

# F-101.2(2) cdpVA-15

**Proponent :** James Dawson (dawsonj@chesterfield.gov)

## 2012 Virginia Statewide Fire Prevention Code

### SECTION 202 DEFINITIONS

#### **USBCApplicable Building Code.**

The ~~Virginia Uniform Statewide Building Code (13VAC5-63)~~, building code, including construction and rehabilitation portions, which was applied to the building when it was constructed, renovated, or rehabilitated, or when a building undergoes a Change of Occupancy.

### SECTION 202 DEFINITIONS

#### **[EB] CHANGE OF OCCUPANCY.**

A change in the use or occupancy of any building or structure that would place the building or structure in a different division of the same group of occupancies or in a different group of occupancies; or a change in the purpose or level of activity within a building or structure that involves a change in the application of the requirements of this code.  
the Uniform Statewide Building Code.

**Reason:** This proposal - a companion change to the VFSB proposal for removing unenforceable provisions of the SFPC - properly defined the "building code" to improve consistency.  
Modifies the definition of change of use for consistency with the USBC and other codes.

**Cost Impact:** No impact

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## Workgroup Recommendation

**Workgroup 2 Recommendation:** None

**Workgroup 2 Reason:** None

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## Board Decision

None

## **[M] 609.1, [M] 609.2, 609.3.5 (New), 609.3.5.1 (New)**

**Proponent :** James Dawson (dawsonj@chesterfield.gov)

### **2015 International Fire Code**

**[M] 609.1 General.** Commercial kitchen exhaust hoods shall comply with the requirements of the ~~International Mechanical Code~~ this section.

**[M] 609.2 Where required.** A Type I hood shall be installed at or above all commercial cooking appliances and domestic cooking appliances used for commercial purposes that produce grease vapors in Mobile Food Preparation Vehicles.

- **Exception:** A Type I hood shall not be required for an electric cooking appliance where an approved testing agency provides documentation that the appliance effluent contains 5 mg/m<sup>3</sup> or less of grease when tested at an exhaust flow rate of 500 cfm (0.236 m<sup>3</sup>/s) in accordance with UL 710B.

### **2012 Virginia Statewide Fire Prevention Code**

**609.3.5 Prohibited conditions** Cooking processes, equipment, equipment location, or cooking media used shall be maintained as approved in accordance with the Building Code.

**609.3.5.1 Modifications** Any change to cooking processes, equipment, equipment location, or cooking media used which may impair the effectiveness of fire protection systems or mechanical systems shall be approved in accordance with the Uniform Statewide Building Code.

**Reason:** This change is submitted as an alternative to the proposal by Rick Witt to sections 609.1, 609.2, and 609.1.1 (new). It addresses concerns noted in the public comment attached to that proposal, and provides more clarity to the intent of the present code and provides enforceable provisions.

Proposed changes to 609.1 and 609.2 are identical to the FSB Subcommittee proposed re-write, and is offered here in the event the larger re-write code change is deferred, this change may go forward without delay as it is not dependent upon any of the other proposed re-writes in that effort.

The addition of Mobile Food Preparation Vehicles to 609.2 is a definition that was reviewed and recommended for approval as a "consensus" as part of a larger Mobile Food Preparation Vehicle code change proposal. This will now be a defined term in the SFPC with the anticipated approval of the Board of Housing.

**Cost Impact:** There are no cost impacts with this change.

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### **Workgroup Recommendation**

None

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**Board Decision**

None

# F-101.2(9b) cdpVA-15

**Proponent :** James Dawson, Representing Virginia Fire Services Board  
(dawsonj@chesterfield.gov)

## 2015 International Fire Code

### BOOK PART III—Building and Equipment Design Features

#### SECTION 907 FIRE ALARM AND DETECTION SYSTEMS

**907.1 General.** This section covers the ~~application, installation, performance and maintenance of fire alarm systems and their components in new and existing buildings and structures. The requirements of Section 907.2 are applicable to new buildings and structures. The requirements of Section 907.9 are applicable to existing buildings and structures.~~

##### **907.1.1 ~~Construction documents~~Documents.** *Construction Copies of construction documents*

~~for fire alarm systems shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show~~provided in detail that it will conform to the provisions of this code, the International Building Code and relevant laws, ordinances, rules and regulations, as determined by the fire code official.accordance with Section 901.2.

**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:~~

- ~~1. A floor plan that indicates the use of all rooms.~~
- ~~2. Locations of alarm initiating devices.~~
- ~~3. Locations of alarm notification appliances, including candela ratings for visible alarm notification appliances.~~
- ~~4. Design minimum audibility level for occupant notification.~~
- ~~5. Location of fire alarm control unit, transponders and notification power supplies.~~
- ~~6. Annunciators.~~
- ~~7. Power connection.~~
- ~~8. Battery calculations.~~
- ~~9. Conductor type and sizes.~~
- ~~10. Voltage drop calculations.~~
- ~~11. Manufacturers' data sheets indicating model numbers and listing information for equipment, devices and materials.~~
- ~~12. Details of ceiling height and construction.~~
- ~~13. The interface of fire safety control functions.~~
- ~~14. Classification of the supervising station.~~

**907.1.3 Equipment.** Systems and components not regulated by the

Applicable Building Code shall be *listed* and *approved* for the purpose for which they are installed.

**~~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 shall be provided in new buildings and structures in accordance with Sections 907.2.1 through 907.2.23 and provide occupant notification in accordance with Section 907.5, unless other requirements are provided by another section 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 sections of this code allow elimination of 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* to provide a means for fire watch personnel to initiate an alarm during a sprinkler system impairment event. Where provided, the manual fire alarm box shall not be located in an area that is accessible to the public.

**~~907.2.1 Group A.~~** A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 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 *International Building Code* shall be considered as a single occupancy for the purposes of applying this section. 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 Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

**~~907.2.1.1 System initiation in 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 Section 907.5.2.2.

**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.

### **~~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 Section 907.5.2.2.4.

**~~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 Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

**~~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 Section 903.3.1.1 provided the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

**~~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 Section 907.5.2.2 and installed in accordance with Section 907.6 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 Section 907.5.2.2 and installed in accordance with Section 907.6 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 Section 907.5.~~
- ~~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.~~

- ~~1. Manual fire alarm boxes shall not be required in Group E occupancies where all of the following apply:
  - ~~1.1. The building is equipped throughout with an *approved automatic sprinkler system* installed in accordance with Section 903.3.1.1.~~
  - ~~1.2. The emergency voice/alarm communication system will activate on sprinkler water flow.~~
  - ~~1.3. Manual activation is provided from a normally occupied location.~~~~

**907.2.4 Group F.** A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group F occupancies where both of the following conditions exist:

- ~~1. The Group F occupancy is two or more stories in height.~~
- ~~2. 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 Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

**907.2.5 Group H.** A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 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 Chapters 60, 62 and 63, respectively.

**907.2.6 Group I.** A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group I occupancies. An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be provided in accordance with Sections 907.2.6.1, 907.2.6.2 and 907.2.6.3.3.

**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 Section 907.4.2.1 are not exceeded.~~
- ~~2. Occupant notification systems are not required to be activated where private mode signaling installed in accordance with NFPA 72 is~~

~~approved by the fire code official and staff evacuation responsibilities are included in the fire safety and evacuation plan required by Section 404.~~

**~~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 Section 907.5.

**~~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 Section 903.3.1.1.~~
- ~~2. Smoke detection is not required for exterior balconies.~~

**~~907.2.6.1.1 Smoke alarms.~~** Single and multiple station smoke alarms shall be installed in accordance with Section 907.2.11.

**~~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 International Building Code.~~ The system shall be activated in accordance with Section 907.4. ~~Group I-2 Condition 2 occupancies shall be equipped with an automatic smoke detection system as required in Section 407 of the International Building Code.~~

**~~Exceptions:~~**

- ~~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. 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.~~

**~~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.

**~~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.



**~~907.2.6.3.2 Manual fire alarm boxes.~~** Manual fire alarm boxes are not required to be located in accordance with Section 907.4.2 where the fire alarm boxes are provided at staff attended locations having direct supervision over areas where manual fire alarm boxes have been omitted.

**907.2.6.3.2.1 Manual fire alarms 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.

**~~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 *International Building 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 Section 903.3.1.1.~~

**~~907.2.7 Group M.~~** A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 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:**

- ~~1. A manual fire alarm system is not required in covered or open mall buildings complying with Section 402 of the *International Building Code*.~~
- ~~2. Manual fire alarm boxes are not required where the building is equipped throughout with an *automatic sprinkler system* installed in accordance with Section 903.3.1.1 and the occupant notification appliances will automatically activate throughout the notification zones upon sprinkler water flow.~~

**~~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 Section 907.5.2.2.~~

**~~907.2.8 Group R-1.~~** ~~Fire alarm systems and smoke alarms shall be installed in Group R-1 occupancies as required in Sections 907.2.8.1 through 907.2.8.3.~~

**~~907.2.8.1 Manual fire alarm system.~~** ~~A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 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 Section 903.3.1.1 or 903.3.1.2.~~
  - ~~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.~~

**~~907.2.8.2 Automatic smoke detection system.~~** ~~An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 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.~~

**~~907.2.8.3 Smoke alarms.~~** ~~Single and multiple station smoke alarms shall be installed in accordance with Section 907.2.11.~~

**~~907.2.9 Group R-2.~~** ~~Fire alarm systems and smoke alarms shall be installed in Group R-2 occupancies as required in Sections 907.2.9.1 and 907.2.9.3.~~

**~~907.2.9.1 Manual fire alarm system.~~** A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group R-2 occupancies where any of the following conditions apply:

- ~~1. Any dwelling unit or sleeping unit is located three or more stories above the lowest level of exit discharge.~~
- ~~2. 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.~~
- ~~1. 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 Section 903.3.1.1 or 903.3.1.2 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 Section 903.3.1.1 or 903.3.1.2, 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 Section 1027.6, Exception 3.~~

**~~907.2.9.2 Smoke alarms.~~** Single and multiple station smoke alarms shall be installed in accordance with Section 907.2.11.

**~~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 Section 907.5 shall be installed in Group R-2 occupancies operated by a college or university for student or staff housing in all of the following locations:

- ~~1. Common spaces outside of dwelling units and sleeping units.~~
- ~~2. Laundry rooms, mechanical equipment rooms and storage rooms.~~
- ~~3. 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 or university for student or staff housing shall be interconnected with the fire alarm system in accordance with NFPA 72.~~

**~~907.2.10 Group R-4.~~** Fire alarm systems and smoke alarms shall be installed in Group R-4 occupancies as required in Sections 907.2.10.1 through 907.2.10.3.

**~~907.2.10.1 Manual fire alarm system.~~** A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 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 Section 903.3.1.1 or 903.3.1.2.~~
  - ~~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.~~
  - ~~2.4. 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 Section 907.4.2.1 are not exceeded.~~

**~~907.2.10.2 Automatic smoke detection system.~~** An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 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 Section 903.3.1.1.~~
- ~~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.~~

**~~907.2.10.3 Smoke alarms.~~** ~~Single and multiple station smoke alarms shall be installed in accordance with Section 907.2.11.~~

**~~907.2.11 Single- and multiple-station smoke alarms.~~** ~~Alarms not required by the Listed Applicable Building Code shall be listed single and multiple station smoke alarms complying with UL 217 shall be and installed in accordance with Sections 907.2.11.1 through 907.2.11.6 the manufacturers instructions and NFPA 72.~~

**~~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:~~

- ~~1. In sleeping areas.~~
- ~~2. In every room in the path of the *means of egress* from the sleeping area to the door leading from the *sleeping unit*.~~
- ~~3. 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.~~

**~~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:~~

- ~~1. On the ceiling or wall outside of each separate sleeping area in the immediate vicinity of bedrooms.~~
- ~~2. In each room used for sleeping purposes.~~
- ~~3. In each story within a *dwelling unit*, including *basements* but not including crawl spaces and uninhabitable attics. In *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.~~

**~~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 Section 907.2.11.1 or 907.2.11.2:~~

- ~~1. Ionization smoke alarms shall not be installed less than 20 feet (6096 mm) horizontally from a permanently installed cooking appliance.~~
- ~~2. 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.~~
- ~~3. Photoelectric smoke alarms shall not be installed less than 6 feet (1829 mm)~~

~~horizontally from a permanently installed cooking appliance.~~

**~~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 Section 907.2.11.1 or 907.2.11.2.~~

**~~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.~~

**~~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 Section 604. 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 Section 604.~~

**~~907.2.11.7 Smoke detection system.~~** ~~Smoke detectors listed in accordance with UL 268 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:~~

- ~~1. The fire alarm system shall comply with all applicable requirements in Section 907.~~
- ~~2. 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 Section 907.5.2.~~
- ~~3. 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 Section 907.6.6.~~

**~~907.2.12 Special amusement buildings.~~** ~~An automatic smoke detection system shall be provided in special amusement buildings in accordance with Sections 907.2.12.1 through 907.2.12.3.~~

### **~~907.2.12.1907.2.12~~ AlarmSpecial amusement alarms.**

~~Upon 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 plans required by Chapter 4 shall be initiated, including the capability of manual initiation of requirements in Section 907.2.12.2. accordance with that chapter.~~

**~~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:~~

- ~~1. Cause illumination of the means of egress with light of not less than 1 footcandle (11 lux) at the walking surface level.~~
- ~~2. Stop any conflicting or confusing sounds and visual distractions.~~
- ~~3. Activate an approved directional exit marking that will become apparent in an emergency.~~
- ~~4. 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.~~

**~~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 Section 907.5.2.2 and be audible throughout the entire special amusement building.~~

**~~907.2.13 High-rise buildings.~~** ~~High-rise buildings shall be provided with an automatic smoke detection system in accordance with Section 907.2.13.1, a fire department communication system in accordance with Section 907.2.13.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.~~

#### **Exceptions:**

- ~~1. Airport traffic control towers in accordance with Section 907.2.22 of this code and Section 412 of the International Building Code.~~
- ~~2. Open parking garages in accordance with Section 406.5 of the International Building Code.~~
- ~~3. Buildings with an occupancy in Group A-5 in accordance with Section 303.1 of the International Building Code.~~
- ~~4. Low hazard special occupancies in accordance with Section 503.1.1 of the International Building Code.~~
- ~~5. Buildings with an occupancy in Group H-1, H-2 or H-3 in accordance with Section 415 of the International Building 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.~~

**~~907.2.13.1 Automatic smoke detection.~~** Automatic smoke detection in high-rise buildings shall be in accordance with Sections ~~907.2.13.1.1~~ and ~~907.2.13.1.2~~.

**~~907.2.13.1.1 Area smoke detection.~~** Area smoke detectors shall be provided in accordance with this section. Smoke detectors shall be connected to an automatic fire alarm system. The activation of any detector required by this section shall activate the emergency voice/alarm communication system in accordance with Section ~~907.5.2.2~~. In addition to smoke detectors required by Sections ~~907.2.1~~ through ~~907.2.10~~, smoke detectors shall be located as follows:

- ~~1. In each mechanical equipment, electrical, transformer, telephone equipment or similar room that is not provided with sprinkler protection.~~
- ~~2. In each elevator machine room, machinery space, control room and control space and in elevator lobbies.~~

**~~[M] 907.2.13.1.2 Duct smoke detection.~~** Duct smoke detectors complying with Section ~~907.3.1~~ shall be located as follows:

- ~~1. 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 m<sup>3</sup>/s). Such detectors shall be located in a serviceable area downstream of the last duct inlet.~~
- ~~2. 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 m<sup>3</sup>/s) and serving not more than 10 air inlet openings.~~

**~~907.2.13.2 Fire department communication system.~~** Where a wired communication system is ~~approved~~ in lieu of an emergency responder radio coverage system in accordance with Section 510, the wired fire department communication system shall be designed and installed in accordance with NFPA 72 and shall operate between a ~~fire command center~~ complying with Section 508, elevators, elevator lobbies, emergency and standby power rooms, fire pump rooms, areas of refuge and inside ~~interiorexit stairways~~. The fire department communication device shall be provided at each floor level within the ~~interiorexit stairway~~.

**~~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 Section 909.4 and in accordance with the system operation requirements in Section 909.17. The system shall be activated in accordance with Section 907.5. Such occupancies in Group A, E or M shall be provided with an emergency voice/alarm communication system complying with the requirements of Section ~~907.5.2.2~~.



**~~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 Section 3206.5.

**~~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.

**~~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.

**~~907.2.18 Underground buildings with smoke control systems.~~** Where a smoke control system is installed in an underground building in accordance with the *International Building Code*, automatic smoke detectors shall be provided in accordance with Section 907.2.18.1.

**~~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:

- ~~1. Mechanical equipment, electrical, transformer, telephone equipment, elevator machine or similar rooms.~~
- ~~2. Elevator lobbies.~~
- ~~3. 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.~~
- ~~4. 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 m<sup>3</sup>/s) and serving not more than 10 air inlet openings.~~

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

**~~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 Section 907.5.2.2.

**~~907.2.20 Covered and open mall buildings.~~** Where the total floor area exceeds 50,000 square feet (4645 m<sup>2</sup>) 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 Section 907.5.2.2.~~

**~~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 *International Building 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.~~

**~~907.2.22 Airport traffic control towers.~~** ~~An automatic smoke detection system that activates the occupant notification system in accordance with Section 907.5 shall be provided in airport control towers in accordance with Sections 907.2.22.1 and 907.2.22.2.~~

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

**~~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 Section 903.3.1.1 shall be provided with smoke detectors in all of the following locations:~~

- ~~1. Airport traffic control cab.~~
- ~~2. Electrical and mechanical equipment rooms.~~
- ~~3. Airport terminal radar and electronics rooms.~~
- ~~1. Outside each opening into *interior exit* stairways.~~
- ~~2. Along the single *means of egress* permitted from observation levels.~~
- ~~3. Outside each opening into the single *means of egress* permitted from observation levels.~~

**~~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:~~

- ~~1. Airport traffic control cab.~~
- ~~2. Electrical and mechanical equipment rooms.~~
- ~~3. Airport terminal radar and electronics rooms.~~
- ~~4. Office spaces incidental to the tower operation.~~
- ~~5. Lounges for employees, including sanitary facilities.~~
- ~~6. *Means of egress*.~~
- ~~7. Accessible utility shafts.~~

**~~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).~~

**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 Section 907.2. 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.

**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 Section 907.2. 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 *International Mechanical 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.

**907.3.2 Delayed egress locks.** Where delayed egress locks are installed on *means of egress* doors, they shall be maintained as installed in accordance with Section 1010.1.9.7, an automatic smoke or heat detection system shall be installed as required by that section the Applicable Building Code.

**907.3.3 Elevator emergency operation.** Automatic fire detectors installed for elevator emergency operation shall be installed in accordance with maintained as provided by the provisions of ASME A17.1 and NFPA 72. Applicable Building Code.

**907.3.4 Wiring.** The wiring to the auxiliary devices and equipment used to accomplish the fire safety functions shall be monitored for integrity in accordance with NFPA 72.

**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 Sections 907.4.1 through 907.4.3.1.

**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 smoke detector, a heat detector shall be permitted.~~

**907.4.2 Manual fire alarm boxes.** ~~Where a manual fire alarm system is required by another section of this code, it shall be activated by~~  
Manual fire alarm boxes installed or pull stations shall be maintained as provided in accordance with Sections 907.4.2.1 through 907.4.2.6, the *Applicable Building Code*.

**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 Section 903.3.1.1 or 903.3.1.2, 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).~~

**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.~~

**907.4.2.3 Color.** ~~Manual fire alarm boxes shall be red in color.~~ maintained as installed unless otherwise approved.

**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.

**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. 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 Section 1003.3.3.~~ reduce the required means of egress width.

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

~~**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.~~

~~**907.4.3.1 Automatic sprinkler system.** For conditions other than specific fire safety functions noted in Section 907.3, in areas where ambient conditions prohibit the installation of smoke detectors, an *automatic sprinkler system* installed in such areas in accordance with Section 903.3.1.1 or 903.3.1.2 and that is connected to the fire alarm system shall be *approved* as automatic heat detection.~~

~~**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 Sections 907.5.1 through 907.5.2.3.3. Where a fire alarm system is required by another section 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 Section 907 to annunciate at a constantly attended location.~~

**907.5.1 Presignal feature.** A presignal feature shall not be ~~installed~~utilized unless *approved* by the *fire code official* and the fire department. Where a presignal feature is provided, a signal shall be annunciated at a constantly attended location *approved* by the fire department, so that occupant notification can be activated in the event of fire or other emergency.

~~**907.5.2 Alarm notification appliances.** Alarm notification appliances shall be provided and shall be *listed* for their purpose.~~

~~**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 Section 907.2.6, Exception 2.~~
- ~~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 Section 907.2.6, Exception 2.~~

- ~~3. Where provided, audible notification appliances located in each occupant evacuation elevator lobby in accordance with Section 3008.9.1 of the *International Building Code* shall be connected to a separate notification zone for manual paging only.~~

**907.5.2.1.1 Average sound pressure.** The audible alarm notification appliances shall ~~provide a~~maintain the sound pressure level of 15 decibels (dBA) ~~above pressures required by 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,~~Applicable Building Code in every occupiable space within the building.

**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 and audible alarm notification appliances shall not be required.~~

**907.5.2.2 Emergency voice/alarm communication systems.** Emergency voice/alarm communication systems required by this code shall be designed and installed in accordance with NFPA 72. 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 Section 404. 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 Chapter 2.~~

**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.

**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.

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

**~~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.~~

**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 *International Applicable Building 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.

**907.5.2.2.5 Emergency power.** Emergency voice/ alarm communications systems shall be provided with emergency power in accordance with the *Applicable Building Code* shall be maintained in accordance with Section 604. The system shall be capable of powering the required load for a duration of not less than 24 hours, ~~as required~~the time specified in NFPA 72, the *Applicable Building Code*.

**~~907.5.2.3 Visible alarms.~~** ~~Visible alarm notification appliances shall be provided in accordance with Sections 907.5.2.3.1 through 907.5.2.3.3.~~

**Exceptions:**

- ~~1. Visible alarm notification appliances are not required in alterations, except where 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 Chapter 2.~~
- ~~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 Section 907.2.6, Exception 2.~~

**~~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 percent spare capacity to account for the potential of adding visible notification appliances in the future to accommodate hearing impaired employee(s).~~

**~~907.5.2.3.2 Groups 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 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**

<b>NUMBER OF SLEEPING UNITS</b>	<b>SLEEPING ACCOMMODATIONS WITH VISIBLE ALARMS</b>
6 to 25	2
26 to 50	4
51 to 75	7
76 to 100	9
101 to 150	12
151 to 200	14
201 to 300	17
301 to 400	20
401 to 500	22
501 to 1,000	5% of total
1,001 and over	50 plus 3 for each 100 over 1,000

**~~907.5.2.3.3 Group R-2.~~** ~~In Group R-2 occupancies required by Section 907 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. 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.~~

**~~907.6 Installation and monitoring.~~** ~~A fire alarm system shall be installed and monitored in accordance with Sections 907.6.1 through 907.6.6.2 and NFPA 72.~~



**907.6.1 Wiring.** ~~Wiring shall comply with the requirements of NFPA 70 and NFPA 72. Wireless protection systems utilizing radio frequency transmitting devices shall comply with the special requirements for supervision of low power wireless systems in NFPA 72.~~

**907.6.2 Power supply.** ~~The primary and secondary power supply for the fire alarm system shall be provided in accordance with NFPA 72.~~

**Exception:** ~~Backup power for single station and multiple station smoke alarms as required in Section 907.2.11.6.~~

**907.6.3 Initiating device identification.** ~~The fire alarm system shall~~systems which identify the specific initiating device address, location, device type, floor level where applicable and status including indication of normal, alarm, trouble and supervisory status, shall be maintained as appropriate provided in accordance with the *Building Code*.

**Exceptions:**

- ~~1. Fire alarm systems in single story buildings less than 22,500 square feet (2090 m<sup>2</sup>) 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.~~

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**907.6.3.1 Annunciation.** ~~The initiating device status shall be annunciated at an approved on-site location.~~

**907.6.4 Zones.** ~~Each floor shall be zoned separately and a zone shall not exceed 22,500 square feet (2090 m<sup>2</sup>). 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.~~

**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.~~

**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:~~

- ~~1. Smoke detectors.~~
- ~~2. Sprinkler waterflow devices.~~
- ~~3. Manual fire alarm boxes.~~
- ~~4. Other approved types of automatic fire detection devices or suppression systems.~~

**907.6.5 Access.** ~~Access shall be provided to each fire alarm device and notification appliance for periodic inspection, maintenance and testing~~ shall not be obstructed.

**907.6.6 Monitoring.** Fire

~~The monitoring of fire alarm systems required by this chapter or by the *International Applicable Building Code* shall be monitored by an approved supervising station maintained in accordance with NFPA 72.~~

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

- ~~1. Single and multiple station smoke alarms required by Section 907.2.11.~~
- ~~2. Smoke detectors in Group I-3 occupancies.~~
- ~~3. Automatic sprinkler systems in one and two family dwellings.~~

**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 chief.

**907.6.6.2 Termination of monitoring service.** Termination of fire alarm monitoring services shall be in accordance with Section 901.9.

**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.~~

**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.~~

**907.7.2 Record of completion.** ~~A record of completion in accordance with NFPA 72 verifying that the system has been installed and tested in accordance with the approved plans and specifications shall be provided.~~

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

**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 Sections 907.8.1 through 907.8.5 and NFPA 72. Records of inspection, testing and maintenance shall be maintained.

**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*.

**907.8.2 Testing.** Testing shall be performed in accordance with the schedules in NFPA 72 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.

**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-percent obscuration light grey smoke, if not marked), the length of time between calibration tests shall be permitted to be extended to not more than 5 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.

**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:**
  - 5.1. 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.
  - 5.2. This requirement shall not apply to single station smoke alarms.

**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.

**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 qualification requirements of NFPA 72 for inspection, testing and maintenance of such systems. Records of inspection, testing and maintenance shall be maintained.

~~**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 Chapter 11.~~

## **SECTION 908 EMERGENCY ALARM SYSTEMS**

**908.1 Group H occupancies.** Emergency alarms for the detection and notification of an emergency condition in Group H occupancies shall be ~~provided~~ maintained as required ~~provided in Chapter 50, accordance with the Applicable Building Code.~~

**908.2 Group H-5 occupancy.** Emergency alarms for notification of an emergency condition in an HPM facility shall be ~~provided~~ maintained as required ~~provided in Section 2703.12~~ accordance with the Applicable Building Code. ~~A continuous~~ Continuous gas detection ~~systems~~ systems shall be ~~provided~~ maintained for HPM gases as provided in accordance with Section 2703.13, the Applicable Building Code.

**908.3 Highly toxic and toxic materials.** Where required by ~~Section 6004.2.2.10, a~~ gas detection system shall be provided for indoor storage and use of the Applicable Building Code for highly toxic and toxic ~~compressed gases, materials, gas detection systems shall be maintained.~~

**908.4 Ozone gas-generator rooms. A**  
Where required by the Applicable Building Code, gas detection system shall be ~~systems provided in ozone gas-generator rooms in accordance with Section 6005.3.2, shall be maintained.~~

**908.5 Repair garages.** A flammable-gas detection system ~~shall be provided~~ provided in accordance with the Buidling Code in repair garages for vehicles fueled by nonodorized gases ~~in accordance with Section 2311.7.2, shall be maintained.~~

**908.6 Refrigeration systems.** Refrigeration system machinery rooms ~~shall be provided with a refrigerant detector~~ detection in accordance with Section 606.9, the Applicable Building Code shall be maintained.

**908.7 Carbon dioxide (CO<sub>2</sub>) systems.** Emergency alarm systems provided in accordance with Section 5307.5.2 the *Applicable Building Code* shall be ~~provided where required for compliance with Section 5307.5~~ maintained.

## **SECTION 909 SMOKE CONTROL SYSTEMS**

**909.1 Scope and purpose.** This section applies to the inspection, testing, and maintenance of mechanical or passive smoke control systems ~~where they are required for new buildings or portions thereof by provisions of the *International Building Code* or this code.~~ The purpose of this section is ~~to establish minimum requirements for the design, installation and acceptance testing of smoke control~~ these systems that are ~~intended~~ is 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 section serve a different purpose than the smoke and heat venting provisions found in Section 910. Mechanical smoke control systems shall not be considered exhaust systems under Chapter 5 of the *International Mechanical Code*.~~

**909.2 General design requirements.** ~~Buildings, structures, or parts thereof required by the *International Building Code* or this code to have a smoke control system or systems shall have such systems designed in accordance with the applicable requirements of Section 909 and the generally accepted and well-established principles of engineering relevant to the design. The *construction documents* shall include sufficient information and detail to 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.~~

**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 Section 909 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 section shall be conducted under the same terms as in Section 1704 of the *International Building Code*.~~

**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 Sections 909.4.1~~

through 909.4.7.

**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.~~

**909.4.2 Temperature effect of fire.** ~~Buoyancy and expansion caused by the design fire in accordance with Section 909.9 shall be analyzed. The system shall be designed such that these effects do not adversely interfere with the system's capabilities.~~

**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 *International Building Code*.~~

**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.~~

**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.~~

**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 that required by the calculated egress time, whichever is greater. Applicable Building Code.~~

**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.~~

**909.5 Smoke barrier construction barriers.** ~~Smoke barriers required for passive smoke control and a smoke control systems systems using the pressurization method shall comply with Section 709 of the *International Building Code*. Smoke barriers shall be constructed and sealed to limit leakage areas exclusive of protected openings. 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 floor 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/maintained in accordance with Section 909.5.1 and tested in accordance with Section 909.5.2.

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**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.

**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*.

**909.5.3 Opening protection.** Openings

Protection of 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/maintained in accordance with Section 716.5.3 of the *International Building 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 Section 907.3.
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 Section 909.5.3.1, the doors shall not be required to be protected in accordance with Section 716 of the *International Building Code*. The doors shall be close fitting within operational tolerances and 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 Section 1010.1.4.3 and are automatic closing by smoke detection in accordance with Section 716.5.9.3 of the *International Building 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.~~

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**~~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 *International Building 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.~~

### **~~909.5.3.2 Ducts and air transfer openings.~~** ~~Ducts~~

~~Protection of ducts and air transfer openings are required to~~ shall be protected/maintained in accordance with a minimum Class II, 250°F (121°C) smoke damper complying with Section 717 of the *International Building Code* Chapter 7.

**~~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.~~

**~~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 not less than two times the maximum calculated pressure difference produced by the design fire.~~

**~~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 Section 1010.1.3. 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 (m<sup>2</sup>).

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).  
 $\Delta P$  = Design pressure difference, inches of water (Pa).

**909.6.3 Pressurized stairways and elevator hoistways.** Where stairways or elevator hoistways are pressurized, such pressurization systems shall comply with Section 909 as smoke control systems, in addition to the requirements of Section 909.21 of this code and Section 909.20 of the *International Building Code*.

**909.7 Airflow design method.** Where approved by the fire code official, 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 section. 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.

**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.

**909.8 Exhaust method.** Where approved by the fire code official, 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.

**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.

**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. The design fire shall be based on the analysis in accordance with Section 909.4 and this section.

**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.

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

**~~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.~~

**~~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.~~

**~~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.~~

**~~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:~~

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

where:

- $\epsilon$  = 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.~~

**~~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 Section 909.10.1. Ducts shall be constructed and supported in accordance with the *International Mechanical 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 percent 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 *International Mechanical Code* and that are constructed of approved fire-~~

~~resistance-rated materials.~~

**~~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.~~

**~~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 *approved* recognized standards.~~

**~~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 *International Building Code*.~~

~~Motors driving fans associated with smoke control systems 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.~~

**~~909.11 Standby power.~~** ~~Smoke control systems standby power shall be provided with standby power maintained in accordance with Section 604.~~

**~~909.11.1 Equipment room.~~** ~~The standby power source and its transfer switches Fire barriers associated with equipment rooms servicing smoke control systems 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 maintained in accordance with Section 707 of the *International Building Code* or horizontal assemblies constructed in accordance with Section 711 of the *International Building Code*, or both. Chapter 7.~~

**~~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 uninterruptable 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.~~

**~~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 Section 907. Such systems shall be equipped with a control unit complying with UL 864 and *listed* as smoke control equipment.~~

**~~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 Section 909.20.6.~~

**~~909.12.2 Wiring.~~** In addition to meeting requirements of NFPA 70, all wiring, regardless of voltage, shall be fully enclosed within continuous raceways.

**~~909.12.3 Activation.~~** Smoke control systems shall be activated in accordance with this section.

**~~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.

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

**~~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 Section 903.3.1.1, manual controls that are readily accessible to the fire department and any smoke detectors required by the engineering analysis.

**~~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.

**~~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. Fittings shall be wrought copper or brass, solder type, in accordance with ASME B 16.18 or ASME B 16.22. 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 liquidus 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 *International Mechanical Code*.~~
- ~~2. Tubing and the connected device shall be completely enclosed within a galvanized or paint grade steel enclosure having a minimum thickness of 0.0296 inch (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 the enclosure. Tubing bridging cabinets 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.~~

**~~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.

**~~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.

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

**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.

**~~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 Section 508 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 Sections 909.16.1 through 909.16.3.~~

**~~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:~~

- ~~1. Fans, dampers and other operating equipment in their normal status—WHITE.~~
- ~~2. Fans, dampers and other operating equipment in their off or closed status—RED.~~
- ~~3. Fans, dampers and other operating equipment in their on or open status—GREEN.~~
- ~~4. Fans, dampers and other operating equipment in a fault status—YELLOW/AMBER.~~

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

- ~~1. 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.~~
- ~~2. OPEN AUTO CLOSE control over individual dampers relating to smoke control and that are also controlled from other sources within the building.~~
- ~~3. 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.~~

in accordance with the *Applicable Building Code*.

**~~909.16.3 Control action and priorities.~~** ~~The fire fighter's control panel actions shall be as follows:~~

- ~~1. 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.~~

- ~~2. Only the AUTO position of each three position firefighter'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 Section 909.16.1. 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.~~

**909.17 System response time.** ~~Smoke-control system activation, including all associated components, 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 accordance with its design. 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 not be achieved before less than the conditions requirements specified 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.~~

**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.~~

**909.18.1 Detection devices.** ~~Smoke or fire detectors that are a part of a smoke control system shall be tested in accordance with Chapter 9 in their installed condition. Where applicable, this testing shall include verification of airflow in both minimum and maximum conditions.~~

**~~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.~~

**~~909.18.3 Dampers.~~** ~~Dampers shall be tested for function in their installed condition.~~

**~~909.18.4 Inlets and outlets.~~** ~~Inlets and outlets shall be read using generally accepted practices to determine air quantities.~~

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

**~~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.~~

**~~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.~~

**~~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 *International Building Code*.~~

**~~909.18.8.1 Scope of testing.~~** ~~Testing shall be conducted in accordance with the following:~~

- ~~1. During erection of ductwork and prior to concealment for the purposes of leakage testing and recording of device location.~~
- ~~2. Prior to occupancy and after sufficient completion for the purposes of pressure difference testing, flow measurements, and detection and control verification.~~

**~~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.~~

**~~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.~~

**909.18.8.3.1 Report filing.** A copy of the final report required by the *Applicable Building Code* shall be filed with the *fire code official* and an identical copy shall be maintained in an *approved* location at the building.

**909.18.9 Identification and documentation.** ~~Charts~~

Copies of 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 Section ~~909.18.8.3~~ 901.2. Devices shall have an *approved* identifying tag or mark on them consistent with ~~the other required documentation such~~ copies and shall be dated indicating the last time they were successfully tested and by whom.

**~~909.19 System acceptance.~~** ~~Buildings, or portions thereof, required by this code to comply with this section shall not be issued a certificate of occupancy until such time that the *fire code official* determines that the provisions of this section 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 Section 909.20.1 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 *fire code official*, shall be allowed, provided that those portions of the building to be occupied meet the requirements of this section and that the remainder does not pose a significant hazard to the safety of the proposed occupants or adjacent buildings.~~

**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 Sections 909.20.1 through 909.20.6.

**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 and approved by the *fire code official* in accordance with Chapter 9 of the *Applicable Building Code*.

**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.

**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.

**909.20.4 Dedicated smoke control systems.** Dedicated smoke control systems shall be operated for each control sequence semiannually. The system shall be tested under standby power conditions.

**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.

**909.20.6 Components bypassing weekly test.** Where components of the smoke control system are bypassed by the preprogrammed weekly test required by Section 909.12.1, such components shall be tested semiannually. The system shall be tested under standby power conditions.

**[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~~be maintained in accordance with Sections 909.21.1 through 909.21.11.~~Section 909.~~

~~**[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 on the floor of recall open and all other 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 *International Building 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:
  - ~~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.~~

**~~[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 Section 909.21.1 during operation of the elevator shaft pressurization system.~~

**~~[BF] 909.21.2 Rational analysis.~~** ~~A rational analysis complying with Section 909.4 shall be submitted with the *construction documents*.~~

**~~[BF] 909.21.3 Ducts for system.~~** ~~Any duct system that is part of the pressurization system shall be protected with the same a fire-resistance rating as required for the elevator shaft enclosure. shall be maintained in accordance with Chapter 7.~~

**~~[BF] 909.21.4 Fan system.~~** ~~The fan system provided for the pressurization system shall be as required by comply with Sections 909.21.4.1 through 909.21.4.4.~~

**~~[BF] 909.21.4.1 Fire resistance.~~** ~~Where located within the building, the fan system that provides the pressurization shall be protected provided in accordance with the same *Applicable Building Code*, the fire-resistance rating required for the elevator shaft enclosure shall be maintained in accordance with Chapter 7.~~

**~~[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.~~

**~~[BF] 909.21.4.3 Separate systems.~~** ~~A separate fan system shall be used for each elevator hoistway.~~

**~~[BF] 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 m<sup>3</sup>/s) per door, or that specified by a *registered design professional* to meet the requirements of a designed pressurization system.~~

**~~[BF] 909.21.5 Standby power.~~** ~~The Standby power systems for pressurization systems shall be provided with standby power maintained in accordance with Section 604.~~

~~**[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.~~

~~**[BF] 909.21.7 Testing.** Testing for performance shall be required in accordance with Section 909.18.8. System acceptance shall be in accordance with Section 909.19.~~

~~**[BF] 909.21.8 Marking and identification.** Detection and control systems shall be marked in accordance with Section 909.14.~~

~~**[BF] 909.21.9 Control diagrams.** Control diagrams shall be provided in accordance with Section 909.15.~~

~~**[BF] 909.21.10 Control panel.** A control panel complying with Section 909.16 shall be provided.~~

~~**[BF] 909.21.11 System response time.** Hoistway pressurization systems response time shall comply be maintained in accordance with the requirements for smoke control system response time in Section 909.17. the Applicable Building Code.~~

## **SECTION 910 SMOKE AND HEAT REMOVAL**

~~**910.1 General.** Where required by this code, smoke Smoke and heat vents or mechanical smoke removal systems shall conform to the requirements of this section. be maintained as provided.~~

~~**910.2 Where required.** Smoke and heat vents or a mechanical smoke removal system shall be installed as required by Sections 910.2.1 and 910.2.2.~~

### ~~**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.~~

~~**910.2.1 Group F-1 or S-1.** Smoke and heat vents installed in accordance with~~

~~Section 910.3 or a mechanical smoke removal system installed in accordance with Section 910.4 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 m<sup>2</sup>) of undivided area. In occupied portions of a building equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1, where the upper surface of the story is not a roof assembly, a mechanical smoke removal system in accordance with Section 910.4 shall be installed.~~

**Exception:** Group S-1 aircraft repair hangars.

**910.2.2 High-piled combustible storage.** ~~Smoke and heat removal required by Table 3206.2 for buildings and portions thereof containing high-piled combustible storage shall be installed in accordance with Section 910.3 in unsprinklered buildings. In buildings and portions thereof containing high-piled combustible storage equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1, a smoke and heat removal system shall be installed in accordance with Section 910.3 or 910.4. In occupied portions of a building equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 where the upper surface of the story is not a roof assembly, a mechanical smoke removal system in accordance with Section 910.4 shall be installed.~~

**910.3 Smoke and heat vents.** ~~The design and installation of smoke and heat vents shall be in accordance with Sections 910.3.1 through 910.3.3.~~

**910.3.1 Listing and labeling.** ~~Smoke and heat vents shall be *listed* and labeled to indicate compliance with UL 793 or FM 4430.~~

**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 Section 910.2, with consideration given to roof pitch, sprinkler location and structural members.~~

**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 Section 903.3.1.1:~~

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

~~where:~~

$A_{VR}$  = ~~The required aggregate vent area (ft<sup>2</sup>).~~

$V$  = ~~Volume (ft<sup>3</sup>) of the area that requires smoke removal.~~

~~For unsprinklered buildings:~~

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

where:

$A_{VR}$  = The required aggregate vent area (ft<sup>2</sup>).

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

**910.4 Mechanical smoke removal systems.** Mechanical smoke removal systems provided shall be designed and maintained as installed in accordance with Sections 910.4.1 through 910.4.7, the Applicable Building Code.

**910.4.1 Automatic sprinklers required.** The building shall be equipped throughout with an approved *automatic sprinkler system* in accordance with Section 903.3.1.1.

**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.

**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 m<sup>3</sup>/sec).

**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 m<sup>2</sup> per 0.4719 m<sup>3</sup>/s) of smoke exhaust.

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

**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 *International Building Code* or *horizontal assemblies* constructed in accordance with Section 711 of the *International Building Code*, or both.

**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 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.

**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 *International Mechanical 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.~~

**910.5 Maintenance.** Smoke and heat vents and mechanical smoke removal systems shall be maintained in an operative condition in accordance with Section 910.5.1 or 910.5.2, respectively.

**910.5.1 Smoke and heat vents.** Smoke and heat vents shall be maintained in an operative condition in accordance with NFPA 204 and Section 910.5.1.1

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

**910.5.2 Mechanical smoke removal systems.** Mechanical smoke removal systems shall be maintained in accordance with the equipment manufacturer's maintenance instructions and Sections 910.5.2.1 through 910.5.2.4.

**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.

**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.

**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.

**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 any unsatisfactory condition and the corrective action taken, including parts replaced.

## **CHAPTER 9 FIRE PROTECTION SYSTEMS**

**Reason:** Chapter 9 Part 2 - SFPC Rewrite.

Fire Services Board Codes Committee DRAFT. This version so being submitted for discussion at the May 31 SFPC Workgroup meeting.

**Cost Impact:** There is no cost impact with this proposal.

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## **Workgroup Recommendation**

**Workgroup 2 Recommendation:** None

**Workgroup 2 Reason:** None

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## **Board Decision**

None

**F-101.2(9b) cdpVA-15**