

Florida Building Code 2010

Chapter 9 Fire Protection Systems Advanced Course

Introduction

This course will cover specific sections of Chapter 9 that relate to fire alarm systems.

While many contractors are familiar with other codes relating to fire alarm systems such as:

NFPA 72, The National Fire Alarm and Signaling Code

NFPA 101, The Life Safety Code

NFPA 70, The National Electrical Code

...most don't know that the requirements for fire alarm systems initiate in the state building code

In addition to the books listed above, your library should include a copy of the 2010 Florida Building Code as well as the Florida Fire Prevention Code.

Section 901

General

- 901.1 Scope. The provisions of this chapter shall specify where *fire protection systems* are required and shall apply to the design, installation and operation of *fire protection systems* and carbon monoxide detection alarms.

Section 901

General

- 901.3 Modifications. No person shall remove or modify any *fire protection system* installed or maintained under the provisions of this code or the *Florida Fire Prevention Code* without approval by the *building official*.

Section 901

- 901.6 Supervisory service. Where required, *fire protection systems* shall be monitored by an supervising station in accordance with NFPA 72.
- 901.6.1 Automatic sprinkler systems. Automatic sprinkler systems shall be monitored by an *approved* supervising station.
 - Exceptions:
 - 1. A supervising station is not required for *automatic sprinkler systems* protecting one- and two-family dwellings.
 - 2. Limited area systems serving fewer than six sprinklers.

Section 901

- 901.6.2 Fire alarm systems. Fire alarm systems required by the provisions of Section 907.2 of this code and the *Florida Fire Prevention Code* shall be monitored by an *approved* supervising station in accordance with Section 907.6.5.
 - Exceptions:
 1. Single- and multiple-station smoke alarms required by Section 907.2.11.
 2. Smoke detectors in Group I-3 occupancies.
 3. Supervisory service is not required for *automatic sprinkler systems* in one- and two-family dwellings.

Section 901

- 901.6.3 Group H. Manual fire alarm, automatic fire-extinguishing and emergency alarm systems in Group H occupancies shall be monitored by an *approved* supervising station.
 - Exception: When *approved* by the *building official*, on-site monitoring at a *constantly attended location* shall be permitted provided that notifications to the fire department will be equal to those provided by an *approved* supervising station.

Section 902

Definitions

Section 902 contains several definitions that relate to alarm systems. While most of them are similar to, if not the same as found in other codes, there are a few that are important to review.

Section 902

- **ALARM SIGNAL.** A signal indicating an emergency requiring immediate action, such as a signal indicative of fire.
- **EMERGENCY ALARM SYSTEM.** A system to provide indication and warning of emergency situations involving hazardous materials.

Section 902

- FIRE PROTECTION SYSTEM. *Approved* devices, equipment and systems or combinations of systems used to detect a fire, activate an alarm, extinguish or control a fire, control or manage smoke and products of a fire or any combination thereof.

Section 902

- RECORD DRAWINGS. Drawings ("as built") that document the location of all devices, appliances, wiring sequences, wiring methods and connections of the components of a fire alarm system as installed

Section 902

- ZONE. A defined area within the protected premises. A zone can define an area from which a signal can be received, an area to which a signal can be sent or an area in which a form of control can be executed.

This definition is expanded upon in section 907.6.3

Section 903

Automatic Sprinkler Systems

- 903.4 Sprinkler system monitoring and alarms. All valves controlling the water supply for *Automatic sprinkler systems*, pumps, tanks, water levels and temperatures, critical air pressures and waterflow switches on all sprinkler systems shall be electrically supervised by a *Listed* fire alarm control unit.
 - Exceptions:
 1. *Automatic sprinkler systems* protecting one-and two-family *dwelling*s.
 2. Limited area systems serving six sprinklers or less.
 3. *Automatic sprinkler systems* installed in accordance with NFPA 13R where a common supply main is used to supply both domestic water and the *automatic sprinkler system*, and a separate shutoff valve for the *automatic sprinkler system* is not provided.
 4. Jockey pump control valves that are sealed or locked in the open position.
 5. Control valves to commercial kitchen hoods, paint spray booths or dip tanks that are sealed or locked in the open position.
 6. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.
 7. Trim valves to pressure switches in dry, preaction and deluge sprinkler systems that are sealed or locked in the open position.

Section 903

Automatic Sprinkler Systems

- 903.4.1 Monitoring. Alarm, supervisory and trouble signals shall be distinctly different and shall be automatically transmitted to an *approved* supervising station or, when *approved* by the fire code official, shall sound an audible signal at a *constantly attended location*.
 - Exceptions:
 1. Underground key or hub valves in roadway boxes provided by the municipality or public utility are not required to be monitored.
 2. Back flow prevention device test valves located in limited area sprinkler system supply piping shall be locked in the open position. In occupancies required to be equipped with a fire alarm system, the backflow preventer valves shall be electrically supervised by a tamper switch installed in accordance with NFPA 72 and separately annunciated.

Section 903

Automatic Sprinkler Systems

- 903.4.2 Alarms. *Approved* audible devices shall be connected to every *automatic sprinkler system*. Such sprinkler waterflow alarm devices shall be activated by waterflow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Alarm devices shall be provided on the exterior of the building in an *approved* location. Where a fire alarm system is installed, actuation of the *automatic sprinkler system* shall actuate the building fire alarm system.

Section 907

Fire Alarm And Detection Systems

- 907.1.1 Construction documents. *Construction documents* for fire alarm systems shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code, the *Florida Fire Prevention Code*, and relevant laws, ordinances, rules and regulations, as determined by the building official.

Section 907

Fire Alarm And Detection Systems

- 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:
 - 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. Location of fire alarm control unit, transponders and notification power supplies.
 - 5. Annunciators.
 - 6. Power connection.
 - 7. Battery calculations.
 - 8. Conductor type and sizes.
 - 9. Voltage drop calculations.
 - 10. Manufacturers' data sheets indicating model numbers and listing information for equipment, devices and materials.
 - 11. Details of ceiling height and construction.
 - 12. The interface of fire safety control functions.
 - 13. Classification of the supervising station.

Section 907

Fire Alarm And Detection Systems

- **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.

Section 907

Fire Alarm And Detection Systems

- A minimum of 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.
 - Exception:
 1. The manual fire alarm box is not required for fire alarm systems dedicated to elevator recall control and supervisory service

Section 907

Fire Alarm And Detection Systems

- 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*.

Section 907

Fire Alarm And Detection Systems

- 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.

Section 907

Fire Alarm And Detection Systems

- 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:
 1. Cause illumination of the *means of egress* with light of not less than 1 footcandle (1 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; and
 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 which is distinctive from other sounds used during normal operation.

Section 907

Fire Alarm And Detection Systems

- 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*.



Section 907

Fire Alarm And Detection Systems

- 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 Sections 907.2.22 and 412.
 2. *Open parking garages* in accordance with Section 406.3.
 3. Buildings with an occupancy in Group A-5 in accordance with Section 303.1.
 4. Reserved.
 5. Buildings with an occupancy in Group H- 1, H-2 or H-3 in accordance with Section 415.
 6. In Group I-1 and I-2 occupancies, the alarm shall sound at a *constantly attended Location* and general occupant notification shall be broadcast by the emergency voice/alarm communication system.



Section 907

Fire Alarm And Detection Systems

- 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 extender, and supervising station transmitting equipment.
 - Exceptions:
 1. Where ambient conditions prohibit installation of a smoke detector, a *heat detector* shall be permitted.
 2. The smoke detector shall not be required where the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2.

Section 907

Fire Alarm And Detection Systems

- 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 fire alarm boxes installed in accordance with Sections 907.4.2.1 through 907.4.2.5.
 - 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*. Additional manual fire alarm boxes shall be located so that travel distance to the nearest box does not exceed 200 feet.
 - 907.4.2.2 Height. The height of the manual fire alarm boxes shall be a minimum of 42 inches (1067 mm) and a maximum of 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.



NFPA 72, 2010

- Section 17.14 Manually Actuated Alarm-Initiating Devices
 - 17.14.1.1 Unless installed in an environment that preclude the use of red paint or red plastic, manual fire alarm boxes shall be red in color

You will notice that the two codes do not mirror the language exactly. Where the building code dictates a red color, the fire alarm code allows for alternatives. In most cases the Florida Building Code will prevail, however, it is subject to the approval of the AHJ (Authority Having Jurisdiction)

Section 907

Fire Alarm And Detection Systems

- 907.5.1 Presignal feature. A presignal feature shall not be installed 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, in order that occupant *notification* can be activated in the event of fire or other emergency.

This language is consistent with NFPA 72, Section 23.8.1.2, 2010 Edition

Section 907

Fire Alarm And Detection Systems

- 907.5.2 Alarm notification appliances. Alarm notification appliances shall be provided and shall be *listed* for their purpose.
- 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 also 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 power. Emergency voice/alarm communication systems shall be provided with an *approved* emergency power source

Section 907

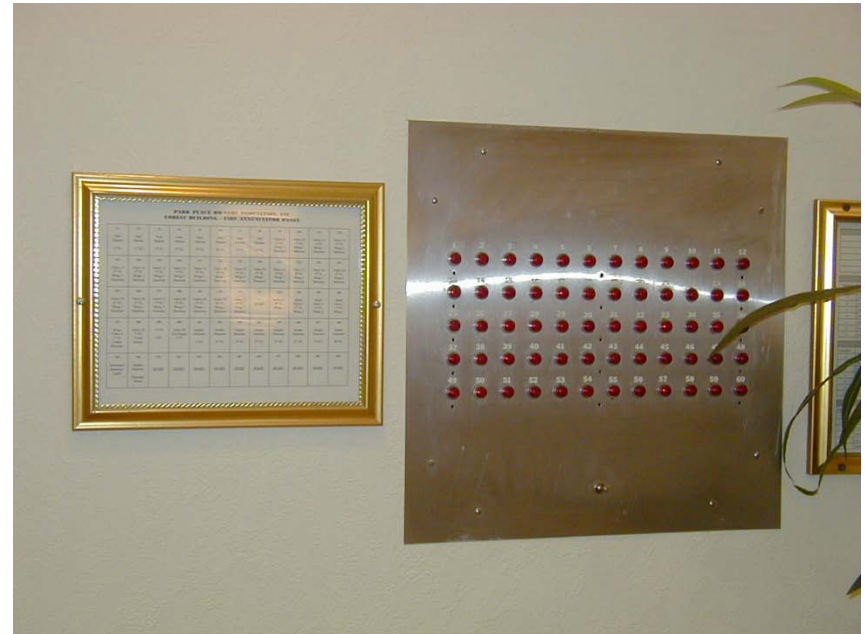
Fire Alarm And Detection Systems

- 907.5.2.3 Visible alarms. Visible alarm notification appliances shall be provided in accordance with Sections 907.5.2.3.1 through 907.5.2.3.4.
 - 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.

Section 907

Fire Alarm And Detection Systems

- 907.6 Installation. A fire alarm system shall be installed in accordance with this section and NFPA 72.
 - 907.6.3 Zones. Each floor shall be zoned separately and a zone shall not exceed 22,500 square feet (2090 m²) . The length of any zone shall not exceed 300 feet (91440 mm) in any direction.



Section 907

Fire Alarm And Detection Systems

- 907.6.3.2 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.

Section 907

Fire Alarm And Detection Systems

- 907.6.5 Monitoring. Fire alarm systems required by this chapter or by the *Florida Fire Prevention Code* shall be monitored by an *approved* supervising station 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.

Section 907

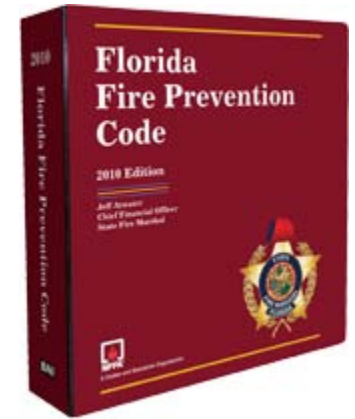
Fire Alarm And Detection Systems

- 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 record drawings ("as-builts") and equipment specifications shall be provided at an *approved* location.

Section 907

Fire Alarm And Detection Systems

- 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 the *Florida Fire Prevention Code*.
- 907.9 Accessibility. Alarm systems required to be accessible shall comply with applicable sections of the *Florida Building Code, Accessibility*.



Florida Accessibility Code

**ADOPTED PURSUANT TO SECTION 553.503,
FLORIDA STATUTES**

**BASED ON THE 2010 ADA STANDARDS FOR
ACCESSIBLE DESIGN**

Florida Accessibility Code

- **CHAPTER 2: SCOPING REQUIREMENTS**

- **215 FIRE ALARM SYSTEMS**

- **215.1 General.** Where fire alarm systems provide audible alarm coverage, alarms shall comply with 215.
 - **EXCEPTION:** In existing facilities, visible alarms shall not be required except where an existing fire alarm system is upgraded or replaced, or a new fire alarm system is installed.
 - **215.2 Public and Common Use Areas.** Alarms in public use areas and common use areas shall comply with 702.
 - **215.3 Employee Work Areas.** Where employee work areas have audible alarm coverage, the wiring system shall be designed so that visible alarms complying with 702 can be integrated into the alarm system.
 - **215.4 Transient Lodging.** Guest rooms required to comply with 224.4 shall provide alarms complying with 702.
 - **215.5 Residential Facilities.** Where provided in residential dwelling units required to comply with 809.5, alarms shall comply with 702.

Florida Accessibility Code

- **CHAPTER 7: COMMUNICATION ELEMENTS AND FEATURES**
 - **701 GENERAL**
 - **701.1 Scope.** The provisions of Chapter 7 shall apply where required by Chapter 2 or where referenced by a requirement in this code.
 - **702 FIRE ALARM SYSTEMS**
 - **702.1 General.** Fire alarm systems shall have permanently installed audible and visible alarms complying with NFPA 72 (1999 or 2002 edition) (incorporated by reference, see “Referenced Standards” in Chapter 1), except that the maximum allowable sound level of audible notification appliances complying with section 4-3.2.1 of NFPA 72 (1999 edition) shall have a sound level no more than 110 dB at the minimum hearing distance from the audible appliance. In addition, alarms in guest rooms required to provide communication features shall comply with sections 4-3 and 4-4 of NFPA 72 (1999 edition) or sections 7.4 and 7.5 of NFPA 72 (2002 edition).
 - **EXCEPTION:** Fire alarm systems in medical care facilities shall be permitted to be provided in accordance with industry practice.

Florida Building Code 2010

Chapter 9 Fire Protection Systems – Advanced Course

Quiz

1. Provided a modification to a fire protection system is small, no approval is needed by the building or fire official
 - a. True
 - b. False

2. Every automatic sprinkler system must be monitored except
 - a. One and two family dwellings
 - b. Systems with fewer than 6 sprinkler heads
 - c. Jurisdictions that do not require Central Station Service as outlined in NFPA 72
 - d. Both A & B
 - e. All of the Above
 - f. None of the above, they always have to be monitored

3. A system designed to alert individuals of the potential threat from hazardous materials is referred to as a
 - a. Fire alarm system
 - b. Threat level assessment system
 - c. Emergency alarm system
 - d. Class D system

4. A Supervising Station is
 - a. A Central Station as defined in NFPA 72
 - b. A Remote Station as defined in NFPA 72
 - c. A facility that receives signals and at which personnel are in attendance at all times to respond to these signals
 - d. A constantly attended station with trained personnel available to respond immediately to the emergency

5. Which of the following is not a mandatory requirement to be included on shop drawings?
 - a. Battery Calculations
 - b. The name of the Authority Having Jurisdiction
 - c. Floor plans
 - d. Detailed information from manufacturer's data sheets identifying the equipment being installed

6. Because fire alarm designs are dictated by code, they do not have to comply with the guidelines for accessibility.
 - a. True
 - b. False

7. Because of new types of construction and the advent of zoning and zoned reporting, there is no longer a need for any of the fire alarm equipment to be red in color.
 - a. True
 - b. False

8. When a building is fully sprinklered with an approved supervised sprinkler system, there is no requirement for a smoke detector to be installed above the control equipment.
 - a. True
 - b. False
 9. Protective Covers installed on alarm boxes must always be provided with a local annunciator to indicate when the cover has been tampered with or dislodged.
 - a. True
 - b. False
 10. Fire alarm systems required by Chapter 9, or by the Florida Fire Prevention Code must be monitored by an approved Central Station in accordance with NFPA 72
 - a. True
 - b. False
-

Answers

1. B
2. D
3. C
4. C
5. B
6. B
7. B
8. A
9. B
10. B