<u>30</u> <u>50</u>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. For requirements on water-soluble flammable liquids and alternative sizing criteria, see section 5.5 of NFPA 10 *as listed in rule 1301:7-7-80 of the Administrative Code*.

(b) 906.3.2 Class B fire hazards. Portable fire extinguishers for occupancies involving flammable or combustible liquids with depths of less than or equal to 0.25-inch (6.4 mm) shall be selected and placed in accordance with Table 906.3(2) *of this rule*.

Portable fire extinguishers for occupancies involving flammable or combustible liquids with a depth of greater than 0.25-inch (6.4 mm) shall be selected and placed in accordance with NFPA 10 *as listed in rule 1301:7-7-80 of the Administrative Code*.

(c) 906.3.3 Class C fire hazards. Portable fire extinguishers for Class C fire hazards shall be selected and placed on the basis of the anticipated Class A or B hazard.

(d) 906.3.4 Class D fire hazards. Portable fire extinguishers for occupancies involving combustible metals shall be selected and placed in accordance with NFPA 10 *as listed in rule 1301:7-7-80 of the Administrative Code*.

(4) 906.4 Cooking grease fires. Fire extinguishers provided for the protection of cooking grease fires shall be of an approved type compatible with the automatic fire-extinguishing system agent and in accordance with *paragraph (D)(12)(e)(904.12.5) of this rule*.

Note: for copyright claim information, please see the notice on the last page of this rule.

(5) **906.5 Conspicuous location.** Portable fire extinguishers shall be located in conspicuous locations where they will be readily accessible and immediately available for use. These locations shall be along normal paths of travel, unless the fire code official determines *and in accordance with the building code as listed in rule 1301:7-7-80 of the Administrative Code* that the hazard posed indicates the need for placement away from normal paths of travel.

(6) **906.6 Unobstructed and unobscured.** Portable fire extinguishers shall not be obstructed or obscured from view. In rooms or areas in which visual obstruction cannot be completely avoided, means shall be provided to indicate the locations of extinguishers.

(7) **906.7 Hangers and brackets.** Hand-held portable fire extinguishers, not housed in cabinets, shall be installed on the hangers or brackets supplied. Hangers or brackets shall be securely anchored to the mounting surface in accordance with the manufacturer's installation instructions.

(8) **906.8 Cabinets.** Cabinets used to house portable fire extinguishers shall not be locked.

Exceptions:

1. Where portable fire extinguishers subject to malicious use or damage are provided with a means of ready access.
2. In Group I-3 occupancies and in mental health areas in Group I-2 occupancies, access to portable fire extinguishers shall be permitted to be locked or to be located in staff locations provided the staff has keys.

(9) **906.9 Extinguisher installation.** The installation of portable fire extinguishers shall be in accordance with paragraphs (F)(9)(a)(906.9.1) to (F)(9)(c)(906.9.3) of this rule.

(a) **906.9.1 Extinguishers weighing 40 pounds or less.** Portable fire extinguishers having a gross weight not exceeding 40 pounds (18 kg) shall be installed so that their tops are not more than 5 feet (1524 mm) above the floor.

(b) **906.9.2 Extinguishers weighing more than 40 pounds.** Hand-held portable fire extinguishers having a gross weight exceeding 40 pounds (18 kg) shall be installed so that their tops are not more than 3.5 feet (1067 mm) above the floor.

(c) **906.9.3 Floor clearance.** The clearance between the floor and the bottom of installed hand-held portable fire extinguishers shall be not less than 4 inches (102 mm).

(10) **906.10 Wheeled units.** Wheeled fire extinguishers shall be conspicuously located in a designated location.

(G) Section 907 Fire alarm and detection systems

(1) **907.1 General.** This paragraph covers the application, installation, performance and maintenance of fire alarm systems and their components in new and existing buildings and structures. The requirements of paragraph (G)(2)(907.2) of this rule are applicable to new buildings and structures. *The requirements for fire alarm and detection systems in new buildings contained in this rule are subject to and do not supersede or otherwise conflict with the requirements of paragraph (D)(2)(a)(104.2.1) of rule 1301:7-7-01 of the Administrative Code. At locations or in structures not regulated by the building code as listed in rule 1301:7-7-80 of the Administrative Code, the fire alarm and detection system shall be approved by the fire code official prior to system installation.* The requirements of paragraph (G)(9)(907.9) of this rule are applicable to existing buildings and structures.

(a) 907.1.1 Construction documents. Construction documents for fire alarm systems shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code, the *building code as listed in rule 1301:7-7-80 of the Administrative Code*, and relevant laws, ordinances, rules and regulations, as determined by the fire code official *and in accordance with the building code as listed in rule 1301:7-7-80 of the Administrative Code*.

(b) 907.1.2 Fire alarm shop drawings. Shop drawings for fire alarm systems shall be submitted for review and approval prior to system installation, and shall include, but not be limited to, all of the following where applicable to the system being installed:

- (i) A floor plan which indicates the use of all rooms.
- (ii) Locations of alarm-initiating devices.
- (iii) Locations of alarm notification appliances, including candela ratings for visible alarm notification appliances.
- (iv) Design minimum audibility level for occupant notification.
- (v) Location of fire alarm control unit, transponders and notification power supplies.
- (vi) Annunciators.
- (vii) Power connection.
- (viii) Battery calculations.
- (ix) Conductor type and sizes.
- (x) Voltage drop calculations.
- (xi) Manufacturers' data sheets indicating model numbers and listing information for equipment, devices and materials.
- (xii) Details of ceiling height and construction.
- (xiii) The interface of fire safety control functions.
- (xiv) Classification of the supervising station.

(c) 907.1.3 Equipment. Systems and components shall be listed and approved for the purpose for which they are installed.

(2) 907.2 Where required-new buildings and structures. An approved fire alarm system installed in accordance with the provisions of this code and NFPA 72 *as listed in rule 1301:7-7-80 of the Administrative Code* shall be provided in new buildings and structures in accordance with *paragraphs (G)(2)(a)(907.2.1) to (G)(2)(w)(907.2.23) of this rule* and provide occupant notification in accordance with *paragraph (G)(5)(907.5) of this rule*, unless other requirements are provided by another *paragraph* of this code.

Not fewer than one manual fire alarm box shall be provided in an approved location to initiate a fire alarm signal for fire alarm systems employing automatic fire detectors or waterflow detection devices. Where other paragraphs of this code allow elimination of the fire alarm boxes due to sprinklers, a single fire alarm box shall be installed.

Exceptions:

1. The manual fire alarm box is not required for fire alarm systems dedicated to elevator recall control and supervisory service.
2. The manual fire alarm box is not required for Group R-2 occupancies unless required by the fire code official *and in accordance with the building code as listed in rule 1301:7-7-80 of the Administrative Code* to provide a means for fire watch personnel to initiate an alarm during a sprinkler system impairment event. *The fire code official shall provide notice to the building official when the manual fire alarm box is required.* Where provided, the manual fire alarm box shall not be located in an area that is accessible to the public.

(a) 907.2.1 Group A. A manual fire alarm system that activates the occupant notification system in accordance with paragraph (G)(5)(907.5) of this rule shall be installed in Group A occupancies where the occupant load due to the assembly occupancy is 300 or more. Group A occupancies not separated from one another in accordance with section 707.3.10 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code* shall be considered as a single occupancy for the purposes of applying this *paragraph*. Portions of Group E occupancies occupied for assembly purposes shall be provided with a fire alarm system as required for the Group E occupancy.

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

(i) 907.2.1.1 System initiation of Group A occupancies with an occupant load of 1,000 or more. Activation of the fire alarm in Group A occupancies with an occupant load of 1,000 or more shall initiate a signal using an emergency voice/alarm communications system in accordance with paragraph (G)(5)(b)(ii)(907.5.2.2) of this rule.

Exception: Where approved, the prerecorded announcement is allowed to be manually deactivated for a period of time, not to exceed 3 minutes, for the sole purpose of allowing a live voice announcement from an approved, constantly attended location.

(ii) 907.2.1.2 Emergency voice/alarm communication system captions. Stadiums, arenas and grandstands required to caption audible public announcements shall be in accordance with paragraph (G)(5)(b)(ii)(d)(907.5.2.2.4) of this rule.

(b) 907.2.2 Group B. A manual fire alarm system shall be installed in Group B occupancies where one of the following conditions exists:

1. The combined Group B occupant load of all floors is 500 or more.
2. The Group B occupant load is more than 100 persons above or below the lowest level of exit discharge.
3. The fire area contains an ambulatory care facility.

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

(i) 907.2.2.1 Ambulatory care facilities. Fire areas containing ambulatory care facilities shall be provided with an electronically supervised automatic smoke detection system installed within the ambulatory care facility and in public use areas outside of tenant spaces, including public corridors and elevator lobbies.

Exception: Buildings equipped throughout with an automatic sprinkler system in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule provided the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

(c) 907.2.3 Group E. A manual fire alarm system that initiates the occupant notification signal utilizing an emergency voice/alarm communication system meeting the requirements of paragraph (G)(5)(b)(ii)(907.5.2.2) of this rule and installed in accordance with paragraph (G)(6)(907.6) of this rule 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.

Exceptions:

1. A manual fire alarm system is not required in Group E occupancies with an occupant load of 50 or less.
2. Emergency voice/alarm communication systems meeting the requirements of paragraph (G)(5)(b)(ii)(907.5.2.2) of this rule and installed in accordance with paragraph (G)(6)(907.6) of this rule shall not be required in Group E occupancies with occupant loads of 100 or less, provided that activation of the manual fire alarm system initiates an approved occupant notification signal in accordance with paragraph (C)(5)(907.5) of this rule.
3. Manual fire alarm boxes are not required in Group E occupancies where all of the following apply:
 - 3.1 Interior corridors are protected by smoke detectors.
 - 3.2 Auditoriums, cafeterias, gymnasiums and similar areas are protected by heat detectors or other approved detection devices.
 - 3.3 Shops and laboratories involving dusts or vapors are protected by heat detectors or other approved detection devices.
4. Manual fire alarm boxes shall not be required in Group E occupancies where all of the following apply:
 - 4.1 The building is equipped throughout with an approved automatic sprinkler system installed in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule.
 - 4.2 The emergency voice/alarm communication system will activate on sprinkler water flow.
 - 4.3 Manual activation is provided from a normally occupied location.

(d) 907.2.4 Group F. A manual fire alarm system that activates the occupant notification system in accordance with paragraph (G)(5)(907.5) of this rule shall be installed in Group F occupancies where both of the following conditions exist:

- (i) The Group F occupancy is two or more stories in height.
- (ii) The Group F occupancy has a combined occupant load of 500 or more above or below the lowest level of exit discharge.

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with *paragraph (C)(3)(a)(i)(903.3.1.1) of this rule* and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

(e) **907.2.5 Group H.** A manual fire alarm system that activates the occupant notification system in accordance with *paragraph (G)(5)(907.5) of this rule* shall be installed in Group H-5 occupancies and in occupancies used for the manufacture of organic coatings. An automatic smoke detection system shall be installed for highly toxic gases, organic peroxides and oxidizers in accordance with *rules 1301:7-7-60, 1301:7-7-62 and 1301:7-7-63 of the Administrative Code*, respectively.

(f) **907.2.6 Group I.** A manual fire alarm system that activates the occupant notification system in accordance with *paragraph (G)(5)(907.5) of this rule* shall be installed in Group I occupancies. An automatic smoke detection system that activates the occupant notification system in accordance with *paragraph (G)(5)(907.5) of this rule* shall be provided in accordance with *paragraphs (G)(2)(f)(i)(907.2.6.1), (G)(2)(f)(ii)(907.2.6.2) and (G)(2)(f)(iii)(c)(907.2.6.3.3) of this rule*.

Exceptions:

1. Manual fire alarm boxes in sleeping units of Group I-1 and I-2 occupancies shall not be required at exits if located at all care providers' control stations or other constantly attended staff locations, provided such stations are visible and continuously accessible and that the distances of travel required in *paragraph (G)(4)(b)(i)(907.4.2.1) of this rule* are not exceeded.
2. Occupant notification systems are not required to be activated where private mode signaling installed in accordance with NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code is approved by the fire code official and in accordance with the building code as listed in rule 1301:7-7-80 of the Administrative Code and staff evacuation responsibilities are included in the fire safety and evacuation plan required by *paragraph (D)(404) of rule 1301:7-7-04 of the Administrative Code*.

(i) **907.2.6.1 Group I-1.** An automatic smoke detection system shall be installed in corridors, waiting areas open to corridors and habitable spaces other than sleeping units and kitchens. The system shall be activated in accordance with *paragraph (G)(5)(907.5) of this rule*.

Exceptions:

1. For Group I-1 Condition 1 occupancies, smoke detection in habitable spaces is not required where the facility is equipped throughout with an automatic sprinkler system installed in accordance with *paragraph (C)(3)(a)(i)(903.3.1.1) of this rule*.
2. Smoke detection is not required for exterior balconies.

(a) **907.2.6.1.1 Smoke alarms.** Single- and multiple-station smoke alarms shall be installed in accordance with *paragraph (G)(2)(k)(907.2.11) of this rule*.

(ii) **907.2.6.2 Group I-2.** An automatic smoke detection system shall be installed in corridors in Group I-2 Condition 1 facilities and spaces permitted to be open to the corridors by section 407.2 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*. The system shall be activated in accordance with *paragraph (G)(4)(907.4) of this rule*. Group I-2 Condition 2 occupancies shall be equipped with an automatic smoke detection system as required in section 407 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*.

Exceptions:

Note: for copyright claim information, please see the notice on the last page of this rule.

1. Corridor smoke detection is not required in smoke compartments that contain sleeping units where such units are provided with smoke detectors that comply with UL 268 as listed in rule 1301:7-7-80 of the Administrative Code. Such detectors shall provide a visual display on the corridor side of each sleeping unit and shall provide an audible and visual alarm at the care providers' station attending each unit.
2. Corridor smoke detection is not required in smoke compartments that contain sleeping units where sleeping unit doors are equipped with automatic door-closing devices with integral smoke detectors on the unit sides installed in accordance with their listing, provided that the integral detectors perform the required alerting function.

(iii) 907.2.6.3 Group I-3 occupancies. Group I-3 occupancies shall be equipped with a manual fire alarm system and automatic smoke detection system installed for alerting staff.

(a) 907.2.6.3.1 System initiation. Actuation of an automatic fire-extinguishing system, automatic sprinkler system, a manual fire alarm box or a fire detector shall initiate an approved fire alarm signal that automatically notifies staff.

(b) 907.2.6.3.2 Manual fire alarm boxes. Manual fire alarm boxes are not required to be located in accordance with paragraph (G)(4)(b)(907.4.2) of this rule where the fire alarm boxes are provided at staff-attended locations having direct supervision over areas where manual fire alarm boxes have been omitted.

(i) 907.2.6.3.2.1 Manual fire alarm boxes in detainee areas. Manual fire alarm boxes are allowed to be locked in areas occupied by detainees, provided that staff members are present within the subject area and have keys readily available to operate the manual fire alarm boxes.

(c) 907.2.6.3.3 Automatic smoke detection system. An automatic smoke detection system shall be installed throughout resident housing areas, including sleeping units and contiguous day rooms, group activity spaces and other common spaces normally accessible to residents.

Exceptions:

1. Other approved smoke detection arrangements providing equivalent protection, including, but not limited to, placing detectors in exhaust ducts from cells or behind protective guards listed for the purpose, are allowed when necessary to prevent damage or tampering.
2. Sleeping units in Use Conditions 2 and 3 as described in section 308 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.
3. Smoke detectors are not required in sleeping units with four or fewer occupants in smoke compartments that are equipped throughout with an automatic sprinkler system installed in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule.

(g) 907.2.7 Group M. A manual fire alarm system that activates the occupant notification system in accordance with paragraph (G)(5)(907.5) of this rule shall be installed in Group M occupancies where one of the following conditions exists.

1. The combined Group M occupant load of all floors is 500 or more persons.
2. The Group M occupant load is more than 100 persons above or below the lowest level of exit discharge.

Exceptions:

Note: for copyright claim information, please see the notice on the last page of this rule.

1. A manual fire alarm system is not required in covered or open mall buildings complying with section 402 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.
2. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule and the occupant notification appliances will automatically activate throughout the notification zones upon sprinkler water flow.

(i) 907.2.7.1 Occupant notification. During times that the building is occupied, the initiation of a signal from a manual fire alarm box or from a waterflow switch shall not be required to activate the alarm notification appliances when an alarm signal is activated at a constantly attended location from which evacuation instructions shall be initiated over an emergency voice/alarm communication system installed in accordance with paragraph (G)(5)(b)(ii)(907.5.2.2) of this rule.

(h) 907.2.8 Group R-1. Fire alarm systems and smoke alarms shall be installed in Group R-1 occupancies as required in paragraphs (G)(2)(h)(i)(907.2.8.1) to (G)(2)(h)(iii)(907.2.8.3) of this rule.

(i) 907.2.8.1 Manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with paragraph (G)(5)(907.5) of this rule shall be installed in Group R-1 occupancies.

Exceptions:

1. A manual fire alarm system is not required in buildings not more than two stories in height where all individual sleeping units and contiguous attic and crawl spaces to those units are separated from each other and public or common areas by not less than 1-hour fire partitions and each individual sleeping unit has an exit directly to a public way, egress court or yard.
2. Manual fire alarm boxes are not required throughout the building where all of the following conditions are met:
 - 2.1 The building is equipped throughout with an automatic sprinkler system installed in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) or (C)(3)(a)(ii)(903.3.1.2) of this rule.
 - 2.2 The notification appliances will activate upon sprinkler water flow.
 - 2.3 Not fewer than one manual fire alarm box is installed at an approved location.

(ii) 907.2.8.2 Automatic smoke detection system. An automatic smoke detection system that activates the occupant notification system in accordance with paragraph (G)(5)(907.5) of this rule shall be installed throughout all interior corridors serving sleeping units.

Exception: An automatic smoke detection system is not required in buildings that do not have interior corridors serving sleeping units and where each sleeping unit has a means of egress door opening directly to an exit or to an exterior exit access that leads directly to an exit.

(iii) 907.2.8.3 Smoke alarms. Single- and multiple-station smoke alarms shall be installed in accordance with paragraph (G)(2)(k)(907.2.11) of this rule.

(i) 907.2.9 Group R-2. Fire alarm systems and smoke alarms shall be installed in Group R-2 occupancies as required in paragraphs (G)(2)(i)(i)(907.2.9.1) and (G)(9)(i)(iii)(907.2.9.3) of this rule.

(i) 907.2.9.1 Manual fire alarm system. A manual fire alarm system that activates the occupant notification system in accordance with paragraph (G)(5)(907.5) of this rule shall be installed in Group R-2 occupancies where any of the following conditions apply:

- (a) Any dwelling unit or sleeping unit is located three or more stories above the lowest level of exit discharge.
- (b) Any dwelling unit or sleeping unit is located more than one story below the highest level of exit discharge of exits serving the dwelling unit or sleeping unit.
- (c) The building contains more than 16 dwelling units or sleeping units.

Exceptions:

- 1. A fire alarm system is not required in buildings not more than two stories in height where all dwelling units or sleeping units and contiguous attic and crawl spaces are separated from each other and public or common areas by not less than 1-hour fire partitions and each dwelling unit or sleeping unit has an exit directly to a public way, egress court or yard.
- 2. Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with paragraphs (C)(3)(a)(i)(903.3.1.1) or (C)(3)(a)(ii)(903.3.1.2) of this rule and the occupant notification appliances will automatically activate throughout the notification zones upon a sprinkler water flow.
- 3. A fire alarm system is not required in buildings that do not have interior corridors serving dwelling units and are protected by an approved automatic sprinkler system installed in accordance with paragraphs (C)(3)(a)(i)(903.3.1.1) or (C)(3)(a)(ii)(903.3.1.2) of this rule, provided that dwelling units either have a means of egress door opening directly to an exterior exit access that leads directly to the exits or are served by open-ended corridors designed in accordance with paragraph (AA)(6)(1027.6) exception 3 of rule 1301:7-7-10 of the Administrative Code.

(ii) 907.2.9.2 Smoke alarms. Single- and multiple-station smoke alarms shall be installed in accordance with paragraph (G)(2)(k)(907.2.11) of this rule.

(iii) 907.2.9.3 Group R-2 college and university buildings. An automatic smoke detection system that activates the occupant notification system in accordance with paragraph (G)(5)(907.5) of this rule shall be installed in Group R-2 occupancies owned or operated by a college or university for student or staff housing in all of the following locations:

- (a) Common spaces outside of dwelling units and sleeping units.
- (b) Laundry rooms, mechanical equipment rooms and storage rooms.
- (c) All interior corridors serving sleeping units or dwelling units.

Exception: An automatic smoke detection system is not required in buildings that do not have interior corridors serving sleeping units or dwelling units and where each sleeping unit or dwelling unit either has a means of egress door opening directly to an exterior exit access that leads directly to an exit or a means of egress door opening directly to an exit.

Required smoke alarms in dwelling units and sleeping units in Group R-2 *occupancies operated by a college and university for student or staff housing* shall be interconnected with the fire alarm system in accordance with NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code.

(j) **907.2.10 Group R-4.** Fire alarm systems and smoke alarms shall be installed in Group R-4 occupancies as required in *paragraphs (G)(2)(j)(i)(907.2.10.1) to (G)(2)(j)(iii)(907.2.10.3) of this rule.*

(i) **907.2.10.1 Manual fire alarm system.** A manual fire alarm system that activates the occupant notification system in accordance with *paragraph (G)(5)(907.5) of this rule* shall be installed in Group R-4 occupancies.

Exceptions:

1. A manual fire alarm system is not required in buildings not more than two stories in height where all individual sleeping units and contiguous attic and crawl spaces to those units are separated from each other and public or common areas by not less than 1-hour fire partitions and each individual sleeping unit has an exit directly to a public way, egress court or yard.
2. Manual fire alarm boxes are not required throughout the building where all of the following conditions are met:
 - 2.1 The building is equipped throughout with an automatic sprinkler system installed in accordance with *paragraph (C)(3)(a)(i)(903.3.1.1) or (C)(3)(a)(ii)(903.3.1.2) of this rule.*
 - 2.2 The notification appliances will activate upon sprinkler water flow.
 - 2.3 Not fewer than one manual fire alarm box is installed at an approved location.
3. Manual fire alarm boxes in resident or patient sleeping areas shall not be required at exits where located at all nurses' control stations or other constantly attended staff locations, provided such stations are visible and continuously accessible and that the distances of travel required in *paragraph (G)(4)(b)(i)(907.4.2.1) of this rule* are not exceeded.

(ii) **907.2.10.2 Automatic smoke detection system.** An automatic smoke detection system that activates the occupant notification system in accordance with *paragraph (G)(5)(907.5) of this rule* shall be installed in corridors, waiting areas open to corridors and habitable spaces other than sleeping units and kitchens.

Exceptions:

1. Smoke detection in habitable spaces is not required where the facility is equipped throughout with an automatic sprinkler system installed in accordance with *paragraph (C)(3)(a)(i)(903.3.1.1) of this rule.*
2. An automatic smoke detection system is not required in buildings that do not have interior corridors serving sleeping units and where each sleeping unit has a means of egress door opening directly to an exit or to an exterior exit access that leads directly to an exit.

(iii) **907.2.10.3 Smoke alarms.** Single- and multiple-station smoke alarms shall be installed in accordance with *paragraph (G)(2)(k)(907.2.11) of this rule.*

(k) **907.2.11 Single- and multiple-station smoke alarms.** Listed single- and multiple-station smoke alarms complying with UL 217 as listed in rule 1301:7-7-80 of the Administrative Code shall be installed in accordance with *paragraphs (G)(2)(k)(i)(907.2.11.1) to (G)(2)(k)(vi)(907.2.11.6) of this rule* and NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code.

(i) **907.2.11.1 Group R-1.** Single- or multiple-station smoke alarms shall be installed in all of the following locations in Group R-1:

- (a) In sleeping areas.
- (b) In every room in the path of the means of egress from the sleeping area to the door leading from the sleeping unit.
- (c) In each story within the sleeping unit, including basements. For sleeping units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

(ii) **907.2.11.2 Groups R-2, R-3, R-4 and I-1.** Single- or multiple-station smoke alarms shall be installed and maintained in Groups R-2, R-3, R-4 and I-1 regardless of occupant load at all of the following locations:

- (a) On the ceiling or wall outside of each separate sleeping area in the immediate vicinity of bedrooms.
- (b) In each room used for sleeping purposes.
- (c) In each story within a dwelling unit, including basements but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

(iii) **907.2.11.3 Installation near cooking appliances.** Smoke alarms shall not be installed in the following locations unless this would prevent placement of a smoke alarm in a location required by *paragraph (G)(2)(k)(i)(907.2.11.1) or (G)(2)(k)(ii)(907.2.11.2) of this rule*:

- (a) Ionization smoke alarms shall not be installed less than 20 feet (6096 mm) horizontally from a permanently installed cooking appliance.
- (b) Ionization smoke alarms with an alarm-silencing switch shall not be installed less than 10 feet (3048 mm) horizontally from a permanently installed cooking appliance.
- (c) Photoelectric smoke alarms shall not be installed less than 6 feet (1829 mm) horizontally from a permanently installed cooking appliance.

(iv) **907.2.11.4 Installation near bathrooms.** Smoke alarms shall be installed not less than 3 feet (914 mm) horizontally from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by *paragraph (G)(2)(k)(i)(907.2.11.1) or (G)(2)(k)(ii)(907.2.11.2) of this rule*.

(v) **907.2.11.5 Interconnection.** Where more than one smoke alarm is required to be installed within an individual dwelling unit or sleeping unit in Group R or I-1 occupancies, the smoke alarms shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.

(vi) **907.2.11.6 Power source.** In new construction, required smoke alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and shall be equipped with a

battery backup. Smoke alarms with integral strobes that are not equipped with battery back-up shall be connected to an emergency electrical system in accordance with *paragraph (D)(604) of rule 1301:7-7-06 of the Administrative Code*. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.

Exception: Smoke alarms are not required to be equipped with battery backup where they are connected to an emergency electrical system that complies with *paragraph (D)(604) of rule 1301:7-7-06 of the Administrative Code*.

(vii) 907.2.11.7 Smoke detection system. Smoke detectors listed in accordance with UL 268 *as listed in rule 1301:7-7-80 of the Administrative Code* and provided as part of the building fire alarm system shall be an acceptable alternative to single- and multiple-station smoke alarms and shall comply with the following:

- (a) The fire alarm system shall comply with all applicable requirements in *paragraph (G)(907) of this rule*.*
- (b) Activation of a smoke detector in a dwelling unit or sleeping unit shall initiate alarm notification in the dwelling unit or sleeping unit in accordance with *paragraph (G)(5)(b)(907.5.2) of this rule*.*
- (c) Activation of a smoke detector in a dwelling unit or sleeping unit shall not activate alarm notification appliances outside of the dwelling unit or sleeping unit, provided that a supervisory signal is generated and monitored in accordance with *paragraph (G)(6)(f)(907.6.6) of this rule*.*

(l) 907.2.12 Special amusement buildings. An automatic smoke detection system shall be provided in special amusement buildings in accordance with *paragraphs (G)(2)(l)(i)(907.2.12.1) to (G)(2)(l)(iii)(907.2.12.3) of this rule*.

(i) 907.2.12.1 Alarm. Activation of any single smoke detector, the automatic sprinkler system or any other automatic fire detection device shall immediately activate an audible and visible alarm at the building at a constantly attended location from which emergency action can be initiated, including the capability of manual initiation of requirements in *paragraph (G)(2)(l)(ii)(907.2.12.2) of this rule*.

(ii) 907.2.12.2 System response. The activation of two or more smoke detectors, a single smoke detector equipped with an alarm verification feature, the automatic sprinkler system or other approved fire detection device shall automatically do all of the following:

- (a) Cause illumination of the means of egress with light of not less than 1 foot candle (11 lux) at the walking surface level.*
- (b) Stop any conflicting or confusing sounds and visual distractions.*
- (c) Activate an approved directional exit marking that will become apparent in an emergency.*
- (d) Activate a prerecorded message, audible throughout the special amusement building, instructing patrons to proceed to the nearest exit. Alarm signals used in conjunction with the prerecorded message shall produce a sound that is distinctive from other sounds used during normal operation.*

(iii) 907.2.12.3 Emergency voice/alarm communication system. An emergency voice/alarm communication system, which is also allowed to serve as a public address system, shall be installed in accordance with *paragraph (G)(5)(b)(ii)(907.5.2.2) of this rule* and be audible throughout the entire special amusement building.

(m) 907.2.13 High-rise buildings. High-rise buildings shall be provided with an automatic smoke detection system in accordance with *paragraph (G)(2)(m)(i)(907.2.13.1) of this rule*, a fire department communication

system in accordance with paragraph (G)(2)(m)(ii)(907.2.13.2) of this rule and an emergency voice/alarm communication system in accordance with paragraph (G)(5)(b)(ii)(907.5.2.2) of this rule.

Exceptions:

1. Airport traffic control towers in accordance with paragraph (G)(2)(u)(907.2.22) of this rule and section 412 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.
2. Open parking garages in accordance with section 406.5 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.
3. Buildings with an occupancy in Group A-5 in accordance with section 303.1 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.
4. Low-hazard special occupancies in accordance with section 503.1.1 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.
5. Buildings with an occupancy in Group H-1, H-2 or H-3 in accordance with section 415 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.
6. In Group I-1 and I-2 occupancies, the alarm shall sound at a constantly attended location and occupant notification shall be broadcast by the emergency voice/alarm communication system.

(i) 907.2.13.1 Automatic smoke detection. Automatic smoke detection in high-rise buildings shall be in accordance with paragraphs (G)(2)(m)(i)(a)(907.2.13.1.1) and (G)(2)(m)(i)(b)(907.2.13.1.2) of this rule.

(a) 907.2.13.1.1 Area smoke detection. Area smoke detectors shall be provided in accordance with this paragraph. Smoke detectors shall be connected to an automatic fire alarm system. The activation of any detector required by this paragraph shall activate the emergency voice/alarm communication system in accordance with paragraph (G)(5)(b)(ii)(907.5.2.2) of this rule. In addition to smoke detectors required by paragraph (G)(2)(a)(907.2.1) to (G)(2)(i)(907.2.10) of this rule smoke detectors shall be located as follows:

- (i) In each mechanical equipment, electrical, transformer, telephone equipment or similar room that is not provided with sprinkler protection.
- (ii) In each elevator machine room, machinery space, control room and control space and in elevator lobbies.

(b) 907.2.13.1.2 Duct smoke detection. Duct smoke detectors complying with paragraph (G)(4)(a)(907.4.1) of this rule shall be located as follows:

- (i) In the main return air and exhaust air plenum of each air-conditioning system having a capacity greater than 2,000 cubic feet per minute (cfm) (0.94 m³/s). Such detectors shall be located in a serviceable area downstream of the last duct inlet.
- (ii) At each connection to a vertical duct or riser serving two or more stories from a return air duct or plenum of an air-conditioning system. In Group R-1 and R-2 occupancies, a smoke detector is allowed to be used in each return air riser carrying not more than 5,000 cfm (2.4 m³/s) and serving not more than 10 air-inlet openings.

(ii) 907.2.13.2 Fire department communication system. Where a wired communication system is approved in lieu of a radio coverage system in accordance with paragraph (J)(510) of rule 1301:7-7-05 of the Administrative Code, the wired fire department communication system shall be designed and installed in

accordance with NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code and shall operate between a fire command center complying with paragraph (H)(508) of rule 1301:7-7-05 of the Administrative Code, elevators, elevator lobbies, emergency and standby power rooms, fire pump rooms, areas of refuge and inside interior exit stairways. The fire department communication device shall be provided at each floor level within the interior exit stairway.

(n) 907.2.14 Atriums connecting more than two stories. A fire alarm system shall be installed in occupancies with an atrium that connects more than two stories, with smoke detection in locations required by a rational analysis in paragraph (I)(4)(909.4) of this rule and in accordance with the system operation requirements in paragraph (I)(17)(909.17) of this rule. The system shall be activated in accordance with paragraph (G)(5)(907.5) of this rule. Such occupancies in Group A, E or M shall be provided with an emergency voice/alarm communication system complying with the requirements of paragraph (G)(5)(b)(ii)(907.5.2.2) of this rule.

(o) 907.2.15 High-piled combustible storage areas. An automatic smoke detection system shall be installed throughout high-piled combustible storage areas where required by paragraph (F)(5)(3206.5) of rule 1301:7-7-32 of the Administrative Code.

(p) 907.2.16 Aerosol storage uses. Aerosol storage rooms and general-purpose warehouses containing aerosols shall be provided with an approved manual fire alarm system where required by this code.

(q) 907.2.17 Lumber, wood structural panel and veneer mills. Lumber, wood structural panel and veneer mills shall be provided with a manual fire alarm system.

(r) 907.2.18 Underground buildings with smoke control systems. Where a smoke control system is installed in an underground building in accordance with the building code as listed in rule 1301:7-7-80 of the Administrative Code, automatic smoke detectors shall be provided in accordance with paragraph (G)(2)(r)(i)(907.2.18.1) of this rule.

(i) 907.2.18.1 Smoke detectors. Not fewer than one smoke detector listed for the intended purpose shall be installed in all of the following areas:

- (a)** Mechanical equipment, electrical, transformer, telephone equipment, elevator machine or similar rooms.
- (b)** Elevator lobbies.
- (c)** The main return and exhaust air plenum of each air-conditioning system serving more than one story and located in a serviceable area downstream of the last duct inlet.
- (d)** Each connection to a vertical duct or riser serving two or more floors from return air ducts or plenums of heating, ventilating and air-conditioning systems, except that in Group R occupancies, a listed smoke detector is allowed to be used in each return air riser carrying not more than 5,000 cfm (2.4 m³/s) and serving not more than 10 air inlet openings.

(ii) 907.2.18.2 Alarm required. Activation of the smoke control system shall activate an audible alarm at a constantly attended location.

(s) 907.2.19 Deep underground buildings. Where the lowest level of a structure is more than 60 feet (18 288 mm) below the finished floor of the lowest level of exit discharge, the structure shall be equipped throughout with a manual fire alarm system, including an emergency voice/alarm communication system installed in accordance with paragraph (G)(5)(b)(ii)(907.5.2.2) of this rule.

(t) 907.2.20 Covered and open mall buildings. Where the total floor area exceeds 50,000 square feet (4645 m²) within either a covered mall building or within the perimeter line of an open mall building, an emergency voice/alarm communication system shall be provided. Emergency voice/alarm communication systems serving a mall, required or otherwise, shall be accessible to the fire department. The system shall be provided in accordance with paragraph (G)(5)(b)(ii)(907.5.2.2) of this rule.

(u) 907.2.21 Residential aircraft hangars. Not fewer than one single-station smoke alarm shall be installed within a residential aircraft hangar as defined in chapter 2 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code* and shall be interconnected into the residential smoke alarm or other sounding device to provide an alarm that will be audible in all sleeping areas of the dwelling.

(v) 907.2.22 Airport traffic control towers. An automatic smoke detection system that activates the occupant notification system in accordance with paragraph (G)(5)(907.5) of this rule shall be provided in airport control towers in accordance with paragraphs (G)(2)(v)(i)(907.2.22.1) and (G)(2)(v)(ii)(907.2.22.2) of this rule.

Exception: Audible appliances shall not be installed within the control tower cab.

(i) 907.2.22.1 Airport traffic control towers with multiple exits and automatic sprinklers. Airport traffic control towers with multiple exits and equipped throughout with an automatic sprinkler system in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule shall be provided with smoke detectors in all of the following locations:

- (a) Airport traffic control cab.
- (b) Electrical and mechanical equipment rooms.
- (c) Airport terminal radar and electronics rooms.
- (d) Outside each opening into interior exit stairways.
- (e) Along the single means of egress permitted from observation levels.
- (f) Outside each opening into the single means of egress permitted from observation levels.

(ii) 907.2.22.2 Other airport traffic control towers. Airport traffic control towers with a single exit or where sprinklers are not installed throughout shall be provided with smoke detectors in all of the following locations:

- (a) Airport traffic control cab.
- (b) Electrical and mechanical equipment rooms.
- (c) Airport terminal radar and electronics rooms.
- (d) Office spaces incidental to the tower operation.
- (e) Lounges for employees, including sanitary facilities.
- (f) Means of egress.
- (g) Accessible utility shafts.

(w) 907.2.23 Battery rooms. An automatic smoke detection system shall be installed in areas containing stationary storage battery systems with a liquid capacity of more than 50 gallons (189 L).

(3) 907.3 Fire safety functions. Automatic fire detectors utilized for the purpose of performing fire safety functions shall be connected to the building's fire alarm control unit where a fire alarm system is required by paragraph (G)(2)(907.2) of this rule. Detectors shall, upon actuation, perform the intended function and activate the alarm notification appliances or activate a visible and audible supervisory signal at a constantly attended location. In buildings not equipped with a fire alarm system, the automatic fire detector shall be powered by normal electrical service and, upon actuation, perform the intended function. The detectors shall be located in accordance with NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code.

(a) 907.3.1 Duct smoke detectors. Smoke detectors installed in ducts shall be listed for the air velocity, temperature and humidity present in the duct. Duct smoke detectors shall be connected to the building's fire alarm control unit when a fire alarm system is required by paragraph (G)(2)(907.2) of this rule. Activation of a duct smoke detector shall initiate a visible and audible supervisory signal at a constantly attended location and shall perform the intended fire safety function in accordance with this code and the mechanical code as listed in rule 1301:7-7-80 of the Administrative Code. In facilities that are required to be monitored by a supervising station, duct smoke detectors shall report only as a supervisory signal and not as a fire alarm. They shall not be used as a substitute for required open area detection.

Exceptions:

1. The supervisory signal at a constantly attended location is not required where duct smoke detectors activate the building's alarm notification appliances.
2. In occupancies not required to be equipped with a fire alarm system, actuation of a smoke detector shall activate a visible and an audible signal in an approved location. Smoke detector trouble conditions shall activate a visible or audible signal in an approved location and shall be identified as air duct detector trouble.

(b) 907.3.2 Delayed egress locks. Where delayed egress locks are installed on means of egress doors in accordance with paragraph (J)(1)(i)(vii)(1010.1.9.7) of rule 1301:7-7-10 of the Administrative Code, an automatic smoke or heat detection system shall be installed as required by that paragraph.

(c) 907.3.3 Elevator emergency operation. Automatic fire detectors installed for elevator emergency operation shall be installed in accordance with the provisions of ASME A17.1/CSA B44 and NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code.

(d) 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 NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code.

(4) 907.4 Initiating devices. Where manual or automatic alarm initiation is required as part of a fire alarm system, the initiating devices shall be installed in accordance with paragraphs (G)(4)(a)(907.4.1) to (G)(4)(c)(i)(907.4.3.1) of this rule.

(a) 907.4.1 Protection of fire alarm control unit. In areas that are not continuously occupied, a single smoke detector shall be provided at the location of each fire alarm control unit, notification appliance circuit power extenders and supervising station transmitting equipment.

Exception: Where ambient conditions prohibit installation of a smoke detector, a heat detector shall be permitted.

(b) 907.4.2 Manual fire alarm boxes. Where a manual fire alarm system is required by another *paragraph* of this code, it shall be activated by fire alarm boxes installed in accordance with *paragraphs* (G)(4)(b)(i)(907.4.2.1) to (G)(4)(b)(vi)(907.4.2.6) of this rule.

(i) **907.4.2.1 Location.** Manual fire alarm boxes shall be located not more than 5 feet (1524 mm) from the entrance to each exit. In buildings not protected by an automatic sprinkler system in accordance with *paragraph* (C)(3)(a)(i)(903.3.1.1) or (C)(3)(a)(ii)(903.3.1.2) of this rule, additional manual fire alarm boxes shall be located so that the exit access travel distance to the nearest box does not exceed 200 feet (60 960 mm).

(ii) **907.4.2.2 Height.** The height of the manual fire alarm boxes shall be not less than 42 inches (1067 mm) and not more than 48 inches (1372 mm) measured vertically, from the floor level to the activating handle or lever of the box.

(iii) **907.4.2.3 Color.** Manual fire alarm boxes shall be red in color.

(iv) **907.4.2.4 Signs.** Where fire alarm systems are not monitored by a supervising station, an approved permanent sign shall be installed adjacent to each manual fire alarm box that reads: "WHEN ALARM SOUNDS-CALL FIRE DEPARTMENT."

Exception: Where the manufacturer has permanently provided this information on the manual fire alarm box.

(v) **907.4.2.5 Protective covers.** The fire code official is authorized to require the installation of listed manual fire alarm box protective covers to prevent malicious false alarms or to provide the manual fire alarm box with protection from physical damage and in accordance with the building code as listed in rule 1301:7-7-80 of the Administrative Code. The protective cover shall be transparent or red in color with a transparent face to permit visibility of the manual fire alarm box. Each cover shall include proper operating instructions. A protective cover that emits a local alarm signal shall not be installed unless approved. Protective covers shall not project more than that permitted by *paragraph* (C)(3)(c)(1003.3.3) of rule 1301:7-7-10 of the Administrative Code.

(vi) **907.4.2.6 Unobstructed and unobscured.** Manual fire alarm boxes shall be accessible, unobstructed, unobscured and visible at all times.

(c) 907.4.3 Automatic smoke detection. Where an automatic smoke detection system is required it shall utilize smoke detectors unless ambient conditions prohibit such an installation. In spaces where smoke detectors cannot be utilized due to ambient conditions, approved automatic heat detectors shall be permitted.

(i) **907.4.3.1 Automatic sprinkler system.** For conditions other than specific fire safety functions noted in *paragraph* (G)(3)(907.3) of this rule in areas where ambient conditions prohibit the installation of smoke detectors, an automatic sprinkler system installed in such areas in accordance with *paragraph* (C)(3)(a)(i)(903.3.1.1) or (C)(3)(a)(ii)(903.3.1.2) of this rule and that is connected to the fire alarm system shall be approved as automatic heat detection.

(5) 907.5 Occupant notification systems. A fire alarm system shall annunciate at the fire alarm control unit and shall initiate occupant notification upon activation, in accordance with *paragraphs* (G)(5)(a)(907.5.1) to (G)(5)(b)(iii)(c)(907.5.2.3.3) of this rule. Where a fire alarm system is required by another *paragraph* of this code, it shall be activated by:

1. Automatic fire detectors.
2. Automatic sprinkler system waterflow devices.

3. Manual fire alarm boxes.
4. Automatic fire-extinguishing systems.

Exception: Where notification systems are allowed elsewhere in this *paragraph (G)(907) of this rule* to annunciate at a constantly attended location.

(a) 907.5.1 Pre-signal feature. Pre-signal feature shall not be installed unless approved by the fire code official and the fire department *and in accordance with the building code as listed in rule 1301:7-7-80 of the Administrative Code*. Where a pre-signal feature is provided, a signal shall be annunciated at a constantly attended location approved by the fire department *and in accordance with the building code as listed in rule 1301:7-7-80 of the Administrative Code*, so that occupant notification can be activated in the event of fire or other emergency.

(b) 907.5.2 Alarm notification appliances. Alarm notification appliances shall be provided and shall be listed for their purpose. *Audible and visual alarm notification appliances shall be located and installed in accordance with this paragraph, accessibility requirements as set forth in chapter 11 of the building code as listed in rule 1301:7-7-80 of the Administrative Code and NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code.*

(i) 907.5.2.1 Audible alarms. Audible alarm notification appliances shall be provided and emit a distinctive sound that is not to be used for any purpose other than that of a fire alarm.

Exceptions:

1. Audible alarm notification appliances are not required in critical care areas of Group I-2 Condition 2 occupancies that are in compliance with *paragraph (G)(2)(f)(907.2.6)*, Exception 2 of this rule.
2. A visible alarm notification appliance installed in a nurses' control station or other continuously attended staff location in a Group I-2 Condition 2 suite shall be an acceptable alternative to the installation of audible alarm notification appliances throughout the suite in Group I-2 Condition 2 occupancies that are in compliance with *paragraph (G)(2)(f)(907.2.6)*, Exception 2 of this rule.
3. Where provided, audible notification appliances located in each occupant evacuation elevator lobby in accordance with section 3008.9.1 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code* shall be connected to a separate notification zone for manual paging only.

(a) 907.5.2.1.1 Average sound pressure. The audible alarm notification appliances shall provide a sound pressure level of 15 decibels (dBA) above the average ambient sound level or 5 dBA above the maximum sound level having a duration of not less than 60 seconds, whichever is greater, in every occupiable space within the building.

(b) 907.5.2.1.2 Maximum sound pressure. The maximum sound pressure level for audible alarm notification appliances shall be 110 dBA at the minimum hearing distance from the audible appliance. *Where the average ambient noise is greater than 95 dBA, visible alarm notification appliances shall be provided in accordance with NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code and audible alarm notification appliances shall not be required.*

(ii) 907.5.2.2 Emergency voice/alarm communication systems. Emergency voice/alarm communication systems shall be designed and installed in accordance with NFPA 72 *as listed in rule 1301:7-7-80 of the Administrative Code*. The operation of any automatic fire detector, sprinkler waterflow device or manual fire alarm box shall automatically sound an alert tone followed by voice instructions giving approved information and directions for a general or staged evacuation in accordance with the building's fire safety and evacuation plans required by *paragraph (D)(404) of rule 1301:7-7-04 of the Administrative Code*. In high-rise buildings,

the system shall operate on at least the alarming floor, the floor above and the floor below. Speakers shall be provided throughout the building by paging zones. At a minimum, paging zones shall be provided as follows:

1. Elevator groups.
2. Interior exit stairways.
3. Each floor.
4. Areas of refuge as defined in rule 1301:7-7-02 of the Administrative Code.

Exception: In Group I-1 and I-2 occupancies, the alarm shall sound in a constantly attended area and a general occupant notification shall be broadcast over the overhead page.

(a) 907.5.2.2.1 Manual override. A manual override for emergency voice communication shall be provided on a selective and all-call basis for all paging zones.

(b) 907.5.2.2.2 Live voice messages. The emergency voice/alarm communication system shall also have the capability to broadcast live voice messages by paging zones on a selective and all-call basis.

(c) 907.5.2.2.3 Alternate uses. The emergency voice/alarm communication system shall be allowed to be used for other announcements, provided the manual fire alarm use takes precedence over any other use.

(d) 907.5.2.2.4 Emergency voice/alarm communication captions. Where stadiums, arenas and grandstands are required to caption audible public announcements in accordance with section 1108.2.7.3 of the building code as listed in rule 1301:7-7-80 of the Administrative Code, the emergency/voice alarm communication system shall be captioned. Prerecorded or live emergency captions shall be from an approved location constantly attended by personnel trained to respond to an emergency.

(e) 907.5.2.2.5 Emergency power. Emergency voice/alarm communications systems shall be provided with emergency power in accordance with paragraph (D)(604) of rule 1301:7-7-06 of the Administrative Code. The system shall be capable of powering the required load for a duration of not less than 24 hours, as required in NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code.

(iii) 907.5.2.3 Visible alarms. Visible alarm notification appliances shall be provided in accordance with paragraphs (G)(5)(b)(iii)(a)(907.5.2.3.1) to (G)(5)(b)(iii)(c)(907.5.2.3.3) of this rule.

Exceptions:

1. Visible alarm notification appliances are not required in alterations, except where, as part of the alteration, an existing notification appliance is relocated, an existing fire alarm system is upgraded or replaced, or a new fire alarm system is installed.
2. Visible alarm notification appliances shall not be required in exits as defined in rule 1301:7-7-02 of the Administrative Code.
3. Visible alarm notification appliances shall not be required in elevator cars.
4. Visual alarm notification appliances are not required in critical care areas of Group I-2 Condition 2 occupancies that are in compliance with paragraph (G)(2)(f)(907.2.6), Exception 2 of this rule.

(a) 907.5.2.3.1 Public use areas and common use areas. Visible alarm notification appliances shall be provided in public use areas and common use areas.

Exception: Where employee work areas have audible alarm coverage, the notification appliance circuits serving the employee work areas shall be initially designed with not less than 20-*per cent* spare capacity to account for the potential of adding visible notification appliances in the future to accommodate hearing impaired employee(s).

(b) **907.5.2.3.2 Group I-1 and R-1.** Group I-1 and R-1 dwelling units or sleeping units in accordance with Table 907.5.2.3.2 of *this rule* shall be provided with a visible alarm notification appliance, activated by both the in-room smoke alarm and the building fire alarm system.

Table 907.5.2.3.2
Visible alarms

Number of sleeping units	Sleeping accommodations with visible alarms
<u>2 to 25</u>	<u>2</u>
<u>26 to 50</u>	<u>4</u>
<u>51 to 75</u>	<u>7</u>
<u>76 to 100</u>	<u>9</u>
<u>101 to 150</u>	<u>12</u>
<u>151 to 200</u>	<u>14</u>
<u>201 to 300</u>	<u>17</u>
<u>301 to 400</u>	<u>20</u>
<u>401 to 500</u>	<u>22</u>
<u>501 to 1,000</u>	<u>5% of total</u>
<u>1,001 and over</u>	<u>50 plus 3 for each 100 over 1,000</u>

(c) **907.5.2.3.3 Group R-2.** In Group R-2 occupancies required by *paragraph (G)(907) of this rule* to have a fire alarm system, all dwelling units and sleeping units shall be provided with the capability to support visible alarm notification appliances in accordance with Chapter 10 of ICC A117.1 as listed in rule 1301:7-7-80 of the *Administrative Code*. Such capability shall be permitted to include the potential for future interconnection of the building fire alarm system with the unit smoke alarms, replacement of audible appliances with combination audible/visible appliances, or future extension of the existing wiring from the unit smoke alarm locations to required locations for visible appliances.

(6) **907.6 Installation and monitoring.** A fire alarm system shall be installed and monitored in accordance with *paragraphs (G)(6)(a)(907.6.1) to (G)(6)(f)(ii)(907.6.6.2) of this rule* and NFPA 72 as listed in rule 1301:7-7-80 of the *Administrative Code*.

(a) **907.6.1 Wiring.** Wiring shall comply with the requirements of NFPA 70 and 72 as listed in rule 1301:7-7-80 of the *Administrative Code*. Wireless protection systems utilizing radio-frequency transmitting devices shall comply with the special requirements for supervision of low-power wireless systems in NFPA 72 as listed in rule 1301:7-7-80 of the *Administrative Code*.

(b) **907.6.2 Power supply.** The primary and secondary power supply for the fire alarm system shall be provided in accordance with NFPA 72 as listed in rule 1301:7-7-80 of the *Administrative Code*.

Exception: Backup power for single-station and multiple-station smoke alarms as required by *paragraph (G)(2)(k)(vi)(907.2.11.6) of this rule*.

(c) **907.6.3 Initiating device identification.** The fire alarm system shall identify the specific initiating device address, location, device type, floor level where applicable and status including indication of normal, alarm, trouble and supervisory status, as appropriate.

Exceptions:

1. Fire alarm systems in single-story buildings less than 22,500 square feet (2090 m²) in area.
2. Fire alarm systems that only include manual fire alarm boxes, waterflow initiating devices and not more than 10 additional alarm-initiating devices.
3. Special initiating devices that do not support individual device identification.
4. Fire alarm systems or devices that are replacing existing equipment.

(i) 907.6.3.1 Annunciation. The initiating device status shall be annunciated at an approved on-site location.

(d) 907.6.4 Zones. Each floor shall be zoned separately and a zone shall not exceed 22,500 square feet (2090 m²). The length of any zone shall not exceed 300 feet (91 440 mm) in any direction.

Exception: Automatic sprinkler system zones shall not exceed the area permitted by NFPA 13 as listed in rule 1301:7-7-80 of the Administrative Code.

(i) 907.6.4.1 Zoning indicator panel. A zoning indicator panel and the associated controls shall be provided in an approved location. The visual zone indication shall lock in until the system is reset and shall not be canceled by the operation of an audible alarm-silencing switch.

(ii) 907.6.4.2 High-rise buildings. In high-rise buildings, a separate zone by floor shall be provided for each of the following types of alarm-initiating devices where provided:

- (a) Smoke detectors.**
- (b) Sprinkler waterflow devices.**
- (c) Manual fire alarm boxes.**
- (d) Other approved types of automatic fire detection devices or suppression systems.**

(e) 907.6.5 Access. Access shall be provided to each fire alarm device and notification appliance for periodic inspection, maintenance and testing.

(f) 907.6.6 Monitoring. Fire alarm systems required by this rule or by the building code as listed in rule 1301:7-7-80 of the Administrative Code shall be monitored by an approved supervising station in accordance with NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code.

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

1. Single- and multiple-station smoke alarms required by paragraph (G)(2)(k)(907.2.11) of this rule.
2. Smoke detectors in Group I-3 occupancies.

(i) 907.6.6.1 Automatic telephone-dialing devices. Automatic telephone-dialing devices used to transmit an emergency alarm shall not be connected to any fire department telephone number unless approved by the fire code official. The fire code official shall notify the building code official of the certified building code department having jurisdiction of this approval.

(ii) **907.6.6.2 Termination of monitoring service.** Termination of fire alarm monitoring services shall be in accordance with *paragraph (A)(9)(901.9) of this rule.*

(7) **907.7 Acceptance tests and completion.** Upon completion of the installation, the fire alarm system and all fire alarm components shall be tested in accordance with NFPA 72 and the building code as listed in rule 1301:7-7-80 of the Administrative Code. When required by the fire code official, all acceptance testing shall be conducted in the presence of the fire code official.

(a) **907.7.1 Single- and multiple-station alarm devices.** When the installation of the alarm devices is complete, each device and interconnecting wiring for multiple-station alarm devices shall be tested in accordance with the smoke alarm provisions of NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code.

(b) **907.7.2 Record of completion.** A record of completion in accordance with NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code verifying that the system has been installed and tested in accordance with the approved plans and specifications shall be provided.

(c) **907.7.3 Instructions.** Operating, testing and maintenance instructions and record drawings (“as built”) and equipment specifications shall be provided at an approved location.

(8) **907.8 Inspection, testing and maintenance.** The maintenance and testing schedules and procedures for fire alarm and fire detection systems shall be in accordance with *paragraphs (G)(8)(a)(907.8.1) to (G)(8)(e)(907.8.5) of this rule* and NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code. Records of inspection, testing and maintenance shall be maintained.

(a) **907.8.1 Maintenance required.** Where required for compliance with the provisions of this code, devices, equipment, systems, conditions, arrangements, levels of protection or other features shall thereafter be continuously maintained in accordance with applicable NFPA requirements or as directed by the fire code official.

(b) **907.8.2 Testing.** Testing shall be performed in accordance with the schedules in NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code or more frequently where required by the fire code official. Records of testing shall be maintained.

Exception: Devices or equipment that are inaccessible for safety considerations shall be tested during scheduled shutdowns where approved by the fire code official, but not less than every 18 months.

(c) **907.8.3 Smoke detector sensitivity.** Smoke detector sensitivity shall be checked within one year after installation and every alternate year thereafter. After the second calibration test, where sensitivity tests indicate that the detector has remained within its listed and marked sensitivity range (or 4-per cent obscuration light grey smoke, if not marked), the length of time between calibration tests shall be permitted to be extended to not more than five years. Where the frequency is extended, records of detector-caused nuisance alarms and subsequent trends of these alarms shall be maintained. In zones or areas where nuisance alarms show any increase over the previous year, calibration tests shall be performed.

(d) **907.8.4 Sensitivity test method.** To verify that each smoke detector is within its listed and marked sensitivity range, it shall be tested using one of the following methods:

1. A calibrated test method.
2. The manufacturer’s calibrated sensitivity test instrument.
3. Listed control equipment arranged for the purpose.

4. A smoke detector/control unit arrangement whereby the detector causes a signal at the control unit where the detector's sensitivity is outside its acceptable sensitivity range.
5. Another calibrated sensitivity test method acceptable to the fire code official.

Detectors found to have a sensitivity outside the listed and marked sensitivity range shall be cleaned and recalibrated or replaced.

Exceptions:

1. Detectors listed as field adjustable shall be permitted to be either adjusted within the listed and marked sensitivity range and cleaned and recalibrated or they shall be replaced.
2. This requirement shall not apply to single-station smoke alarms.

(i) 907.8.4.1 Sensitivity testing device. Smoke detector sensitivity shall not be tested or measured using a device that administers an unmeasured concentration of smoke or other aerosol into the detector.

(e) 907.8.5 Inspection, testing and maintenance. The building owner shall be responsible to maintain the fire and life safety systems in an operable condition at all times. Service personnel shall meet the *certification requirements of this rule as applicable and the qualification requirements of NFPA 72 as listed in rule 1301:7-7-80 of the Administrative Code* for inspection, testing and maintenance of such systems. Records of inspection, testing and maintenance shall be maintained.

(9) 907.9 Where required in existing buildings and structures. An approved fire alarm system shall be provided in existing buildings and structures where required in *rule 1301:7-7-11 of the Administrative Code.*

(H) Section 908 Emergency alarm systems

(1) 908.1 Group H occupancies. Emergency alarms for the detection and notification of an emergency condition in Group H occupancies shall be provided as required in *rule 1301:7-7-50 of the Administrative Code.*

(2) 908.2 Group H-5 occupancy. Emergency alarms for notification of an emergency condition in an "HPM" facility shall be provided as required in *paragraph (C)(12)(2703.12) of rule 1301:7-7-27 of the Administrative Code.* A continuous gas detection system shall be provided for "HPM" gases in accordance with *paragraph (C)(13)(2703.13) of rule 1301:7-7-27 of the Administrative Code.*

(3) 908.3 Highly toxic and toxic materials. Where required by *paragraph (D)(2)(b)(x)(6004.2.2.10) of rule 1301:7-7-60 of the Administrative Code,* a gas detection system shall be provided for indoor storage and use of highly toxic and toxic compressed gases.

(4) 908.4 Ozone gas-generator rooms. A gas detection system shall be provided in ozone gas-generator rooms in accordance with *paragraph (E)(3)(b)(6005.3.2) of rule 1301:7-7-60 of the Administrative Code.*

(5) 908.5 Repair garages. A flammable-gas detection system shall be provided in repair garages for vehicles fueled by non-odorized gases in accordance with *paragraph (K)(7)(b)(2311.7.2) of rule 1301:7-7-23 of the Administrative Code.*

(6) 908.6 Refrigeration systems. Refrigeration system machinery rooms shall be provided with a refrigerant detector in accordance with *paragraph (F)(8)(606.8) of rule 1301:7-7-06 of the Administrative Code.*

(7) **908.7 Carbon dioxide (CO₂) systems.** Emergency alarm systems in accordance with *paragraph (G)(5)(b)(5307.5.2) of rule 1301:7-7-53 of the Administrative Code* shall be provided where required for compliance with *paragraph (G)(5)(5307.5) of rule 1301:7-7-53 of the Administrative Code*.

(I) Section 909 Smoke control systems

(1) **909.1 Scope and purpose.** This *paragraph* applies to mechanical or passive smoke control systems where they are required for new buildings or portions thereof by provisions of the *building code as listed in rule 1301:7-7-80 of the Administrative Code* or this code. The purpose of this *paragraph* is to establish minimum requirements for the design, installation and acceptance testing of smoke control systems that are intended to provide a tenable environment for the evacuation or relocation of occupants. These provisions are not intended for the preservation of contents, the timely restoration of operations or for assistance in fire suppression or overhaul activities. Smoke control systems regulated by this *paragraph* serve a different purpose than the smoke- and heat-venting provisions found in *paragraph (J)(910) of this rule*. Mechanical smoke control systems shall not be considered exhaust systems under chapter 5 of the *mechanical code as listed in rule 1301:7-7-80 of the Administrative Code*.

(2) **909.2 General design requirements.** Buildings, structures, or parts thereof required by the *building code as listed in rule 1301:7-7-80 of the Administrative Code* or this code to have a smoke control system or systems shall have such systems designed in accordance with the applicable requirements of *paragraph (I)(909) of this rule* and the generally accepted and well-established principles of engineering relevant to the design. The construction documents shall include sufficient information and detail to describe adequately the elements of the design necessary for the proper implementation of the smoke control systems. These documents shall be accompanied with sufficient information and analysis to demonstrate compliance with these provisions.

(3) **909.3 Special inspection and test requirements.** In addition to the ordinary inspection and test requirements that buildings, structures and parts thereof are required to undergo, smoke control systems subject to the provisions of *paragraph (I)(909) of this rule* shall undergo special inspections and tests sufficient to verify the proper commissioning of the smoke control design in its final installed condition. The design submission accompanying the construction documents shall clearly detail procedures and methods to be used and the items subject to such inspections and tests. Such commissioning shall be in accordance with generally accepted engineering practice and, where possible, based on published standards for the particular testing involved. The special inspections and tests required by this *paragraph* shall be conducted under the same terms as in section 1704 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*.

(4) **909.4 Analysis.** A rational analysis supporting the types of smoke control systems to be employed, the methods of their operations, the systems supporting them and the methods of construction to be utilized shall accompany the construction documents submission and include, but not be limited to, the items indicated in *paragraphs (I)(4)(a)(909.4.1) to (I)(4)(g)(909.4.7) of this rule*.

(a) **909.4.1 Stack effect.** The system shall be designed such that the maximum probable normal or reverse stack effect will not adversely interfere with the system's capabilities. In determining the maximum probable stack effect, altitude, elevation, weather history and interior temperatures shall be used.

(b) **909.4.2 Temperature effect of fire.** Buoyancy and expansion caused by the design fire in accordance with *paragraph (I)(9)(909.9) of this rule* shall be analyzed. The system shall be designed such that these effects do not adversely interfere with the system's capabilities.

(c) **909.4.3 Wind effect.** The design shall consider the adverse effects of wind. Such consideration shall be consistent with the wind-loading provisions of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*.

(d) 909.4.4 Systems. The design shall consider the effects of the heating, ventilating and air-conditioning ("HVAC") systems on both smoke and fire transport. The analysis shall include all permutations of systems status. The design shall consider the effects of the fire on the heating, ventilating and air-conditioning systems.

(e) 909.4.5 Climate. The design shall consider the effects of low temperatures on systems, property and occupants. Air inlets and exhausts shall be located so as to prevent snow or ice blockage.

(f) 909.4.6 Duration of operation. All portions of active or engineered smoke control systems shall be capable of continued operation after detection of the fire event for a period of not less than either 20 minutes or 1.5 times the calculated egress time, whichever is greater.

(g) 909.4.7 Smoke control system interaction. The design shall consider the interaction effects of the operation of multiple smoke control systems for all design scenarios.

(5) 909.5 Smoke barrier construction. Smoke barriers required for passive smoke control and a smoke control system using the pressurization method shall comply with section 709 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*. The maximum allowable leakage area shall be the aggregate area calculated using the following leakage area ratios:

1. Walls: $A/A_w = 0.00100$
2. Interior exit stairways and ramps and exit passageways: $A/A_w = 0.00035$
3. Enclosed exit access stairways and ramps and all other shafts: $A/A_w = 0.00150$
4. Floors and roofs: $A/A_f = 0.00050$

where:

A = Total leakage area, square feet (m^2).

A_f = Unit floor or roof area of barrier, square feet (m^2).

A_w = Unit wall area of barrier, square feet (m^2).

The leakage area ratios shown do not include openings due to gaps around doors and operable windows. The total leakage area of the smoke barrier shall be determined in accordance with *paragraph (l)(5)(a)(909.5.1) of this rule* and tested in accordance with *paragraph (l)(5)(b)(909.5.2) of this rule*.

(a) 909.5.1 Total leakage area. Total leakage area of the barrier is the product of the smoke barrier gross area multiplied by the allowable leakage area ratio, plus the area of other openings such as gaps around doors and operable windows.

(b) 909.5.2 Testing of leakage area. Compliance with the maximum total leakage area shall be determined by achieving the minimum air pressure difference across the barrier with the system in the smoke control mode for mechanical smoke control systems utilizing the pressurization method. Compliance with the maximum total leakage area of passive smoke control systems shall be verified through methods such as door fan testing or other methods, as approved by the fire code official pursuant to *paragraph (A)(1)(901.1) of this rule*. At locations or in structures not regulated by the building code as listed in rule 1301:7-7-80 of the Administrative Code, the test method shall be approved by the fire code official prior to system installation.

(c) 909.5.3 Opening protection. Openings in smoke barriers shall be protected by automatic-closing devices actuated by the required controls for the mechanical smoke control system. Door openings shall be protected

by fire door assemblies complying with section 716.5.3 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.

Exceptions:

1. Passive smoke control systems with automatic-closing devices actuated by spot-type smoke detectors listed for releasing service installed in accordance with paragraph (G)(3)(907.3) of this rule.
2. Fixed openings between smoke zones that are protected utilizing the airflow method.
3. In Group I-1 Condition 2, Group I-2 and ambulatory care facilities, where a pair of opposite-swinging doors are installed across a corridor in accordance with paragraph (I)(5)(c)(i)(909.5.3.1) of this rule, the doors shall not be required to be protected in accordance with section 716 of the building code as listed in rule 1301:7-7-80 of the Administrative Code. The doors shall be close-fitting within operational tolerances shall not have a center mullion or undercuts in excess of 3/4-inch (19.1 mm) louvers or grilles. The doors shall have head and jamb stops and astragals or rabbets at meeting edges and where permitted by the door manufacturer's listing, positive-latching devices are not required.
4. In Group I-2 and ambulatory care facilities, where such doors are special-purpose horizontal sliding, accordion or folding door assemblies installed in accordance with paragraph (J)(1)(d)(iii)(1010.1.4.3) of rule 1301:7-7-10 of the Administrative Code and are automatic closing by smoke detection in accordance with section 716.5.9.3 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.
5. Group I-3.
6. Openings between smoke zones with clear ceiling heights of 14 feet (4267 mm) or greater and bank-down capacity of greater than 20 minutes as determined by the design fire size.

(i) 909.5.3.1 Group I-1 Condition 2, Group I-2 and ambulatory care facilities. In Group I-1, Condition 2, Group I-2 and ambulatory care facilities, where doors are installed across a corridor, the doors shall be automatic closing by smoke detection in accordance with section 716.5.9.3 of the building code as listed in rule 1301:7-7-80 of the Administrative Code and shall have a vision panel with fire-protection-rated glazing materials in fire-protection-rated frames, the area of which shall not exceed that tested.

(ii) 909.5.3.2 Ducts and air transfer openings. Ducts and air transfer openings are required to be protected with a minimum Class II, 250°F (121°C) smoke damper complying with section 717 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.

(6) 909.6 Pressurization method. 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.

(a) 909.6.1 Minimum pressure difference. The minimum pressure difference across a smoke barrier shall be 0.05-inch water gage (0.0124 kPa) in fully sprinklered buildings.

In buildings allowed to be other than fully sprinklered, the smoke control system shall be designed to achieve pressure differences at least two times the maximum calculated pressure difference produced by the design fire.

(b) 909.6.2 Maximum pressure difference. The maximum air pressure difference across a smoke barrier shall be determined by required door-opening or closing forces. The actual force required to open exit doors when the system is in the smoke control mode shall be in accordance with paragraph (J)(1)(c)(1010.1.3) of rule 1301:7-

7-10 of the Administrative Code. Opening and closing forces for other doors shall be determined by standard engineering methods for the resolution of forces and reactions. The calculated force to set a side-hinged, swinging door in motion shall be determined by:

$$F = F_{dc} + K(WA\Delta P)/2(W-d) \quad \text{(Equation 9-1)}$$

where:

A = Door area, square feet (m²).

d = Distance from door handle to latch edge of door, feet (m).

F = Total door opening force, pounds (N).

F_{dc} = Force required to overcome closing device, pounds (N).

K = Coefficient 5.2 (1.0).

W = Door width, feet (m).

ΔP = Design pressure difference, inches of water (Pa).

(c) 909.6.3 Pressurized stairways and elevator hoistways. Where stairways or elevator hoistways are pressurized, such pressurization systems shall comply with paragraph (l)(909) of this rule as smoke control systems, in addition to the requirements of paragraph (l)(21)(909.21) of this rule and section 909.20 of the building code as listed in rule 1301:7-7-80 of the Administrative Code.

(7) 909.7 Airflow design method. Where approved by the fire code official pursuant to paragraph (A)(1)(901.1) of this rule, smoke migration through openings fixed in a permanently open position, which are located between smoke control zones by the use of the airflow method, shall be permitted. The design airflow shall be in accordance with this paragraph. Airflow shall be directed to limit smoke migration from the fire zone. The geometry of openings shall be considered to prevent flow reversal from turbulent effects. Smoke control systems using the airflow method shall be designed in accordance with NFPA 92 as listed in rule 1301:7-7-80 of the Administrative Code. At locations or in structures not regulated by the building code as listed in rule 1301:7-7-80 of the Administrative Code, airflow design method shall be approved by the fire code official prior to system installation.

(a) 909.7.1 Prohibited conditions. This method shall not be employed where either the quantity of air or the velocity of the airflow will adversely affect other portions of the smoke control system, unduly intensify the fire, disrupt plume dynamics or interfere with exiting. In no case shall airflow toward the fire exceed 200 feet per minute (1.02 m/s). Where the calculated airflow exceeds this limit, the airflow method shall not be used.

(8) 909.8 Exhaust method. When approved by the fire code official pursuant to paragraph (A)(1)(901.1) of this rule, mechanical smoke control for large enclosed volumes, such as in atriums or malls, shall be permitted to utilize the exhaust method. Smoke control systems using the exhaust method shall be designed in accordance with NFPA 92 as listed in rule 1301:7-7-80 of the Administrative Code. At locations or in structures not regulated by the building code as listed in rule 1301:7-7-80 of the Administrative Code, the exhaust method shall be approved by the fire code official prior to system installation.

(a) 909.8.1 Smoke layer. The height of the lowest horizontal surface of the smoke layer interface shall be maintained not less than 6 feet (1829 mm) above a walking surface that forms a portion of a required egress system within the smoke zone.

(9) **909.9 Design fire.** The design fire shall be based on a rational analysis performed by the registered design professional and approved by the fire code official pursuant to paragraph (A)(1)(901.1) of this rule. The design fire shall be based on the analysis in accordance with paragraph (I)(4)(909.4) of this rule and this paragraph. At locations or in structures not regulated by the building code as listed in rule 1301:7-7-80 of the Administrative Code, the design fire shall be approved by the fire code official prior to system installation.

(a) **909.9.1 Factors considered.** The engineering analysis shall include the characteristics of the fuel, fuel load, effects included by the fire and whether the fire is likely to be steady or unsteady.

(b) **909.9.2 Design fire fuel.** Determination of the design fire shall include consideration of the type of fuel, fuel spacing and configuration.

(c) **909.9.3 Heat-release assumptions.** The analysis shall make use of best available data from approved sources and shall not be based on excessively stringent limitations of combustible material.

(d) **909.9.4 Sprinkler effectiveness assumptions.** A documented engineering analysis shall be provided for conditions that assume fire growth is halted at the time of sprinkler activation.

(10) **909.10 Equipment.** Equipment including, but not limited to, fans, ducts, automatic dampers and balance dampers shall be suitable for their intended use, suitable for the probable exposure temperatures that the rational analysis indicates, and as approved by the fire code official pursuant to paragraph (A)(1)(901.1) of this rule. At locations or in structures not regulated by the building code as listed in rule 1301:7-7-80 of the Administrative Code, the equipment shall be approved by the fire code official prior to system installation.

(a) **909.10.1 Exhaust fans.** Components of exhaust fans shall be rated and certified by the manufacturer for the probable temperature rise to which the components will be exposed. This temperature rise shall be computed by:

$$T_s = (Q_c/mc) + (T_a) \quad \text{(Equation 9-3)}$$

where:

c = Specific heat of smoke at smoke layer temperature, Btu/lb°F (kJ/kg · K).

m = Exhaust rate, pounds per second (kg/s).

Q_c = Convective heat output of fire, Btu/s (kW).

T_a = Ambient temperature, °F (K).

T_s = Smoke temperature, °F (K).

Exception: Reduced T_s as calculated based on the assurance of adequate dilution air.

(b) **909.10.2 Ducts.** Duct materials and joints shall be capable of withstanding the probable temperatures and pressures to which they are exposed as determined in accordance with paragraph (I)(10)(a)(909.10.1) of this rule. Ducts shall be constructed and supported in accordance with the mechanical code as listed in rule 1301:7-7-80 of the Administrative Code. Ducts shall be leak tested to 1.5 times the maximum design pressure in accordance with nationally accepted practices. Measured leakage shall not exceed 5 per cent of design flow. Results of such testing shall be a part of the documentation procedure. Ducts shall be supported directly from fire-resistance-rated structural elements of the building by substantial, noncombustible supports.

Exception: Flexible connections, for the purpose of vibration isolation, complying with the *mechanical code as listed in rule 1301:7-7-80 of the Administrative Code* and that are constructed of approved fire-resistance-rated materials.

(c) **909.10.3 Equipment, inlets and outlets.** Equipment shall be located so as to not expose uninvolved portions of the building to an additional fire hazard. Outside air inlets shall be located so as to minimize the potential for introducing smoke or flame into the building. Exhaust outlets shall be so located as to minimize reintroduction of smoke into the building and to limit exposure of the building or adjacent buildings to an additional fire hazard.

(d) **909.10.4 Automatic dampers.** Automatic dampers, regardless of the purpose for which they are installed within the smoke control system, shall be listed and conform to the requirements of *section 716.3 of the building code as listed in rule 1301:7-7-80 of the Administrative Code*.

(e) **909.10.5 Fans.** In addition to other requirements, belt-driven fans shall have 1.5 times the number of belts required for the design duty with the minimum number of belts being two. Fans shall be selected for stable performance based on normal temperature and, where applicable, elevated temperature. Calculations and manufacturer's fan curves shall be part of the documentation procedures. Fans shall be supported and restrained by noncombustible devices in accordance with the structural design requirements of chapter 16 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*.

Motors driving fans shall not be operated beyond their nameplate horsepower (kilowatts) as determined from measurement of actual current draw and shall have a minimum service factor of 1.15.

(11) **909.11 Standby power.** Smoke control systems shall be provided with standby power in accordance with *paragraph (D)(604) of rule 1301:7-7-06 of the Administrative Code*.

(a) **909.11.1 Equipment room.** The standby power source and its transfer switches shall be in a room separate from the normal power transformers and switch gears and ventilated directly to and from the exterior. The room shall be enclosed with not less than 1-hour fire barriers constructed in accordance with *section 707 of the building code as listed in rule 1301:7-7-80 of the Administrative Code* or horizontal assemblies constructed in accordance with *section 711 of the building code as listed in rule 1301:7-7-80 of the Administrative Code*, or both.

(b) **909.11.2 Power sources and power surges.** Elements of the smoke control system relying on volatile memories or the like shall be supplied with uninterruptible power sources of sufficient duration to span 15-minute primary power interruption. Elements of the smoke control system susceptible to power surges shall be suitably protected by conditioners, suppressors or other approved means.

(12) **909.12 Detection and control systems.** Fire detection systems providing control input or output signals to mechanical smoke control systems or elements thereof shall comply with the requirements of *paragraph (G)(907) of this rule*. Such systems shall be equipped with a control unit complying with UL 864 *as listed in rule 1301:7-7-80 of the Administrative Code* and listed as smoke control equipment.

(a) **909.12.1 Verification.** Control systems for mechanical smoke control systems shall include provisions for verification. Verification shall include positive confirmation of actuation, testing, manual override and the presence of power downstream of all disconnects. A preprogrammed weekly test sequence shall report abnormal conditions audibly, visually and by printed report. The preprogrammed weekly test shall operate all devices, equipment and components used for smoke control.

Exception: Where verification of individual components tested through the preprogrammed weekly testing sequence will interfere with, and produce unwanted effects to, normal building operation, such individual components are permitted to be bypassed from the preprogrammed weekly testing, where approved by the fire code official and in accordance with both of the following:

1. Where the operation of components is bypassed from the preprogrammed weekly test, presence of power downstream of all disconnects shall be verified weekly by a listed control unit.
2. Testing of all components bypassed from the preprogrammed weekly test shall be in accordance with paragraph (l)(20)(f)(909.20.6) of this rule.

(b) 909.12.2 Wiring. In addition to meeting requirements of NFPA 70 as listed in rule 1301:7-7-80 of the Administrative Code, all wiring, regardless of voltage, shall be fully enclosed within continuous raceways.

(c) 909.12.3 Activation. Smoke control systems shall be activated in accordance with this paragraph.

(i) 909.12.3.1 Pressurization, airflow or exhaust method. Mechanical smoke control systems using the pressurization, airflow or exhaust method shall have completely automatic control.

(ii) 909.12.3.2 Passive method. Passive smoke control systems actuated by approved spot-type detectors listed for releasing service shall be permitted.

(d) 909.12.4 Automatic control. Where completely automatic control is required or used, the automatic-control sequences shall be initiated from an appropriately zoned automatic sprinkler system complying with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule, manual controls that are readily accessible to the fire department, and any smoke detectors required by the engineering analysis.

(13) 909.13 Control air tubing. Control air tubing shall be of sufficient size to meet the required response times. Tubing shall be flushed clean and dry prior to final connections and shall be adequately supported and protected from damage. Tubing passing through concrete or masonry shall be sleeved and protected from abrasion and electrolytic action.

(a) 909.13.1 Materials. Control air tubing shall be hard drawn copper, Type L, ACR in accordance with ASTM B 42, ASTM B 43, ASTM B 68, ASTM B 88, ASTM B 251 and ASTM B 280 as listed in rule 1301:7-7-80 of the Administrative Code. Fittings shall be wrought copper or brass, solder type, in accordance with ASME B 16.18 or ASME B 16.22 as listed in rule 1301:7-7-80 of the Administrative Code. Changes in direction shall be made with appropriate tool bends. Brass compression-type fittings shall be used at final connection to devices; other joints shall be brazed using a BCuP5 brazing alloy with solidus above 1,100°F (593°C) and liquid is below 1,500°F (816°C). Brazing flux shall be used on copper-to-brass joints only.

Exception: Nonmetallic tubing used within control panels and at the final connection to devices, provided all of the following conditions are met:

1. Tubing shall comply with the requirements of section 602.2.1.3 of the mechanical code as listed in rule 1301:7-7-80 of the Administrative Code.
2. Tubing and the connected device shall be completely enclosed with a galvanized or paint-grade steel enclosure having a minimum thickness of 0.0296-inches (0.7534 mm) (No. 22 gage). Entry to the enclosure shall be by copper tubing with a protective grommet of neoprene or teflon or by suitable brass compression to male-barbed adapter.
3. Tubing shall be identified by appropriately documented coding.
4. Tubing shall be neatly tied and supported within enclosure. Tubing bridging cabinet and doors or moveable devices shall be of sufficient length to avoid tension and excessive stress. Tubing shall be protected against abrasion. Tubing serving devices on doors shall be fastened along hinges.

(b) 909.13.2 Isolation from other functions. Control tubing serving other than smoke control functions shall be isolated by automatic isolation valves or shall be an independent system.

(c) 909.13.3 Testing. Control air tubing shall be tested at three times the operating pressure for not less than 30 minutes without any noticeable loss in gauge pressure prior to final connection to devices.

(14) 909.14 Marking and identification. The detection and control systems shall be clearly marked at all junctions, accesses and terminations.

(15) 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 code official, the fire department and in the fire command center in a format and manner approved by the fire chief.

(16) 909.16 Fire fighter's smoke control panel. A fire fighter's smoke control panel for fire department emergency response purposes only shall be provided and shall include manual control or override of automatic control for mechanical smoke control systems. The panel shall be located in a fire command center complying with *paragraph (H)(508) of rule 1301:7-7-05 of the Administrative Code* in high-rise buildings or buildings with smoke-protected assembly seating. In all other buildings, the fire fighter's smoke control panel shall be installed in an approved location adjacent to the fire alarm control panel. The fire fighter's smoke control panel shall comply with *paragraphs (I)(16)(a)(909.16.1) to (I)(16)(c)(909.16.3) of this rule.*

(a) 909.16.1 Smoke control systems. Fans within the building shall be shown on the fire fighter's control panel. A clear indication of the direction of airflow and the relationship of components shall be displayed. Status indicators shall be provided for all smoke control equipment, annunciated by fan and zone and by pilot-lamp-type indicators as follows:

- (i) Fans, dampers and other operating equipment in their normal status – "WHITE."
- (ii) Fans, dampers and other operating equipment in their off or closed status – "RED."
- (iii) Fans, dampers and other operating equipment in their on or open status – "GREEN."
- (iv) Fans, dampers and other operating equipment in a fault status – "YELLOW/AMBER."

(b) 909.16.2 Smoke control panel. The fire fighter's control panel shall provide control capability over the complete smoke control system equipment within the building as follows:

- (i) "ON-AUTO-OFF" control over each individual piece of operating smoke control equipment that can also be controlled from other sources within the building. This includes stairway pressurization fans; smoke exhaust fans; supply, return and exhaust fans; elevator shaft fans; and other operating equipment used or intended for smoke control purposes.
- (ii) "OPEN-AUTO-CLOSE" control over individual dampers relating to smoke control and that are also controlled from other sources within the building.
- (iii) "ON-OFF" or "OPEN-CLOSE" control over smoke control and other critical equipment associated with a fire or smoke emergency and that can only be controlled from the fire fighter's control panel.

Exceptions:

1. Complex systems, where approved, where the controls and indicators are combined to control and indicate all elements of a single smoke zone as a unit.

2. Complex systems, where approved, where the control is accomplished by computer interface using approved, plain English commands.

(c) 909.16.3 Control action and priorities. The fire fighter's control panel actions shall be as follows:

- (i) "ON-OFF" and "OPEN-CLOSE" control actions shall have the highest priority of any control point within the building. Once issued from the fire fighter's control panel, automatic or manual control from any other control point within the building shall not contradict the control action. Where automatic means are provided to interrupt normal, nonemergency equipment operation or produce a specific result to safeguard the building or equipment including, but not limited to, duct freezestats, duct smoke detectors, high-temperature cutouts, temperature-actuated linkage and similar devices, such means shall be capable of being overridden by the fire-fighter's control panel. The last control action as indicated by each fire fighter's control panel switch position shall prevail. Control actions shall not require the smoke control system to assume more than one configuration at any one time.

Exception: Power disconnects required by NFPA 70 as listed in rule 1301:7-7-80 of the Administrative Code.

- (ii) Only the "AUTO" position of each three-position fire-fighter's control panel switch shall allow automatic or manual control action from other control points within the building. The "AUTO" position shall be the "NORMAL," nonemergency, building control position. Where a fire fighter's control panel is in the "AUTO" position, the actual status of the device (on, off, open, closed) shall continue to be indicated by the status indicator described in paragraph (l)(16)(a)(909.16.1) of this rule. Where directed by an automatic signal to assume an emergency condition, the "NORMAL" position shall become the emergency condition for that device or group of devices within the zone. Control actions shall not require the smoke control system to assume more than one configuration at any one time.

(17) 909.17 System response time. Smoke-control system activation shall be initiated immediately after receipt of an appropriate automatic or manual activation command. Smoke control systems shall activate individual components (such as dampers and fans) in the sequence necessary to prevent physical damage to the fans, dampers, ducts and other equipment. For purposes of smoke control, the fire fighter's control panel response time shall be the same for automatic or manual smoke control action initiated from any other building control point. The total response time, including that necessary for detection, shutdown of operating equipment and smoke control system startup, shall allow for full operational mode to be achieved before the conditions in the space exceed the design smoke condition. The system response time for each component and their sequential relationships shall be detailed in the required rational analysis and verification of their installed condition reported in the required final report.

(18) 909.18 Acceptance testing. Devices, equipment, components and sequences shall be individually tested. These tests, in addition to those required by other provisions of this code, shall consist of determination of function, sequence and, where applicable, capacity of their installed condition.

(a) 909.18.1 Detection devices. Smoke or fire detectors that are a part of a smoke control system shall be tested in accordance with this rule in their installed condition. When applicable, this testing shall include verification of airflow in both minimum and maximum conditions.

(b) 909.18.2 Ducts. Ducts that are part of a smoke control system shall be traversed using generally accepted practices to determine actual air quantities.

(c) 909.18.3 Dampers. Dampers shall be tested for function in their installed condition.

(d) 909.18.4 Inlets and outlets. Inlets and outlets shall be read using generally accepted practices to determine air quantities.

(e) 909.18.5 Fans. Fans shall be examined for correct rotation. Measurements of voltage, amperage, revolutions per minute and belt tension shall be made.

(f) 909.18.6 Smoke barriers. Measurements using inclined manometers or other approved calibrated measuring devices shall be made of the pressure differences across smoke barriers. Such measurements shall be conducted for each possible smoke control condition.

(g) 909.18.7 Controls. Each smoke zone equipped with an automatic-initiation device shall be put into operation by the actuation of one such device. Each additional device within the zone shall be verified to cause the same sequence without requiring the operation of fan motors in order to prevent damage. Control sequences shall be verified throughout the system, including verification of override from the fire fighter's control panel and simulation of standby power conditions.

(h) 909.18.8 Testing for smoke control. Smoke control systems shall be tested by a special inspector in accordance with Section 1705.18 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*.

(i) 909.18.8.1 Scope of testing. Testing shall be conducted in accordance with the following:

- (a) During erection of ductwork and prior to concealment for the purposes of leakage testing and recording of device location.
- (b) Prior to occupancy and after sufficient completion for the purposes of pressure-difference testing, flow measurements, and detection and control verification.

(ii) 909.18.8.2 Qualifications. Approved agencies for smoke control testing shall have expertise in fire protection engineering, mechanical engineering and certification as air balancers.

(iii) 909.18.8.3 Reports. A complete report of testing shall be prepared by the approved agency. The report shall include identification of all devices by manufacturer, nameplate data, design values, measured values and identification tag or mark. The report shall be reviewed by the responsible registered design professional and, when satisfied that the design intent has been achieved, the responsible registered design professional shall sign, seal and date the report.

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

(i) 909.18.9 Identification and documentation. Charts, drawings and other documents identifying and locating each component of the smoke control system, and describing their proper function and maintenance requirements, shall be maintained on file at the building as an attachment to the report required by *paragraph (l)(18)(h)(iii)(909.18.8.3) of this rule*. Devices shall have an approved identifying tag or mark on them consistent with the other required documentation and shall be dated indicating the last time they were successfully tested and by whom.

(19) 909.19 System acceptance. Buildings, or portions thereof, required by this code to comply with this *paragraph* shall not be occupied until such time that the provisions of this *paragraph* have been fully complied with and that the fire department has received satisfactory instruction on the operation, both automatic and manual, of the system and a written maintenance program complying with the requirements of *paragraph (l)(20)(a)(909.20.1) of this rule* has been submitted and approved by the fire code official.

Exception: In buildings of phased construction, a temporary certificate of occupancy, as approved by the *building official in accordance with the building code as listed in rule 1301:7-7-80 of the Administrative Code*, shall be allowed, provided that those portions of the building to be occupied meet the requirements of this

paragraph and that the remainder does not pose a significant hazard to the safety of the proposed occupants or adjacent buildings.

(20) 909.20 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 paragraphs (l)(20)(a)(909.20.1) to (l)(20)(f)(909.20.6) of this rule.

(a) 909.20.1 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.

(b) 909.20.2 Records. Records of smoke control system testing and maintenance shall be maintained. The record shall include the date of the maintenance, identification of the servicing personnel and notification of any unsatisfactory condition and the corrective action taken, including parts replaced.

(c) 909.20.3 Testing. Operational testing of the smoke control system shall include all equipment such as initiating devices, fans, dampers, controls, doors and windows.

(d) 909.20.4 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.

(e) 909.20.5 Nondedicated smoke control systems. Nondedicated smoke control systems shall be operated for each control sequence annually. The system shall be tested under standby power conditions.

(f) 909.20.6 Components bypassing weekly test. Where components of the smoke control system are bypassed by the preprogrammed weekly test required by paragraph (l)(12)(a)(909.12.1) of this rule, such components shall be tested semiannually. The system shall be tested under standby power conditions.

(21) [BF] 909.21 Elevator hoistway pressurization alternative. Where elevator hoistway pressurization is provided in lieu of required enclosed elevator lobbies, the pressurization system shall comply with paragraphs (l)(21)(a)(909.21.1) to (l)(21)(k)(909.21.11) of this rule.

(a) [BF] 909.21.1 Pressurization requirements. Elevator hoistways shall be pressurized to maintain a minimum positive pressure of 0.10 inch of water (25 Pa) and a maximum positive pressure of 0.25 inch of water (67 Pa) with respect to adjacent occupied space on all floors. This pressure shall be measured at the midpoint of each hoistway door, with all elevator cars at the floor of recall and all hoistway doors closed. The pressure differential shall be measured between the hoistway and the adjacent elevator landing. The opening and closing of hoistway doors at each level must be demonstrated during this test. The supply air intake shall be from an outside, uncontaminated source located a minimum distance of 20 feet (6096 mm) from any air exhaust system or outlet.

Exceptions:

1. On floors containing only Group R occupancies, the pressure differential is permitted to be measured between the hoistway and a dwelling unit or sleeping unit.
2. Where an elevator opens into a lobby enclosed in accordance with Section 3007.6 or 3008.6 of the building code as listed in rule 1301:7-7-80 of the Administrative Code, the pressure differential is permitted to be measured between the hoistway and the space immediately outside the door(s) from the floor to the enclosed lobby.
3. The pressure differential is permitted to be measured relative to the outdoor atmosphere on floors other than the following:

Note: for copyright claim information, please see the notice on the last page of this rule.

3.1 The fire floor.

3.2 The two floors immediately below the fire floor.

3.3 The floor immediately above the fire floor.

4. The minimum positive pressure of 0.10 inch of water (25 Pa) and a maximum positive pressure of 0.25 inch of water (67 Pa) with respect to occupied floors is not required at the floor of recall with the doors open.

(i) [BF] 909.21.1.1 Use of ventilation systems. Ventilation systems, other than hoistway supply air systems, are permitted to be used to exhaust air from adjacent spaces on the fire floor, two floors immediately below and one floor immediately above the fire floor to the building's exterior where necessary to maintain positive pressure relationships as required in *paragraph (l)(21)(a)(909.21.1) of this rule* during operation of the elevator shaft pressurization system.

(b) [BF] 909.21.2 Rational analysis. A rational analysis complying with *paragraph (l)(4)(909.4) of this rule* shall be submitted with the construction documents.

(c) [BF] 909.21.3 Ducts for system. Any duct system that is part of the pressurization system shall be protected with the same fire-resistance rating as required for the elevator shaft enclosure.

(d) [BF] 909.21.4 Fan system. The fan system provided for the pressurization system shall be as required by *paragraphs (l)(21)(d)(i)(909.21.4.1) to (l)(21)(d)(iv)(909.21.4.4) of this rule.*

(i) [BF] 909.21.4.1 Fire resistance. Where located within the building, the fan system that provides the pressurization shall be protected with the same fire-resistance rating required for the elevator shaft enclosure.

(ii) [BF] 909.21.4.2 Smoke detection. The fan system shall be equipped with a smoke detector that will automatically shut down the fan system when smoke is detected within the system.

(iii) [BF] 909.21.4.3 Separate systems. A separate fan system shall be used for each elevator hoistway.

(iv) 909.21.4.4 Fan capacity. The supply fan shall be either adjustable with a capacity of not less than 1,000 cfm (0.4719 m³/s) per door, or that specified by a registered design professional to meet the requirements of a designed pressurization system.

(e) [BF] 909.21.5 Standby power. The pressurization system shall be provided with standby power in accordance with *paragraph (D)(604) of rule 1301:7-7-06 of the Administrative Code.*

(f) [BF] 909.21.6 Activation of pressurization system. The elevator pressurization system shall be activated upon activation of either the building fire alarm system or the elevator lobby smoke detectors. Where both a building fire alarm system and elevator lobby smoke detectors are present, each shall be independently capable of activating the pressurization system.

(g) [BF] 909.21.7 Testing. Testing for performance shall be required in accordance with *paragraph (l)(18)(h)(909.18.8) of this rule.* System acceptance shall be in accordance with *paragraph (l)(19)(909.19) of this rule.*

(h) [BF] 909.21.8 Marking and identification. Detection and control systems shall be marked in accordance with *paragraph (l)(14)(909.14) of this rule.*

(i) **[BF] 909.21.9 Control diagrams.** Control diagrams shall be provided in accordance with paragraph (I)(15)(909.15) of this rule.

(j) **[BF] 909.21.10 Control panel.** A control panel complying with paragraph (I)(16)(909.16) of this rule shall be provided.

(k) **[BF] 909.21.11 System response time.** Hoistway pressurization systems shall comply with the requirements for smoke control system response time in paragraph (I)(17)(909.17) of this rule.

(J) Section 910 Smoke and heat removal

(1) 910.1 General. Where required by this code, smoke and heat vents or mechanical smoke removal systems shall conform to the requirements of this paragraph.

(2) 910.2 Where required. Smoke and heat vents, an approved mechanical smoke exhaust system, or an approved manually activated smoke exhaust system shall be installed as required by paragraphs (J)(2)(a)(910.2.1) and (J)(2)(b)(910.2.2) of this rule.

Exceptions:

1. Frozen food warehouses used solely for storage of Class I and II commodities where protected by an approved automatic sprinkler system.
2. Smoke and heat removal shall not be required in areas of buildings equipped with early suppression fast-response (ESFR) sprinklers.
3. Smoke and heat removal shall not be required in areas of buildings equipped with control mode special application sprinklers with a response time index of $50 (m \cdot S)^{1/2}$ or less that are listed to control a fire in stored commodities with 12 or fewer sprinklers.

(a) 910.2.1 Group F-1 or S-1. Smoke and heat vents installed in accordance with paragraph (J)(3)(910.3) of this rule or a mechanical smoke removal system installed in accordance with paragraph (J)(4)(910.4) of this rule shall be installed in buildings and portions thereof used as a Group F-1 or S-1 occupancy having more than 50,000 square feet (4645 m²) of undivided area. In occupied portions of a building equipped throughout with an automatic sprinkler system in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule, where the upper surface of the story is not a roof assembly, a mechanical smoke removal system in accordance with paragraph (J)(4)(910.4) of this rule shall be installed.

Exception: Group S-1 aircraft repair hangars.

(b) 910.2.2 High-piled combustible storage. Smoke and heat removal required by Table 3206.2 of rule 1301:7-7-32 of the Administrative Code for buildings and portions thereof containing high-piled combustible storage shall be installed in accordance with paragraph (J)(3)(910.3) of this rule in unsprinklered buildings. In buildings and portions thereof containing high-piled combustible storage equipped throughout with an automatic sprinkler system in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule, a smoke and heat removal system shall be installed in accordance with paragraph (J)(3)(910.3) or (J)(4)(910.4) of this rule. In occupied portions of a building equipped throughout with an automatic sprinkler system in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule where the upper surface of the story is not a roof assembly, a mechanical smoke removal system in accordance with paragraph (J)(4)(910.4) of this rule shall be installed.

(c) 910.2.3 Exit access travel distance increase. Buildings and portions thereof used as a Group F-1 or S-1 occupancy where the maximum exit travel distance is increased in accordance with paragraph (P)(3)(1016.3) of rule 1301:7-7-10 of the Administrative Code.

(3) 910.3 Smoke and heat vents. The design and installation of smoke and heat vents shall be in accordance with paragraphs (J)(3)(a)(910.3.1) to (J)(3)(c)(910.3.3) of this rule.

(a) 910.3.1 Listing and labeling. Smoke and heat vents shall be listed and labeled to indicate compliance with UL 793 or FM 4430 as listed in rule 1301:7-7-80 of the Administrative Code.

(b) 910.3.2 Smoke and heat vent locations. Smoke and heat vents shall be located 20 feet (6096 mm) or more from adjacent lot lines and fire walls and 10 feet (3048 mm) or more from fire barriers. Vents shall be uniformly located within the roof in the areas of the building where the vents are required to be installed by paragraph (J)(2)(910.2) of this rule with consideration given to roof pitch, sprinkler location and structural members.

(c) 910.3.3 Smoke and heat vents area. The required aggregate area of smoke and heat vents shall be calculated as follows:

For buildings equipped throughout with an automatic sprinkler system in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule:

$$A_{VR} = V/9000 \quad \text{(Equation 9-4)}$$

where:

A_{VR} = The required aggregate vent area (ft²).

V = Volume (ft³) of the area that requires smoke removal.

For unsprinklered buildings:

$$A_{VR} = A_{FA}/50 \quad \text{(Equation 9-5)}$$

where:

A_{VR} = The required aggregate vent area (ft²).

A_{VA} = The area of the floor in the area that requires smoke removal.

(4) 910.4 Mechanical smoke removal systems. Mechanical smoke removal systems shall be designed and installed in accordance with paragraphs (J)(4)(a)(910.4.1) to (J)(4)(g)(910.4.7) of this rule.

(a) 910.4.1 Automatic sprinklers required. The building shall be equipped throughout with an approved automatic sprinkler system in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule.

(b) 910.4.2 Exhaust fan construction. Exhaust fans that are part of a mechanical smoke removal system shall be rated for operation at 221°F (105°C). Exhaust fan motors shall be located outside of the exhaust fan air stream.

(c) 910.4.3 System design criteria. The mechanical smoke removal system shall be sized to exhaust the building at a minimum rate of two air changes per hour based upon the volume of the building or portion thereof without contents. The capacity of each exhaust fan shall not exceed 30,000 cubic feet per minute (14.2 m³/sec).

(i) 910.4.3.1 Makeup air. Makeup air openings shall be provided within 6 feet (1829 mm) of the floor level. Operation of makeup air openings shall be manual or automatic. The minimum gross area of makeup air inlets shall be 8 square feet per 1,000 cubic feet per minute (0.74 m² per 0.4719 m³/s) of smoke exhaust.

(d) **910.4.4 Activation.** The mechanical smoke removal system shall be activated by manual controls only.

(e) **910.4.5 Manual control location.** Manual controls shall be located so as to be accessible to the fire service from an exterior door of the building and protected against interior fire exposure by not less than 1-hour fire barriers constructed in accordance with Section 707 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code* or horizontal assemblies constructed in accordance with Section 711 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*, or both.

(f) **910.4.6 Control wiring.** Wiring for operation and control of mechanical smoke removal systems shall be connected ahead of the main disconnect in accordance with Section 701.12E of NFPA 70 *as listed in rule 1301:7-7-80 of the Administrative Code* and be protected against interior fire exposure to temperatures in excess of 1,000°F (538°C) for a period of not less than 15 minutes.

(g) **910.4.7 Controls.** Where building air-handling and mechanical smoke removal systems are combined or where independent building air-handling systems are provided, fans shall automatically shut down in accordance with the *mechanical code as listed in rule 1301:7-7-80 of the Administrative Code*. The manual controls provided for the smoke removal system shall have the capability to override the automatic shutdown of fans that are part of the smoke removal system.

(5) **910.5 Maintenance.** Smoke and heat vents and mechanical smoke removal systems shall be maintained in an operative condition in accordance with *paragraph (I)(5)(a)(910.5.1) or (I)(5)(b)(910.5.2) of this rule*, respectively.

(a) **910.5.1 Smoke and heat vents.** Smoke and heat vents shall be maintained in an operative condition in accordance with NFPA 204 *as listed in rule 1301:7-7-80 of the Administrative Code* and *paragraph (J)(5)(a)(i)(910.5.1.1) of this rule*.

(i) **910.5.1.1 Fusible links.** Fusible links for smoke and heat vents shall be replaced whenever fused, damaged or painted.

(b) **910.5.2 Mechanical smoke removal systems.** Mechanical smoke removal systems shall be maintained in accordance with the manufacturer's maintenance instructions and *paragraphs (J)(5)(b)(i)(910.5.2.1) to (J)(5)(b)(iv)(910.5.2.4) of this rule*.

(i) **910.5.2.1 Frequency.** Systems shall be operationally tested not less than once per year. Testing shall include the operation of all system components, including control elements.

(ii) **910.5.2.2 Testing.** Operational testing of the mechanical smoke removal system shall include all equipment such as fans, controls and make-up air openings.

(iii) **910.5.2.3 Schedule.** A routine maintenance and operational testing program shall be initiated and a written schedule for routine maintenance and operational testing shall be established.

(iv) **910.5.2.4 Written record.** A written record of mechanical smoke exhaust system testing and maintenance shall be maintained on the premises. The written record shall include the date of the maintenance, identification of the servicing personnel and notification of an unsatisfactory condition and the corrective action taken, including parts replaced.

(6) **910.6 Manually activated smoke exhaust system.** A manually activated smoke exhaust system shall be an acceptable alternate to smoke and heat vents and to allow for the increased travel distance option provided in *paragraph (P)(3)(1016.3) of rule 1301:7-7-10 of the Administrative Code*.

(a) **910.6.1 Location.** Exhaust fans shall be uniformly spaced throughout the Group F-1 or S-1 portion of the building.

(b) **910.6.2 Size.** Fans shall have a maximum individual capacity of 50,000 cubic feet per minute (cfm) and provide a minimum of two air changes per hour.

(c) **910.6.3 Operation.** Smoke exhaust fans shall be manually activated by individual manual controls.

(d) **910.6.4 Wiring and control.** Wiring for operation and control of smoke exhaust fans shall be connected ahead of the main disconnect and protected against exposure to temperatures in excess of 1000 degrees F (538 degrees C) for a period of not less than 15 minutes. Controls shall be located so as to be immediately accessible to the fire service from the exterior of the building and protected against interior fire exposure by not less than 1-hour fire barriers constructed in accordance with Section 707 of the building code as listed in rule 1301:7-7-80 of the Administrative Code or horizontal assemblies constructed in accordance with Section 711 of the building code as listed in rule 1301:7-7-80 of the Administrative Code, or both.

(e) **910.6.5 Supply air.** Supply air for exhaust fans shall be provided at or near the floor level and shall be sized to provide a minimum of 50 per cent of required exhaust. Supply air for exhaust fans shall be uniformly distributed around the periphery of the area served.

(f) **910.6.6 Interlocks.** Combination comfort air-handling/manually activated smoke exhaust systems are permitted. In combination comfort air-handling/manually activated smoke exhaust systems or independent comfort air-handling systems, the comfort air-handling system fans shall be controlled to automatically shut down upon duct or area smoke detector activation or sprinkler system water flow as specified in the approved manually activated smoke exhaust system sequence of operation.

(K) Section 911 Explosion control

(1) **911.1 General.** Explosion control shall be provided in the following locations:

- (a) Where a structure, room or space is occupied for purposes involving explosion hazards as identified in Table 911.1 of this rule.
- (b) Where quantities of hazardous materials specified in Table 911.1 of this rule exceed the maximum allowable quantities in Table 5003.1.1(1) of rule 1301:7-7-50 of the Administrative Code.

Such areas shall be provided with explosion (deflagration) venting, explosion (deflagration) prevention systems or barricades in accordance with this paragraph and NFPA 69, or NFPA 495 as listed in rule 1301:7-7-80 of the Administrative Code as applicable. Deflagration venting shall not be utilized as a means to protect buildings from detonation hazards.

Table 911.1
Explosion control requirements^f

<u>Material</u>	<u>Class</u>	<u>Explosion control methods</u>	
		<u>Barricade construction</u>	<u>Explosion (deflagration) venting or explosion (deflagration) prevention systems</u>
<u>Hazard category</u>			
<u>Combustible dusts^a</u>	<u>-----</u>	<u>Not required</u>	<u>Required</u>
<u>Cryogenic fluids</u>	<u>Flammable</u>	<u>Not required</u>	<u>Required</u>
<u>Explosives</u>	<u>Division 1.1</u>	<u>Required</u>	<u>Not required</u>
	<u>Division 1.2</u>	<u>Required</u>	<u>Not required</u>

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	<u>Division 1.3</u> <u>Division 1.4</u> <u>Division 1.5</u> <u>Division 1.6</u>	<u>Not required</u> <u>Not required</u> <u>Required</u> <u>Required</u>	<u>Required</u> <u>Required</u> <u>Not required</u> <u>Not required</u>
<u>Flammable gas</u>	<u>Gaseous</u> <u>Liquefied</u>	<u>Not required</u> <u>Not required</u>	<u>Required</u> <u>Required</u>
<u>Flammable liquids</u>	<u>IA^b</u> <u>IB^c</u>	<u>Not required</u> <u>Not required</u>	<u>Required</u> <u>Required</u>
<u>Organic peroxides</u>	<u>Unclassified detonable</u> <u>I</u>	<u>Required</u> <u>Required</u>	<u>Not permitted</u> <u>Not permitted</u>
<u>Oxidizer liquids and solids</u>	<u>4</u>	<u>Required</u>	<u>Not permitted</u>
<u>Pyrophoric</u>	<u>Gases</u>	<u>Not required</u>	<u>Required</u>
<u>Unstable (reactive)</u>	<u>4</u> <u>3 detonable</u> <u>3 nondetonable</u>	<u>Required</u> <u>Required</u> <u>Not required</u>	<u>Not permitted</u> <u>Not permitted</u> <u>Required</u>
<u>Water-reactive liquids and solids</u>	<u>3</u> <u>2^e</u>	<u>Not required</u> <u>Not required</u>	<u>Required</u> <u>Required</u>
Special uses			
<u>Acetylene generator rooms</u>	<u>----</u>	<u>Not required</u>	<u>Required</u>
<u>Grain processing</u>	<u>----</u>	<u>Not required</u>	<u>Required</u>
<u>Liquefied petroleum gas distribution facilities</u>	<u>----</u>	<u>Not required</u>	<u>Required</u>
<u>Where explosion hazards exist^d</u>	<u>Detonation</u> <u>Deflagration</u>	<u>Required</u> <u>Not required</u>	<u>Not permitted</u> <u>Required</u>

a. Combustible dusts that are generated during manufacturing or processing. See definition of combustible dust in rule 1301:7-7-02 of the Administrative Code.

b. Storage or use.

c. In open use or dispensing.

d. Rooms containing dispensing and use of hazardous materials when an explosive environment can occur because of the characteristics or nature of the hazardous materials or as a result of the dispensing or use process.

e. A method of explosion control shall be provided when Class 2 water-reactive materials can form potentially explosive mixtures.

f. Explosion venting is not required for Group H-5 Fabrication Areas complying with rule 1301:7-7-27 of the Administrative Code and the building code as listed in rule 1301:7-7-80 of the Administrative Code.

(2) 911.2 Required deflagration venting. Areas that are required to be provided with deflagration venting shall comply with the following:

- (a) Walls, ceilings and roofs exposing surrounding areas shall be designed to resist a minimum internal pressure of 100 pounds per square foot (psf) (4788 Pa). The minimum internal design pressure shall not be less than five times the maximum internal relief pressure specified in paragraph (K)(2)(e)(911.2) of this rule.
- (b) Deflagration venting shall be provided only in exterior walls and roofs.

Exception: Where sufficient exterior wall and roof venting cannot be provided because of inadequate exterior wall or roof area, deflagration venting shall be allowed by specially designed shafts vented to the exterior of the building.

- (c) Deflagration venting shall be designed to prevent unacceptable structural damage. Where relieving a deflagration, vent closures shall not produce projectiles of sufficient velocity and mass to cause life threatening injuries to the occupants or other persons on the property or adjacent public ways.
- (d) The aggregate clear area of vents and venting devices shall be governed by the pressure resistance of the construction assemblies specified in paragraph (K)(2)(a)(911.2.1) of this rule and the maximum internal pressure allowed by paragraph (K)(2)(e)(911.2.5) of this rule.

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(e) Vents shall be designed to withstand loads in accordance with the *building code as listed in rule 1301:7-7-80 of the Administrative Code*. Vents shall consist of any one or any combination of the following to relieve at a maximum internal pressure of 20 pounds per square foot (958 Pa), but not less than the loads required by the *building code as listed in rule 1301:7-7-80 of the Administrative Code*.

(i) Exterior walls designed to release outward.

(ii) Hatch covers.

(iii) Outward swinging doors.

(iv) Roofs designed to uplift.

(v) Venting devices listed for the purpose.

(f) Vents designed to release from the exterior walls or roofs of the building when venting a deflagration shall discharge directly to the exterior of the building where an unoccupied space not less than 50 feet (15 240 mm) in width is provided between the exterior walls of the building and the lot line.

Exception: Vents complying with *paragraph (K)(2)(g)(911.2.7) of this rule*.

(g) Vents designed to remain attached to the building when venting a deflagration shall be so located that the discharge opening shall not be less than 10 feet (3048 mm) vertically from window openings and exits in the building and 20 feet (6096 mm) horizontally from exits in the building, from window openings and exits in adjacent buildings on the same lot and from the lot line.

(h) Discharge from vents shall not be into the interior of the building.

(3) 911.3 Explosion prevention systems. Explosion prevention systems shall be of an approved type and installed in accordance with the provisions of this code and NFPA 69 as listed in rule 1301:7-7-80 of the Administrative Code.

(4) 911.4 Barricades. Barricades shall be designed and installed in accordance with NFPA 495 as listed in rule 1301:7-7-80 of the Administrative Code.

(L) Section 912 Fire department connections

(1) 912.1 Installation. Fire department connections shall be installed in accordance with the NFPA standard applicable to the system design and shall comply with *paragraphs (L)(2)(912.2) to (L)(7)(912.7) of this rule*.

Exceptions: Fire department connections are not required for:

1 Limited area sprinkler systems supplied from the domestic water system.

2. Automatic sprinkler systems having less than twenty sprinklers.

(2) 912.2 Location. With respect to hydrants, driveways, buildings and landscaping, fire department connections shall be so located that fire apparatus and hose connected to supply the system will not obstruct access to the buildings for other fire apparatus. The location of the fire department connections shall be approved by the fire code official. After approving the location of the fire department connection(s), the fire code official shall submit this approval to the building code official of the certified building department having jurisdiction.

(a) **912.2.1 Visible location.** Fire department connections shall be located on the street side of buildings, fully visible and recognizable from the street or nearest point of fire department vehicle access or otherwise approved by the fire code official. If the fire code official approves a fire department connection location that does not meet the above criteria, the fire code official shall provide this input to the building code official of the certified building department having jurisdiction.

(b) **912.2.2 Existing buildings.** On existing buildings, wherever the fire department connection is not visible to approaching fire apparatus, the fire department connection shall be indicated by an approved sign mounted on the street front or on the side of the building. Such sign shall have the letters "FDC" not less than 6 inches (152 mm) high and words in letters not less than 2 inches (51 mm) high or an arrow to indicate the location. Such signs shall be subject to the approval of the fire code official.

(3) **912.3 Fire hose threads.** Fire hose threads used in connection with standpipe systems shall be approved and shall be compatible with fire department hose threads.

(4) **912.4 Access.** Immediate access to fire department connections shall be maintained at all times and without obstruction by fences, bushes, trees, walls or any other fixed or moveable object. Access to fire department connections shall be approved by the fire code official.

Exception: Fences, where provided with an access gate equipped with a sign complying with the legend requirements of *paragraph (L)(5)(912.5) of this rule* and a means of emergency operation. The gate and the means of emergency operation shall be approved by the fire code official and maintained operational at all times.

(a) **912.4.1 Locking fire department connection caps.** The fire code official is authorized to require locking caps on fire department connections for water-based fire protection systems where the responding fire department carries appropriate key wrenches for removal. The fire code official shall notify the building official of the requirement for locking fire department connection caps.

(b) **912.4.2 Clear space around connections.** A working space of not less than 36 inches (914 mm) in width, 36 inches (914 mm) in depth and 78 inches (1981 mm) in height shall be provided and maintained in front of and to the sides of wall-mounted fire department connections and around the circumference of free-standing fire department connections, except as otherwise required or approved by the fire code official. The fire code official shall notify the building code official of the certified building department having jurisdiction of any conditions approved by the fire code official that exceed the minimum requirements contained in this paragraph.

(c) **912.4.3 Physical protection.** Where fire department connections are subject to impact by a motor vehicle, vehicle impact protection shall be provided in accordance with *paragraph (L)(312) of rule 1301:7-7-03 of the Administrative Code*.

(5) **912.5 Signs.** A metal sign with raised letters at least 1 inch (25 mm) in size shall be mounted on all fire department connections serving automatic sprinklers, standpipes or fire pump connections. Such signs shall read: "AUTOMATIC SPRINKLERS" or "STANDPIPES" or "TEST CONNECTION" or a combination thereof as applicable. Where the fire department connection does not serve the entire building, a sign shall be provided indicating the portions of the building served.

(6) **912.6 Backflow protection.** The potable water supply to automatic sprinkler and standpipe systems shall be protected against backflow as required by the *plumbing code as listed in rule 1301:7-7-80 of the Administrative Code*.

(7) **912.7 Inspection, testing and maintenance.** Fire department connections shall be periodically inspected, tested and maintained in accordance with NFPA 25 as listed in *rule 1301:7-7-80 of the Administrative Code*. Records of inspection, testing and maintenance shall be maintained.

(M) Section 913 Fire pumps

(1) 913.1 General. Where provided, fire pumps shall be installed in accordance with this *paragraph* and NFPA 20 as listed in rule 1301:7-7-80 of the Administrative Code.

(a) 913.1.1 Minimum suction pressure to be maintained. When a fire pump is installed, the "Ohio Environmental Protection Agency" requires the installation of a low-pressure cut-off or a low suction throttling valve to ensure that a minimum of 10 psi is maintained in the suction line while the pump is operating in accordance with rule 3745-95-07 of the Administrative Code.

(2) 913.2 Protection against interruption of service. The fire pump, driver and controller shall be protected in accordance with NFPA 20 as listed in rule 1301:7-7-80 of the Administrative Code against possible interruption of service through damage caused by explosion, fire, flood, earthquake, rodents, insects, windstorm, freezing, vandalism and other adverse conditions.

(a) 913.2.1 Protection of fire pump rooms. Rooms where fire pumps are located shall be separated from all other areas of the building in accordance with section 913.2.1 of the *building code* as listed in rule 1301:7-7-80 of the Administrative Code.

(b) 913.2.2 Circuits supplying fire pumps. Cables used for survivability of circuits supplying fire pumps shall be listed in accordance with UL 2196 as listed in rule 1301:7-7-80 of the Administrative Code. Electrical circuit protective systems shall be installed in accordance with their listing requirements.

(3) 913.3 Temperature of pump room. Suitable means shall be provided for maintaining the temperature of a pump room or pump house, where required, above 40°F (5°C).

(a) 913.3.1 Engine manufacturer's recommendation. Temperature of the pump room, pump house or area where engines are installed shall never be less than the minimum recommended by the engine manufacturer. The engine manufacturer's recommendations for oil heaters shall be followed.

(4) 913.4 Valve supervision. Where provided, the fire pump suction, discharge and 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 location.
3. Locking valves open.
4. Sealing valves and approved weekly record inspection where valves are located within fenced enclosures under the control of the owner.

(a) 913.4.1 Test outlet valve supervision. Fire pump test outlet valves shall be supervised in the closed position.

(5) 913.5 Testing and maintenance. Fire pumps shall be inspected, tested and maintained in accordance with the requirements of this *paragraph* and NFPA 25 as listed in rule 1301:7-7-80 of the Administrative Code. Records of inspection, testing and maintenance shall be maintained.

(a) 913.5.1 Acceptance test. Acceptance testing shall be done in accordance with the requirements of NFPA 20 as listed in rule 1301:7-7-80 of the Administrative Code.

(b) 913.5.2 Generator sets. Engine generator sets supplying emergency or standby power to fire pump assemblies shall be periodically tested in accordance with NFPA 110 *as listed in rule 1301:7-7-80 of the Administrative Code*. Written records of such tests shall meet the requirements of paragraph (D)(4)(b)(604.4.2) of rule 1301:7-7-06 of the Administrative Code. Records of testing shall be maintained.

(c) 913.5.3 Transfer switches. Automatic transfer switches shall be periodically tested in accordance with NFPA 110 *as listed in rule 1301:7-7-80 of the Administrative Code*. Written records of such tests shall meet the requirements of paragraph (D)(4)(b)(604.4.2) of rule 1301:7-7-06 of the Administrative Code. Records of testing shall be maintained.

(d) 913.5.4 Pump room environmental conditions. Tests of pump room environmental conditions, including heating, ventilation and illumination shall be made to ensure proper manual or automatic operation of the associated equipment.

(N) Section 914 Fire protection based on special detailed requirements of use and occupancy

(1) 914.1 General. This *paragraph* shall specify where fire protection systems are required based on the detailed requirements of use and occupancy of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*.

(2) 914.2 Covered and open mall buildings. Covered and open mall buildings shall comply with *paragraphs (N)(2)(a)(914.2.1) to (N)(2)(d)(914.2.4) of this rule*.

(a) 914.2.1 Automatic sprinkler system. Covered and open mall buildings and buildings connected shall be equipped throughout with an automatic sprinkler system in accordance with *paragraph (C)(1)(a)(903.1.1) of this rule*, which shall comply with all of the following:

- (i)** The automatic sprinkler system shall be complete and operative throughout occupied space in the mall building prior to occupancy of any of the tenant spaces. Unoccupied tenant spaces shall be similarly protected unless provided with approved alternative protection.
- (ii)** Sprinkler protection for the mall of a covered mall building shall be independent from that provided for tenant spaces or anchor buildings.
- (iii)** Sprinkler protection for the tenant spaces of an open mall building shall be independent from that provided for anchor buildings.
- (iv)** Sprinkler protection shall be provided beneath exterior circulation balconies located adjacent to an open mall.
- (v)** Where tenant spaces are supplied by the same system, they shall be independently controlled.

Exception: An automatic sprinkler system shall not be required in spaces or areas of open parking garages separated from the covered or open mall in accordance with section 402.4.2.3 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code* and constructed in accordance with section 406.5 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*.

(b) 914.2.2 Standpipe system. The covered and open mall building shall be equipped throughout with a standpipe system as required by *paragraph (E)(3)(c)(905.3.3) of this rule*.

(c) 914.2.3 Emergency voice/alarm communication system. Where the total floor area exceeds 50,000 square feet (4645 m²) within either a covered mall building or within the perimeter line of an open mall building, an emergency voice/alarm communication system shall be provided. Emergency voice/alarm communication

systems serving a mall, required or otherwise, shall be accessible to the fire department. The system shall be provided in accordance with *paragraph (G)(5)(b)(ii)(907.5.2.2) of this rule.*

(d) 914.2.4 Fire department access to equipment. Rooms or areas containing controls for air-conditioning systems, automatic fire-extinguishing systems, automatic sprinkler systems or other detection, suppression or control elements shall be identified for use by the fire department.

(3) 914.3 High-rise buildings. High-rise buildings shall comply with *paragraphs (N)(3)(a)(914.3.1) to (N)(3)(g)(914.3.7) of this rule.*

(a) 914.3.1 Automatic sprinkler system. Buildings and structures shall be equipped throughout with an automatic sprinkler system in accordance with *paragraph (C)(3)(a)(i)(903.3.1.1) of this rule* and a secondary water supply where required by *paragraph (N)(3)(c)(914.3.3) of this rule.*

Exception: An automatic sprinkler system shall not be required in spaces or areas of:

1. Open parking garages in accordance with section 406.5 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code.*
2. Telecommunications equipment buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided that those spaces or areas are equipped throughout with an automatic fire detection system in accordance with *paragraph (G)(2)(907.2) of this rule* and are separated from the remainder of the building by not less than 1-hour fire barriers constructed in accordance with section 707 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code* or not less than 2-hour horizontal assemblies constructed in accordance with section 711 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*, or both.

(i) 914.3.1.1 Number of sprinkler risers and system design. Each sprinkler system zone in buildings that are more than 420 feet (128 m) in height shall be supplied by a minimum of two risers. Each riser shall supply sprinklers on alternate floors. If more than two risers are provided for a zone, sprinklers on adjacent floors shall not be supplied from the same riser.

(a) 914.3.1.1.1 Riser location. Sprinkler risers shall be placed in interior exit stairways and ramps that are remotely located in accordance with *paragraph (G)(1007) of rule 1301:7-7-10 of the Administrative Code.*

(ii) 914.3.1.2 Water supply to required fire pumps. In buildings that are more than 420 feet (128 m) in building height, required fire pumps shall be supplied by connections to no fewer than two water mains located in different streets. Separate supply piping shall be provided between each connection to the water main and the pumps. Each connection and the supply piping between the connection and the pumps shall be sized to supply the flow and pressure required for the pumps to operate.

Exception: Two connections to the same main shall be permitted provided the main is valved such that an interruption can be isolated so that the water supply will continue without interruption through no fewer than one of the connections.

(b) 914.3.2 Secondary water supply. An automatic secondary on-site water supply having a capacity not less than the hydraulically calculated sprinkler demand, including the hose stream requirement, shall be provided for high-rise buildings assigned to in Seismic Design Category C, D, E or F as determined by the *building code as listed in rule 1301:7-7-80 of the Administrative Code.* An additional fire pump shall not be required for the secondary water supply unless needed to provide the minimum design intake pressure at the suction side of the fire pump supplying the automatic sprinkler system. The secondary water supply shall have a duration of not

less than 30 minutes as determined by the occupancy hazard classification in accordance with NFPA 13 as listed in rule 1301:7-7-80 of the Administrative Code.

Exception: Existing buildings.

(c) 914.3.3 Fire alarm system. A fire alarm system shall be provided in accordance with paragraph (G)(2)(m)(907.2.13) of this rule.

(d) 914.3.4 Automatic smoke detection. Smoke detection shall be provided in accordance with paragraph (G)(2)(m)(i)(907.2.13.1) of this rule.

(e) 914.3.5 Emergency voice/alarm communication system. An emergency voice/alarm communication system shall be provided in accordance with paragraph (G)(5)(b)(ii)(907.5.2.2) of this rule.

(f) 914.3.6 Emergency responder radio coverage. Emergency responder radio coverage shall be provided in accordance with paragraph (J)(510) of rule 1301:7-7-05 of the Administrative Code.

(g) 914.3.7 Fire command. A fire command center complying with paragraph (H)(508) of rule 1301:7-7-05 of the Administrative Code shall be provided in a location approved by the fire department.

(4) 914.4 Atriums. Atriums shall comply with paragraphs (N)(4)(a)(914.4.1) and (N)(4)(b)(914.4.2) of this rule.

(a) 914.4.1 Automatic sprinkler system. An approved automatic sprinkler system shall be installed throughout the entire building.

Exceptions:

1. That area of a building adjacent to or above the atrium need not be sprinklered, provided that portion of the building is separated from the atrium portion by not less than a 2-hour fire barrier constructed in accordance with section 707 of the building code as listed in rule 1301:7-7-80 of the Administrative Code or horizontal assemblies constructed in accordance with section 711 of the building code as listed in rule 1301:7-7-80 of the Administrative Code, or both.
2. Where the ceiling of the atrium is more than 55 feet (16 764 mm) above the floor, sprinkler protection at the ceiling of the atrium is not required.

(b) 914.4.2 Fire alarm system. A fire alarm system shall be provided where required by paragraph (G)(2)(n)(907.2.14) of this rule.

(5) 914.5 Underground buildings. Underground buildings shall comply with paragraphs (N)(5)(a)(914.5.1) to (N)(5)(e)(914.5.5) of this rule.

(a) 914.5.1 Automatic sprinkler system. The highest level of exit discharge serving the underground portions of the building and all levels below shall be equipped with an automatic sprinkler system installed in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule. Water-flow switches and control valves shall be supervised in accordance with paragraph (C)(4)(903.4) of this rule.

(b) 914.5.2 Smoke control system. A smoke control system is required to control the mitigation of products of combustion in accordance with paragraph (I)(909) of this rule and provisions of this paragraph. Smoke control shall restrict movement of smoke to the general area of fire origin and maintain means of egress in a usable condition.

(c) 914.5.3 Compartment smoke control system. Where compartmentation is required by section 405.4 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code*, each compartment shall have an independent smoke control system. The system shall be automatically activated and capable of manual operation in accordance with *paragraph (G)(2)(r)(907.2.18) of this rule*.

(d) 914.5.4 Fire alarm system. A fire alarm system shall be provided where required by *paragraphs (G)(2)(r)(907.2.18) and (G)(2)(s)(907.2.19) of this rule*.

(e) 914.5.5 Standpipe system. The underground building shall be provided throughout with a standpipe system in accordance with *paragraph (E)(905) of this rule*.

(6) 914.6 Stages. Stages shall comply with *paragraphs (N)(6)(a)(914.6.1) and (N)(6)(b)(914.6.2) of this rule*.

(a) 914.6.1 Automatic sprinkler system. Stages shall be equipped with an automatic sprinkler system in accordance with *paragraph (C)(3)(a)(i)(903.3.1.1) of this rule*. Sprinklers shall be installed under the roof and gridiron and under all catwalks and galleries over the stage. Sprinklers shall be installed in dressing rooms, performer lounges, shops and storerooms accessory to such stages.

Exceptions:

1. Sprinklers are not required under stage areas less than 4 feet (1219 mm) in clear height utilized exclusively for storage of tables and chairs, provided the concealed space is separated from the adjacent spaces by Type X gypsum board not less than 5/8-inch (15.9 mm) thickness.
2. Sprinklers are not required for stages 1,000 square feet (93 m²) or less in area and 50 feet (15 240 mm) or less in height where curtains, scenery or other combustible hangings are not retractable vertically. Combustible hangings shall be limited to a single main curtain, borders, legs and a single backdrop.
3. Sprinklers are not required within portable orchestra enclosures on stages.

(b) 914.6.2 Standpipe system. Standpipe systems shall be provided in accordance with *paragraph (E)(905) of this rule*.

(7) 914.7 Special amusement buildings. Special amusement buildings shall comply with *paragraphs (N)(7)(a)(914.7.1) and (N)(7)(b)(914.7.2) of this rule*.

(a) 914.7.1 Automatic sprinkler system. Special amusement buildings shall be equipped throughout with an automatic sprinkler system in accordance with *paragraph (C)(3)(a)(i)(903.3.1.1) of this rule*. Where the special amusement building is temporary, movable, or portable the sprinkler water supply shall be of an approved temporary means.

Exceptions:

1. Automatic sprinklers are not required where the total floor area of a temporary special amusement occupancy is less than 1,000 square feet (93 m²) and the exit access travel distance from any point to an exit is less than 50 feet (15 240 mm).
2. Automatic fire sprinklers are not required where the total floor area of a temporary special amusement occupancy in an existing building is less than 5,000 square feet (93 m²), the travel distance from any point to an exit is less than 50 feet (15,240 mm), and where, in the opinion of the fire code official, additional means have been provided to ensure an equivalent level of safety for all occupants during the hours that the special amusement building is operated and occupied. Such additional means may

include, but not be limited to: fire watches, reduced occupant loads, additional means of egress, additional detection and portable fire extinguishers.

(b) 914.7.2 Automatic smoke detection. Special amusement buildings shall be equipped with an automatic smoke detection system in accordance with paragraph (G)(2)(l)(907.2.12) of this rule.

(8) 914.8 Aircraft-related occupancies. Aircraft-related occupancies shall comply with paragraphs (N)(8)(a)(914.8.1) to (G)(2)(f)(914.8.6) of this rule.

(a) 914.8.1 Automatic smoke detection systems. Airport traffic control towers shall be provided with an automatic smoke detection system installed in accordance with paragraph (G)(2)(v)(907.2.22) of this rule.

(b) 914.8.2 Automatic sprinkler system for new airport traffic control towers. Where an occupied floor is located more than 35 feet (10 668 mm) above the lowest level of fire department vehicle access, new airport traffic control towers shall be equipped with an automatic sprinkler system in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule.

(c) 914.8.3 Fire suppression for aircraft hangars. Aircraft hangars shall be provided with a fire suppression system designed in accordance with NFPA 409 as listed in rule 1301:7-7-80 of the Administrative Code, based upon the classification for the hangar given in Table 914.8.3 of this rule.

Exception: Where a fixed base operator has separate repair facilities on site, Group II hangars operated by a fixed base operator used for storage of transient aircraft only shall have a fire suppression system, but the system shall be exempt from foam requirements.

Table 914.8.3
Hangar fire suppression requirements^{a,b,c}

Maximum single fire area, square feet (m²)	Building code as listed in rule 1301:7-7-80- Type of construction								
	IA	IB	IIA	IIB	IIIA	IIIB	IV	VA	VB
>40,001	Group I	Group I	Group I	Group I	Group I	Group I	Group I	Group I	Group I
40,000	Group II	Group II	Group II	Group II	Group II	Group II	Group II	Group II	Group II
30,000	Group III	Group II	Group II	Group II	Group II	Group II	Group II	Group II	Group II
20,000	Group III	Group III	Group II	Group II	Group II	Group II	Group II	Group II	Group II
15,000	Group III	Group III	Group III	Group II	Group III	Group II	Group III	Group II	Group II
12,000	Group III	Group III	Group III	Group III	Group III	Group III	Group III	Group II	Group II
8,000	Group III	Group III	Group III	Group III	Group III	Group III	Group III	Group III	Group II
5,000	Group III	Group III	Group III	Group III	Group III	Group III	Group III	Group III	Group III

For SI: 1 square foot = 0.0929 m², 1 foot = 304.8 mm.

- Aircraft hangars with a door height greater than 28 feet shall be provided with fire suppression for a Group I hangar regardless of maximum fire area.
- Groups shall be as classified in accordance with NFPA 409 as listed in rule 1301:7-7-80 of the Administrative Code.
- Membrane structures complying with section 3102 of the building code as listed in rule 1301:7-7-80 of the Administrative Code shall be classified as a Group IV hangar.

Note: for copyright claim information, please see the notice on the last page of this rule.

(i) **914.8.3.1 Hazardous operations.** Any Group III aircraft hangar according to Table 914.8.3 of this rule that contains hazardous operations including, but not limited to, the following shall be provided with a Group I or Group II fire suppression system in accordance with NFPA 409 as listed in rule 1301:7-7-80 of the Administrative Code as applicable:

- (a) Doping.
- (b) Hot working including, but not limited to, welding, torch cutting and torch soldering.
- (c) Fuel transfer.
- (d) Fuel tank repair or maintenance not including defueled tanks in accordance with NFPA 409 as listed in rule 1301:7-7-80 of the Administrative Code, inerted tanks or tanks that have never been fueled.
- (e) Spray finishing operations.
- (f) Total fuel capacity of all aircraft within the unsprinklered single fire area in excess of 1,600 gallons (6057 L).
- (g) Total fuel capacity of all aircraft within the maximum single fire area in excess of 7,500 gallons (28 390 L) for a hangar equipped throughout with an automatic fire sprinkler system in accordance with paragraph (C)(3)(a)(i)(903.3.1.1) of this rule.

(ii) **914.8.3.2 Separation of maximum single fire areas.** Maximum single fire areas established in accordance with hangar classification and construction type in Table 914.8.3 of this rule shall be separated by 2-hour fire walls constructed in accordance with section 706 of the building code as listed in rule 1301:7-7-80 of the Administrative Code. In determining the maximum single fire area as set forth in Table 914.8.3 of this rule, ancillary uses that are separated from aircraft servicing areas by not less than a 1-hour fire barrier constructed in accordance with section 707 of the building code as listed in rule 1301:7-7-80 of the Administrative Code shall not be included in the area.

(d) **914.8.4 Finishing.** The process of “doping,” involving the use of a volatile flammable solvent, or of painting shall be carried on in a separate detached building equipped with automatic fire-extinguishing equipment in accordance with paragraph (C)(903) of this rule.

(e) **914.8.5 Residential aircraft hangar smoke alarms.** Smoke alarms shall be provided within residential aircraft hangars in accordance with paragraph (G)(2)(u)(907.2.21) of this rule.

(f) **914.8.6 Aircraft paint hangar fire suppression.** Aircraft paint hangars shall be provided with fire suppression as required by NFPA 409 as listed in rule 1301:7-7-80 of the Administrative Code.

(9) **914.9 Application of flammable finishes.** An automatic sprinkler system or fire-extinguishing system shall be provided in all spray, dip and immersing spaces and storage rooms, and shall be installed in accordance with this rule.

(10) **914.10 Drying rooms.** Drying rooms designed for high-hazard materials and processes, including special occupancies as provided for in chapter 4 of the building code as listed in rule 1301:7-7-80 of the Administrative Code, shall be protected by an approved automatic fire-extinguishing system complying with the provisions of this rule.

(11) **914.11 Ambulatory care facilities.** Occupancies classified as ambulatory care facilities shall comply with paragraphs (N)(11)(a)(914.11.1) to (N)(11)(c)(914.11.3) of this rule.

(a) 914.11.1 Automatic sprinkler systems. An automatic sprinkler system shall be provided for ambulatory care facilities in accordance with paragraph (C)(2)(b)(903.2.2) of this rule.

(b) 914.11.2 Manual fire alarm systems. A manual fire alarm system shall be provided for ambulatory care facilities in accordance with paragraph (G)(2)(b)(907.2.2) of this rule.

(c) 914.11.3 Fire alarm systems. An automatic smoke detection system shall be provided for ambulatory care facilities in accordance with paragraph (G)(2)(b)(i)(907.2.2.1) of this rule.

(O) Section 915 Carbon monoxide detection

(1) 915.1 General. Carbon monoxide detection shall be installed in new buildings in accordance with paragraphs (O)(1)(a)(915.1.1) to (O)(6)(915.6) of this rule. Carbon monoxide detection shall be installed in existing buildings in accordance with paragraph (C)(9)(1103.9) of rule 1301:7-7-11 of the Administrative Code.

(a) 915.1.1 Where required. Carbon monoxide detection shall be provided in Group I-1, I-2, I-4 and R occupancies and in classrooms in Group E occupancies in the locations specified in paragraph (O)(2)(915.2) of this rule where any of the conditions in paragraphs (O)(1)(b)(915.1.2) to (O)(1)(f)(915.1.6) of this rule exist.

(b) 915.1.2 Fuel-burning appliances and fuel-burning fireplaces. Carbon monoxide detection shall be provided in dwelling units, sleeping units and classrooms that contain a fuel-burning appliance or a fuel-burning fireplace.

(c) 915.1.3 Forced-air furnaces. Carbon monoxide detection shall be provided in dwelling units, sleeping units and classrooms served by a fuel-burning, forced-air furnace.

Exception: Carbon monoxide detection shall not be required in dwelling units, sleeping units and classrooms where carbon monoxide detection is provided in the first room or area served by each main duct leaving the furnace, and the carbon monoxide alarm signals are automatically transmitted to an approved location.

(d) 915.1.4 Fuel-burning appliances outside of dwelling units, sleeping units and classrooms. Carbon monoxide detection shall be provided in dwelling units, sleeping units and classrooms located in buildings that contain fuel-burning appliances or fuel-burning fireplaces.

Exceptions:

1. Carbon monoxide detection shall not be required in dwelling units, sleeping units and classrooms where there are no communicating openings between the fuel-burning appliance or fuel-burning fireplace and the dwelling unit, sleeping unit or classroom.
2. Carbon monoxide detection shall not be required in dwelling units, sleeping units and classrooms where carbon monoxide detection is provided in one of the following locations:
 - 2.1. In an approved location between the fuel-burning appliance or fuel-burning fireplace and the dwelling unit, sleeping unit or classroom.
 - 2.2. On the ceiling of the room containing the fuel-burning appliance or fuel-burning fireplace.

(e) 915.1.5 Private garages. Carbon monoxide detection shall be provided in dwelling units, sleeping units and classrooms in buildings with attached private garages.

Exceptions:

1. Carbon monoxide detection shall not be required where there are no communicating openings between the private garage and the dwelling unit, sleeping unit or classroom.
2. Carbon monoxide detection shall not be required in dwelling units, sleeping units and classrooms located more than one story above or below a private garage.
3. Carbon monoxide detection shall not be required where the private garage connects to the building through an open-ended corridor.
4. Where carbon monoxide detection is provided in an approved location between openings to a private garage and dwelling units, sleeping units or classrooms, carbon monoxide detection shall not be required in the dwelling units, sleeping units or classrooms.

(f) 915.1.6 Exempt garages. For determining compliance with *paragraph (O)(1)(e)(915.1.5) of this rule*, an open parking garage complying with Section 406.5 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code* or an enclosed parking garage complying with Section 406.6 of the *building code as listed in rule 1301:7-7-80 of the Administrative Code* shall not be considered a private garage.

(2) 915.2 Locations. Where required by *paragraph (O)(1)(a)(915.1.1) of this rule*, carbon monoxide detection shall be installed in the locations specified in *paragraphs (O)(2)(a)(915.2.1) to (O)(2)(c)(915.2.3) of this rule*.

(a) 915.2.1 Dwelling units. Carbon monoxide detection shall be installed in dwelling units outside of each separate sleeping area in the immediate vicinity of the bedrooms. Where a fuel-burning appliance is located within a bedroom or its attached bathroom, carbon monoxide detection shall be installed within the bedroom.

(b) 915.2.2 Sleeping units. Carbon monoxide detection shall be installed in sleeping units.

Exception: Carbon monoxide detection shall be allowed to be installed outside of each separate sleeping area in the immediate vicinity of the sleeping unit where the sleeping unit or its attached bathroom does not contain a fuel-burning appliance and is not served by a forced air furnace.

(c) 915.2.3 Group E occupancies. Carbon monoxide detection shall be installed in classrooms in Group E occupancies. Carbon monoxide alarm signals shall be automatically transmitted to an on-site location that is staffed by school personnel.

Exception: Carbon monoxide alarm signals shall not be required to be automatically transmitted to an on-site location that is staffed by school personnel in Group E occupancies with an occupant load of 30 or less.

(3) 915.3 Detection equipment. Carbon monoxide detection required by *paragraphs (O)(1)(915.1) to (O)(2)(c)(915.2.3) of this rule* shall be provided by carbon monoxide alarms complying with *paragraph (O)(4)(915.4) of this rule* or carbon monoxide detection systems complying with *paragraph (O)(5)(915.5) of this rule*.

(4) 915.4 Carbon monoxide alarms. Carbon monoxide alarms shall comply with *paragraphs (O)(4)(a)(915.4.1) to (O)(4)(c)(915.4.3) of this rule*.

(a) 915.4.1 Power source. Carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source, and when primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than that required for overcurrent protection.

Exception: Where installed in buildings without commercial power, battery-powered carbon monoxide alarms shall be an acceptable alternative.

(b) **915.4.2 Listings.** Carbon monoxide alarms shall be listed in accordance with UL 2034 as listed in rule 1301:7-7-80 of the Administrative Code.

(c) **915.4.3 Combination alarms.** Combination carbon monoxide/smoke alarms shall be an acceptable alternative to carbon monoxide alarms. Combination carbon monoxide/smoke alarms shall be listed in accordance with UL 2034 and UL 217 as listed in rule 1301:7-7-80 of the Administrative Code.

(5) **915.5 Carbon monoxide detection systems.** Carbon monoxide detection systems shall be an acceptable alternative to carbon monoxide alarms and shall comply with paragraphs (O)(5)(a)(915.5.1) to (O)(5)(c)(915.5.3) of this rule.

(a) **915.5.1 General.** Carbon monoxide detection systems shall comply with NFPA 720 as listed in rule 1301:7-7-80 of the Administrative Code. Carbon monoxide detectors shall be listed in accordance with UL 2075 as listed in rule 1301:7-7-80 of the Administrative Code.

(b) **915.5.2 Locations.** Carbon monoxide detectors shall be installed in the locations specified in paragraph (O)(2)(915.2) of this rule. These locations supersede the locations specified in NFPA 720 as listed in rule 1301:7-7-80 of the Administrative Code.

(c) **915.5.3 Combination detectors.** Combination carbon monoxide/smoke detectors installed in carbon monoxide detection systems shall be an acceptable alternative to carbon monoxide detectors, provided they are listed in accordance with UL 2075 and UL 268 as listed in rule 1301:7-7-80 of the Administrative Code.

(6) **915.6 Maintenance.** Carbon monoxide alarms and carbon monoxide detection systems shall be maintained in accordance with NFPA 720 as listed in rule 1301:7-7-80 of the Administrative Code. Carbon monoxide alarms and carbon monoxide detectors that become inoperable or begin producing end-of-life signals shall be replaced.

(P) Section 916 Fire protection and fire-fighting equipment certification

(1) **916.1** No person shall sell, offer for sale, or use any fire protection or fire-fighting equipment which does not meet the minimum standards for such equipment as specified in this code.

(2) **916.2** Except for public and private mobile fire trucks, no person shall engage in the business of servicing, testing, repairing, or installing fire protection or fire-fighting equipment for profit without first being certified by the state fire marshal, as required by section 3737.65 of the Revised Code and this code.

(3) **916.3 Terms defined for this paragraph.** The following words take on exclusive meanings as used in this paragraph of this rule only.

"Company." Any individual, sole proprietorship, partnership, association, or corporation certified pursuant to this rule.

"Company branch." A separate but dependent office of a company certified pursuant to paragraph (P)(18)(916.18) of this rule that operates at a different address than the company.

"Provisional individual." Any person enrolled in a bona fide apprenticeship training program registered with the apprenticeship council pursuant to section 4139.08 of the Revised Code or with the bureau of apprenticeship and training of the United States department of labor.

(4) **916.4 Individual and provisional individual certification.** Upon satisfactory application and examination pursuant to paragraphs (P)(6)(916.6) and (P)(7)(916.7) of this rule, the state fire marshal may certify any individual

or provisional individual to service, test, repair or install fire protection or fire-fighting equipment in the following categories:

- (a) Automatic sprinkler and standpipe systems;
- (b) Fire service mains and water tanks;

Exception: Excavation and earth moving equipment operators are not required to be certified in this category provided the work they perform to meet the requirements of NFPA 22 and 24 is conducted under the direct supervision and active direction of an individual certified in this category (who remains on site while the work is performed.)

- (c) Fire pumps;
- (d) Fire alarm and detection equipment;
- (e) Household fire warning equipment only;
- (f) Portable fire extinguishers;
- (g) Engineered extinguishing equipment other than water;
- (h) Pre-engineered extinguishing equipment other than water;
- (i) Fire pump diesel technician;
- (j) Aerosol extinguishing equipment; or
- (k) Such other categories as deemed necessary by the state fire marshal.

(5) 916.5 “Satisfactory application” includes, but is not limited to:

1. The provision to the state fire marshal of all information requested by the fire marshal or required by this rule;
2. The provision to the state fire marshal of documentation describing the applicant’s recent work history relating to fire protection installer work or similar construction trade experience including, upon request of the state fire marshal, evidence that any work performed was completed with certified individuals and in compliance with applicable codes.

(a) 916.5.1. If the state fire marshal has obtained evidence that the applicant, within two years prior to the date of examination, engaged in unauthorized fire protection installer work, the state fire marshal may deny the application. If the state fire marshal has obtained evidence that a renewal applicant, within two years of the date of renewal application, has engaged in fire protection installer work performed in violation of the applicable codes, the state fire marshal may deny the renewal application.

(6) 916.6 Those seeking certification to work on a particular engineered or pre-engineered system must show at least one of the following:

- (a) Proof from the manufacturer of training or approval to work on the manufacturers engineered or pre-engineered system; or

- (b) Documentation demonstrating that the applicant has witnessed the code compliant installation of ten engineered or pre-engineered systems within two years immediately prior to making application. The documentation shall include the license number of the individual performing such installation, type of system, date and location of installation.

(7) 916.7 Except for provisional individuals, the state fire marshal shall require all applicants to obtain a passing grade of at least seventy per cent on a fire protection installer examination administered by the state fire marshal prior to certification. The state fire marshal may administer the examination by procuring or engaging a third party to provide testing services. Fees for the examination may be assessed.

(8) 916.8 An individual may only work in those categories for which he has been certified pursuant to paragraph (P)(4)(916.4) of this rule.

(9) 916.9 An individual must be a company certified pursuant to paragraph (P)(4)(916.4) of this rule or must be associated with a certified company when such individual engages in the business of servicing, testing, repairing or installing fire protection or fire-fighting equipment for profit.

(10) 916.10 Individuals may only work on those particular engineered or pre-engineered systems for which the individual has recent experience or education to show competence and has provided documentation thereof to the state fire marshal. Individuals may only engage in the servicing, testing, or repairing of any fire protection or fire-fighting equipment if they are knowledgeable and experienced in the testing, maintenance and servicing requirements of the equipment and of the testing, service or maintenance methods of the equipment being worked on. Entities who engage persons to work on engineered or pre-engineered systems or to test, service, repair or provide maintenance on fire protection or fire-fighting equipment shall only engage competent and qualified individuals for work.

(11) 916.11 Every certified individual shall carry the certificate issued pursuant to paragraph (P)(916) of this rule on their person while engaging in the business of servicing, testing, repairing or installing fire protection or fire-fighting equipment for profit and produce the certificate for inspection upon request by the fire code official.

(12) 916.12 A provisional individual must be supervised by a certified individual at all times such provisional individual is engaging in work requiring certification. The certified individual directly supervising the individual issued the provisional certificate shall only supervise one provisional certificate holder while engaging in work requiring certification. The certified individual directly supervising the provisional certificate holder shall possess a valid and current certificate for the certification category of the work being performed.

(13) 916.13 Applications for certification and renewals shall be made on forms provided by the state fire marshal. All applications and renewals shall be accompanied by the appropriate fee, to be made payable to "Treasurer, State of Ohio."

(14) 916.14 Original application for certification and renewal of an individual or provisional individual shall, at a minimum, include the following:

- (a) Name of applicant;
- (b) Categories for which applicant is seeking certification;
- (c) If a non-resident of Ohio, an irrevocable consent to legal service in Ohio (needed for original application only);
- (d) If for a provisional individual, a copy of the indenture agreement;

- (e) Documentation describing the applicant's recent work history relating to fire protection installer work or similar construction trade experience; and
- (f) Any other information requested by the state fire marshal.

(15) **916.15** Fees for an individual or provisional certification shall be as follows:

- (a) Original application of an individual or provisional individual shall be thirty-five dollars for each category for which certification is sought;
- (b) Renewal of an individual or provisional individual shall be forty dollars;
- (c) An application for a duplicate license shall be made in writing to the state fire marshal. The application for a duplicate license shall be accompanied by a ten-dollar fee.

(16) **916.16** Applications for renewal must be received by the state fire marshal prior to the expiration date. Individual certification licenses and company certification of an individual operating alone expire in accordance with the following schedule:

- (a) Last name beginning with "a-q" on January second of each year;
- (b) Last name beginning with "h-m" on April first of each year;
- (c) Last name beginning with "n-s" on July first of each year;
- (d) Last name beginning with "t-z" on October first of each year.

(17) **916.17** Upon expiration of certification, all applications for renewal will be considered as a new application and the applicant shall be required to pass a fire protection installer examination administered by the state fire marshal prior to certification.

(18) **916.18** Upon satisfactory application, the state fire marshal may certify any company to engage in the business of servicing, testing, repairing, and installing fire protection and fire-fighting equipment. A company certification authorizes a company to engage in fire protection installer work only for those fire protection installer categories for which its employees are certified pursuant to this rule.

(19) **916.19** Original application for certification and renewal of a company shall, at a minimum, include the following:

- (a) Name of applicant;
- (b) The primary business address of the company;
- (c) Names of all persons responsible for the normal operations of the company (e.g., officers of the corporation, partners, etc.);
- (d) Proof of liability insurance or bonding in an amount of at least fifty thousand dollars for completion and/or performance purposes;
- (e) If a non-resident, an irrevocable consent to legal service in Ohio (needed for original application only); and
- (f) Any other information requested by the state fire marshal.

(20) **916.20** Fees for a company certification shall be as follows:

- (a) Original application of a company shall be two hundred dollars, except that an individual operating as a company shall be required to pay a fee of fifty dollars.
- (b) Renewal of a company shall be one hundred fifty dollars, except that an individual operating as a company shall be required to pay a fee of twenty-five dollars. All renewal applications not submitted prior to the date of expiration, shall pay new application fees in accordance with paragraph (P)(20)(a)(916.20) of this rule.
- (c) An application for a duplicate license shall be made in writing to the state fire marshal. The application for a duplicate license shall be accompanied by a ten-dollar fee.
- (d) The original application for a company branch certificate shall be made in writing to the state fire marshal. The application fee for a company branch certificate shall be ten dollars per company branch certificate.
 - (i) A company branch certificate status is contingent upon the status of the company and shall only operate if the company maintains a valid certificate.
 - (ii) A branch is not required to pay renewal fees separate from the company. A company branch certificate is automatically renewed upon the satisfactory and approved renewal of the company unless otherwise indicated in writing by the company.
 - (iii) The company is responsible for any fire protection installation or fire-fighting equipment business conducted out of or in association with a company branch.

(21) **916.21** All company certification licenses expire June thirtieth of each year. Renewal shall be pursuant to standard renewal procedure. Upon expiration of certification, all applications for renewal received by the state fire marshal thereafter shall be considered as a new application and the company applicant shall pay new application fees in accordance with paragraph (P)(20)(916.20) of this rule.

(22) **916.22** Any certified individual or certified company that changes its primary mailing address as previously filed with the state fire marshal or that experiences expiration of required insurance coverage, shall submit written notification of such change of address or insurance expiration to the state fire marshal within thirty days of the change of address or insurance expiration. A certified company or the company branch shall submit written notification to the state fire marshal of a company branch office's address change or closure within thirty days of such change or closure.

(23) **916.23** An application for any certificate issued pursuant to paragraph (P)(916) of this rule may be denied, or a certificate issued pursuant to paragraph (P)(916) of this rule may be suspended or revoked, for cause by the state fire marshal. Denial, suspension or revocation for cause includes, but is not limited to, any of the following reasons:

- (a) For knowingly committing an act that violates any provision of the "Ohio Building Code," the "Ohio Fire Code," or the Revised Code;
- (b) For engaging in or permitting a person to engage in activity requiring certification, but for which activity the person is not certified;
- (c) For gross negligence or gross incompetence;
- (d) For knowingly making any misrepresentation or false promise, or for dishonest or illegal dealing;
- (e) For a continued course of misrepresentation or the making of false promises individually, through employees or agents, through advertising, or otherwise;

- (f) For failure to notify the state fire marshal of a change of primary mailing address;
- (g) In the case of a company, for failure to maintain the liability insurance or bonding in an amount of at least fifty thousand dollars for completion and/or performance purposes;
- (h) In the case of a provisional individual, for failure to complete the apprenticeship program or failure to maintain enrollment in the apprenticeship training program; or
- (i) In the case of a company, for failure to notify the state fire marshal upon expiration of the required insurance coverage or of any changes to the information required by paragraph (P)(22)(916.22) of this rule or for failure to provide satisfactory evidence documenting such changes to the required information.

(24) 916.24 The state fire marshal shall comply with the provisions of Chapter 119. of the Revised Code whenever denying, suspending or revoking a certificate pursuant to paragraph (P)(23)(916.23) of this rule.

(25) 916.25 No person who has been denied certification, or whose certification is under suspension or revocation pursuant to paragraph (P)(23)(916.23) of this rule, may be associated with any company certified pursuant to paragraph (P)(916) of this rule.

(26) 916.26 If an application for certification is denied, or if a certification issued pursuant to paragraph (P)(916) of this rule is suspended or revoked, the company, company branch, or individual shall immediately cease engaging in the business of servicing, testing, repairing or installing fire protection or fire-fighting equipment for profit. If a certification is denied, suspended or revoked, that company or a company that had its certification denied, suspended or revoked, or an individual who had their certification denied, suspended or revoked, may not reapply for certification pursuant to paragraph (P)(916) of this rule until the suspension is lifted or until two years expire from the date of denial or revocation of certification.

Exception: A company that had its certification denied or an individual who had their certification denied solely for failure to submit a complete application, may reapply for certification pursuant to paragraph (P)(916) of this rule without waiting for two years to expire from the date of denial of certification.

Replaces: 1301:7-7-09

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Certification

Date

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