



PORTLAND MAINE

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Fire Department

Chief Frederick J. LaMontagne, Jr.

The following rules and regulations are hereby promulgated pursuant to Section 2.5-31 of City Code

CITY OF PORTLAND REQUIREMENTS

Regarding Signaling Systems for the Protection of Life and Property

Rule 1 In addition to an electrical permit, signaling system permits shall be required for all new signaling systems for the protection of life and property, and for renovation of any existing system effecting more than 5 devices or replacing a panel with a different model.

Rule 2 The *City of Portland Technical Standard for Signaling Systems for the Protection of Life and Property*, namely the 2010 edition of this document, is hereby the only approved installation and maintenance standard for signaling systems for the protection of life and property in the City of Portland.

***Editor's Note:** A copy of such standards may be obtained at <http://www.portlandmaine.gov/fire>

Rule 3 Companies engaged in the installation or servicing of signaling systems for the protection of life and property shall have a certificate of fitness issued by the fire department.

All questions concerning the interpretation or application of these Rules and Regulations should be addressed to:

Fire Prevention Bureau
City of Portland
380 Congress Street
Portland, Maine 04101
(207)874-8400

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(30 days after issuance)

Fire Chief

**Standard for
Signaling Systems
for the Protection
of Life and
Property
2010 edition**



City of Portland
380 Congress Street
Portland, Maine 04101

Standard for
Signal Systems
For the Protection
Of Life and Property
2010 Edition

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ADMINISTRATION

Section 1.0

- 1.1 The scope of this standard shall be the same as NFPA 72, *National Fire Alarm and Signaling Code*, 2010 edition.
- 1.2 All signaling systems for the protection of life and property shall conform to NFPA 72, *National Fire Alarm and Signaling Code*, 2010 edition, including the Annexes thereof, and this standard.
- 1.3 Where the requirements of NFPA 72 and this standard are different, the more stringent shall apply.
- 1.4 A certificate of fitness is required for all companies engaged in installation or servicing of signaling systems.

DEFINITIONS

Section 2.0

- 2.1 The definitions contained in this section shall apply to the terms used in this standard. Where terms are not defined in this section, they shall be as defined in NFPA official definitions.

High-rise shall mean any structure seventy-five (75) feet or more above grade level. Lineal measure shall be from the lowest point of the occupiable space to the top floor of the structure as determined by the Fire Chief.

Supervised shall mean a system or device that is monitored for all alarm, trouble and supervisory signals by an approved, UL listed Central Station.

FUNDAMENTALS

Section 3.0

- 3.1 There shall be only one life safety signaling system in a building or structure.
- 3.2 A life safety signaling system shall cover only one building or structure.
- 3.2.1. The requirements of 3.2 may be waived at the discretion of the Fire Prevention Bureau in a campus type setting under common ownership provided that each building has its own full function annunciator and alarm number.
- 3.3 All structures, as herein defined, shall be provided with some level of early warning, installed and maintained as detailed by this ordinance and other referenced publications. The intent of this ordinance is to provide early warning to all persons where danger from an emergency condition may not be immediately evident, to allow those persons to safely evacuate the area and/or take other appropriate action.
- 3.4 The Fire Prevention Bureau shall review each building permit application for all structures except one (1) and two (2) family homes, to determine the need and extent of life safety signaling system protection.
- 3.5 The level of protection required shall be based on the size and type of construction, occupancy classification (as determined by NFPA 101) and building contents.
- 3.6 Life safety signaling systems may be required in structures not specifically required to be protected by other sections of these standards to offset exit deficiency, mixed occupancies or other safety situations not otherwise addressed.
- 3.7 At the discretion of the Fire Chief, state of the art alternate fire protection systems may be accepted as an equivalent substitute to the life safety signaling systems detailed in these standards.
- 3.8 Life safety signaling systems shall be required for any of the following occupancies:
- Where required by Chapter 10 of the Portland City ordinance
 - Apartment Buildings (4 or more stories or 11 or more units)
 - Business Occupancies (when occupied by 50 or more persons)
 - Industrial Occupancies (when occupied by 50 or more persons or any high hazard classification)
 - Storage (when stored materials are classified as hazardous and the structure is normally occupied)
 - Special Structures (when determined by the Fire Prevention Bureau)
 - Any mixed occupancy that includes a residential use.
- 3.9 All new signaling systems shall be addressable.
- 3.9.1. A conventional system shall be permissible provided there is no more than one initiating device per initiating device circuit and only 80% of initiating device circuits are used when the panel is installed (25% expansion possible).
- 3.10 All control equipment must have transient protection devices to comply with UL864 requirements.

- 3.11 Knox Box(s) – number, make and model as determined by the Fire Prevention Bureau- shall be located as required by the Fire Department on all structures requiring a life safety signaling system. All keys required to operate the life safety signaling system shall be placed within the box.
- 3.12 All applications for life safety signaling system permits shall be made at the building inspection office on forms provided by the Fire Prevention Bureau. New forms shall be downloaded for every new application. All information requested on the forms shall be completed when applicable to the proposed installation and all supportive documentation provided before the permit can be reviewed.

***Editor's Note:** A copy of such forms may be obtained at <http://www.portlandmaine.gov/fire>

3.13 **Personnel Qualifications**

3.13.1. System Installers and Service Personnel

- 3.13.1.1. Life safety signaling system installers and service personnel shall be Maine licensed electricians.
- 3.13.1.2. Life safety signaling system installers and service personnel shall be affiliated with a company complying with 3.14
- 3.13.1.3. Life safety signaling system installers and service personnel shall have completed an approved training program in accordance with NFPA 72.

3.13.2. System Designers

- 3.13.2.1. The system designer shall be responsible for the design of a signal system or the alteration of an existing system, and shall be responsible for the signal system permit.
- 3.13.2.2. Life safety signaling system designers shall be NICET level 3 or higher. A State of Maine licensed PE with a minimum 5 years experience in fire alarm design may be an approved alternative to NICET when approved by the Fire Prevention Bureau.
- 3.13.2.3. Life safety signaling systems protecting high-rise buildings, atriums, buildings where the effects of stratification must be taken into effect, and buildings as determined by the Fire Prevention Bureau shall be designed and stamped by a Fire Protection Engineer.

3.14 **Certificate of Fitness**

- 3.14.1. Companies engaged in the installation or servicing of life safety signaling system shall have a certificate of fitness.
- 3.14.2. Certificates of fitness shall comply with NFPA 1.
- 3.14.3. Only companies with a current certificate of fitness shall be permitted to affix inspection stickers to a Life safety signaling system.
- 3.14.4. Companies engaged in the installation or servicing of life safety signaling systems shall ensure that personnel comply with 3.13.
- 3.15 Any application for a life safety signaling system shall include the following submitted in an approved format:

Designer qualifications;
Complete descriptive data indicating “UL” listings (or other approved listing organization) for all system components (specific component model shall be called out on cut sheets);
Input/Output matrix (see NFPA 72-A.14.6.2.4(9));
A complete wiring/ riser diagram for all components being connected to the system (specific device shall be called out);
Floor plans indicating the placement of all equipment (specific device shall be called out);
Annunciator details showing the labeling of all zones;
Battery and voltage drop calculations.

- 3.16 Any additions or modifications from approved plans will require the submission of an amendment and approval from the fire department.
- 3.17 After the completion of installation, the installation contractor shall provide the Fire Prevention Bureau with a completed “Fire Alarm and Emergency Communication System Record of Completion” (See 72-10.18.2.1.1) before the “Certificate of Occupancy” can be issued.
- 3.18 All fire alarm wiring shall be protected from vandalism in an approved manner.
- 3.19 Any life safety signaling system, including all peripheral devices, shall be maintained and kept operational at all times. Whenever any initiating device is activated and rendered inoperable, it shall be repaired or replaced within twenty-four (24) hours. Any other component needing repair or replacement shall be started within twenty-four (24) hours of disablement and continued until completed as parts are received.
- 3.20 A fire alarm records cabinet shall be provided next to the Signal System Interface Panel. The cabinet shall be keyed alike, and labeled “FIRE ALARM DOCUMENTS”. With the exception of section 14.6.3, it shall contain all records listed in sections 10.18 and 14.6 of NFPA 72 for the life of the signaling system. In addition, a Record of System Installation (#14 of the Fire Alarm Emergency Communication System Record of Completion) shall be laminated and affixed to the inside of the cabinet.

CONTROL EQUIPMENT

Section 4.0

- 4.1 The signal system interface panel or a full function annunciator panel shall be placed at the primary point of entry as defined by the Fire Prevention Bureau.
- 4.2 Programmable systems shall be capable of being programmed onsite.
- 4.3 All control features shall be placed within the signal system interface panel or annunciator panel only.
- 4.3.1 All signal system controls shall be secured by a key. Locked room doors shall not be acceptable. Allen keys shall not be acceptable.
- 4.4 All annunciators shall be full function.
- 4.5 Where required, drill switches when activated shall be programmed to prevent transmission of an alarm signal, but shall initiate a supervisory signal at the panel and transmit a supervisory signal when connected to a central station. Activation of a drill switch alone shall not cause the evacuation signals to silence.
- 4.6 Any signal system interface panel which is placed within a space shall have the door leading to that space labeled with the words "Fire Alarm Control Panel".
- 4.7 Where two-way telephone communication service for fire department use is required by Chapter 10 of City Code and the fire department radio system is approved as an equivalent system, the Fire Prevention Bureau may require an approved Fixed repeater system that shall meet the interface requirements of the City of Portland's 800 mhz radio system. All such equipment shall be properly installed and regularly maintained, and the cost thereof borne by the property owner and shall be available for inspection and use of the City of Portland 24/7.
- 4.7.1 Where fire department radio equipment fails to penetrate a building, the Fire Chief reserves the right to require a fixed repeater system complying with 4.7.

INITIATING DEVICES

Section 5.0

- 5.1 The tripping of a duct detector or tamper switch shall activate a supervisory signal only and shall not sound the evacuation signals.
- 5.2 Detection devices located within concealed spaces or spaces deemed inaccessible by the Fire Prevention Bureau shall have an indicator visual to the firefighter from an adjacent normally occupied space approved by the Fire Prevention Bureau.
- 5.3 All areas that are part of a defined exit system (hallways, stairways, lobbies, etc.) and any areas prone to smoldering fires shall be protected with smoke detectors. All other areas shall be protected with heat detectors.
- 5.3.1 5.3 may be waived in the sole discretion of the Fire Prevention Bureau for non-required systems in occupancies where occupants do not sleep and are capable of self-preservation.
- 5.3.2 The Fire Prevention Bureau may require smoke detectors using alarm verification or multi-criteria technology where there is a likelihood of false alarms due to the environment of the space being protected.
- 5.3.3 Heat detectors shall be rate-of-rise in all cases practical.
- *Editor's Note:** Where normally installed equipment creates a rapid rise in temperatures as a result of normal operations, and in conditions not suitable for ROR, the signal system designer is expected to submit an alternative heat detector that is listed for the environment it is to be installed in.
- 5.3.4 Where a supervised, automatic sprinkler system provides complete protection of the building, heat detectors shall be permitted to be omitted if the sprinkler zones do not exceed the requirements of NFPA 13 and each story has a water flow switch and zone control valve.
- 5.4 All fire alarm systems shall have manual pull stations located as required by NFPA 72.
- 5.4.1 New manual pull stations shall be reset with the same key as the fire alarm panel.
- 5.5 All automatic extinguishing systems shall be supervised by the life safety signal system.
- 5.6 All detection devices shall be protected against radio frequency activation.
- 5.7 Initiation devices shall be labeled with a unique identity number visible from the floor for tracking of maintenance.

SIGNALING DEVICES

Section 6.0

- 6.1 The use of bells as a signal device is prohibited in any system.
- 6.2 The activation of the life safety signal system in all high-rise occupancies shall sound an audible and visible alarm on the floor of initiation, the floor above, and the floor below. Whenever any incident requires the activation of a floor connected to other floors by means of an unprotected vertical opening, the alarm activation shall be extended to include all floors so interconnected. If a second zone goes into alarm, then a general evacuation shall be sounded.
 - 6.2.1 The Fire Prevention Bureau has the authority to require the evacuation alarm to sound through out a high-rise building where in the opinion of the Fire Prevention Bureau, the building is not adequately compartmentalized.
- 6.3 All other structures shall sound a general evacuation throughout all floors unless otherwise approved by this office.
- 6.4 The use of chimes shall be prohibited in occupancies other than where sudden loud noises might cause panic or confusion to the occupants and there is no other acceptable method of staff notification available. Any occupancy using chimes as the signal devices must provide staff which is awake twenty-four (24) hours a day, be required to have a master box by City Code, and be approved by the Fire Prevention Bureau.
- 6.7 The Fire Prevention Bureau may require multi-lingual voice evacuation systems in all facilities using prerecorded voice evacuation systems. Prerecorded messages and alert tone(s) shall be approved by the Fire Prevention Bureau.

MASTER BOX CONNECTIONS

Section 7.0

- 7.1 Master Box Alarm Connections shall be approved by the Fire Chief.
- 7.2 All new master boxes shall be connected to the City of Portland Public Safety Answering Point (PSAP) via an approved wireless master box. Those facilities requiring or desiring signaling system monitoring other than master box connection shall be by approved central station or means approved by the fire chief.
- 7.2.1. Existing, approved master box connections by central station shall be grandfathered.
- ***Editor's Note:** Existing, approved master box connections by central station must comply with the 2005 edition of the Portland Fire Department Rules and Regulations.
- 7.3 Master box alarm systems shall have a drill switch complying with 4.5.
- 7.3.1. Existing signal systems requiring master box connection may be made from the signal system interface panel to the municipal signal equipment via an approved, supervised disconnect switch when complying with 7.3 is not practical in the judgment of the Fire Prevention Bureau. Activation of a disconnect switch shall cause a supervisory signal to be indicated at the signal system interface, annunciator and PSAP.
- 7.4 Master box equipment shall be of the type approved by the Fire Chief.
- 7.5 Installation shall be per manufacturer and City requirements.
- 7.6 Master box equipment shall be located next to the signal system interface panel and shall not be capable of operation apart from the building signal system.
- 7.7 Each master box alarm number shall not serve more than 100,000 square feet of building space, more than one building, more than one evacuation zone, or more than 6 stories.
- 7.8 All wiring on the municipal side of the signal system interface panel shall be rigid or non-metallic conduit.
- 7.9 The 2005 edition of the *Fire Department Rules and Regulations, Section a. For Master Box Connections to Municipal System*, shall remain in effect until further notice.

SUPERVISING STATION ALARM SYSTEMS

Section 8.0

- 8.1 Supervised station alarm systems shall have a drill switch complying with 4.5.
- 8.1.1 The Fire Prevention Bureau may in its sole discretion wave the requirement of 8.1 in buildings that most likely will not require a master box connection in the future.
- ***Editor's Note:** Non-mixed use apartment buildings with fewer than 20 dwelling units which would likely not be able to increase the number of units or change use would likely not require a master box connection in the future.
- 8.2 Managed Facilities-Based Voice Network (MFVN)
- 8.2.1 Managed Facilities-Based Voice Network (MFVN) shall comply with section A.3.3.141 of NFPA 72, *National Fire Alarm and Signaling Code*, 2010 edition.
- 8.2.1.1 The requirements of A.3.3.141(3) may be waived for the second communication method (phone number).
- 8.2.1 All equipment required to receive power from the protected premises shall comply with section 10.5 of NFPA 72, *National Fire Alarm and Signaling Code*, 2010 edition.
- 8.2.2 All equipment required for MFVN and located at the protected premises shall be installed within 5 feet of the signal system interface panel, and be secured to prevent connection by other than the fire alarm system prior to such connection.
- 8.2.3 Communications circuits for MFVN shall not have breaks prior to the cable modem at the protected premises. Special attention shall be given to section 26.6.3.2.1.1 of NFPA 72, *National Fire Alarm and Signaling Code*, 2010 edition.

RESERVED

Section 9.0

MAINTENANCE

Section 10.0

10.1 **Inspection Stickers**

10.1.1 All signal systems shall have a current inspection sticker.

10.1.1.1 All existing signal systems shall have a current inspection sticker by December 31,2010.

10.1.2 Inspection stickers shall be acquired by companies with a valid certificate of fitness from the Fire Prevention Bureau.

10.1.3 Inspection stickers shall not be affixed to signal systems that are non-compliant or deficient, and that do not have a service contract.

10.1.4 Records for inspection stickers shall be kept on forms provided by the Fire Prevention Bureau and submitted quarterly.

***Editor's Note:** A copy of such forms may be obtained at <http://www.portlandmaine.gov/fire>

10.1.5 All inspection stickers and records remain the property of the Fire Prevention Bureau and shall be turned over upon demand.

10.2 **Initiation Devices**

10.2.1 Initiation devices shall be labeled with a unique identity number visible from the floor for tracking of maintenance. All such labeling shall be completed in the time frame established by NFPA 72 for which each device of the given type must have been tested.

10.2.2 A log shall be kept indicating precisely which initiating devices have been tested.

10.3 **Supervising Station Alarm Systems**

10.3.1 The service company shall verify the communications method complies with this standard.

10.4 The company responsible for servicing shall affix a sticker with their name and contact number.