

FIRE ALARM PLAN REVIEW

Office of the State Fire Marshal
Massachusetts Department of Fire Services
December 2009



SURPRISE QUIZ

1. A fire alarm system is required to be installed by the MSBC, what edition of NFPA 72 do you use?
2. A kitchen fire suppression system is installed in a restaurant that does not have/need a fire alarm system. Does the installation of this suppression system require that a fire alarm system needs to be installed?
3. A caller tells you he will be installing a new fire alarm system in his new office building. He was told that the fire alarm system had to meet the provisions of 780 CMR 9.00 and 527 CMR 24.00. Is he correct?



Department of Fire Services

SURPRISE QUIZ

4. Your community has an extensive master box system. A new very large church is being built. The fire protection systems need to be monitored. Can you require, through the MSBC, that they monitor the systems by a master box?
5. A new elementary school is being built with a sprinkler and fire alarm system. Are smoke detectors required to be installed in the common areas?
6. Is a local fire department permit needed to install a fire alarm system?

QUIZ ANSWERS

1. A fire alarm system is required to be installed by the MSBC, what edition of NFPA 72 do you use?

If the 7th Edition of MSBC; use the 2007 NFPA 72.

If the 6th Edition of MSBC; use the 2002 NFPA 72.

2. A kitchen fire suppression system is installed in a restaurant that does not have/need a fire alarm system. Does the installation of the suppression system require a fire alarm system to be installed?

No, per 780 CMR 907.13.



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QUIZ ANSWERS

3. A caller tells you he will be installing a new fire alarm system in his new office building. He was told that the fire alarm system had to meet the provisions of 780 CMR 9.0 and 527 CMR 24.00. Is he correct?

No, 527 CMR 24.00 is only applicable in certain residential situations.

4. Your community has an extensive master box system. A very new large church is being built. The fire protection systems need to be monitored. Can you require, through the MSBC, that they monitor the systems by a master box?

No, it is the owner's choice per 780 CMR 907.13.

QUIZ ANSWERS

5. A new elementary school is being built with a sprinkler and fire alarm system. Are smoke detectors required to be installed in the common areas?
No, per 780 CMR 907.2.3, Exception #2.
6. Is a local fire department permit needed to install a fire alarm system?
Yes, per 527 CMR 10.03(15).

FIRE ALARM PLAN REVIEW

Course Description:

This training is an introduction to the NFPA 72 fire alarm standard. The training will cover the scope of the standard. It will detail when and where a fire alarm system (FAS) is required to be installed in Massachusetts. In the training, the required information to conduct a proper FAS plan review will be listed. It will address the most common design errors encountered in a basic FAS review. Although mentioned, it is not the intention of the training to cover 120 volt multiple station smoke alarms.



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FIRE ALARM PLAN REVIEW

The Office of the State Marshal has noticed, especially since the introduction of the 7th Edition of the Massachusetts State Building Code (780 CMR), the great majority of FAS plan review issues seem to originate more with 780 CMR than NFPA 72.

Therefore, the focus of this course has been modified to concentrate more on 780 CMR issues than NFPA 72 related issues.

An advanced Fire Alarm class, that deals exclusively with NFPA 72, is currently being planned.

FIRE ALARM PLAN REVIEW

This presentation provides a brief overview of the basics encountered in the most frequent FAS plan reviews.

The presentation does not cover all possible occupancies or situations where a FAS would be required.

Therefore, 780 CMR and NFPA 72 must always be reviewed to ensure the proper requirements are satisfied.

WHERE ARE FAS REQUIRED?



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WHERE REQUIRED?

The requirement to install a FAS are found in 780 CMR – 7th Edition (Effective 3/1/2009):

Chapter 4.00 – Special Detailed Requirements Based on Use and Occupancy.

Chapter 9.00 – Fire Protection and Lifesafety Systems.



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WHERE REQUIRED?

Besides 780 CMR, requirements for a FAS are also found in:

MGL c. 148 s. 26C – Certain apartment houses (6 or more dwelling units), hotels, boarding or lodging houses, or family hotels must put a FAS per 527 CMR 24.00. **527 CMR 24.00 does not apply to new residential or commercial installations!**

MGL c. 148 s. 26G½ – A FAS is required in certain nightclubs, dance halls, bars, etc...



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NFPA 72 STANDARD



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NFPA 72

Per 780 CMR 35.00, the 2007 Edition of NFPA 72 is the referenced edition for 780 CMR (7th Edition) Base Code.

Referenced editions NFPA 72 vary between codes:

780 CMR 53.00 (7 th Edition)	2002 NFPA 72
780 CMR (6 th Edition)	2002 NFPA 72
521 CMR 40.0	2002 NFPA 72
527 CMR 24.00	1996 NFPA 72

*Note: The 2010 NFPA 72 has been published.



Department of Fire Services

ALARM INITIATION



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ALARM INITIATION

780 CMR 907.2 – Manual, automatic or manual and automatic fire alarm system shall be provided in accordance with 780 CMR 907.2.1 through 907.2.24.



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MANUAL FAS

780 CMR 907.3 – Manual fire alarm boxes shall be installed in accordance with 780 CMR 907.3.1 through 907.3.5.



MANUAL FAS

780 CMR 907.3.1 – Manual fire alarm boxes shall be located not more than 5' from the entrance to each exit.

Additional manual fire alarm boxes shall be located so that travel to the nearest box does not exceed 200'.



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MANUAL FAS

780 CMR 907.3.2 – The height of the manual fire alarm boxes shall be a minimum of 42” and a maximum of 48” measured vertically, from the floor level to the activating handle or lever of the box.

780 CMR 907.3.3 – Manual fire alarm boxes shall be red in color.



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MANUAL FAS

780 CMR 907.3.5 – The Building Official or the FD is authorized to require the installation of listed manual fire alarm box protective covers to prevent malicious false alarms or provide the manual fire alarm box with protection from physical damage.

A protective cover that emits a local alarm signal shall not be installed unless approved.



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AUTOMATIC FAS

780 CMR 907.2 –

The automatic fire detectors shall be smoke detectors, except that an alternative type of detector shall be installed in spaces such as boiler rooms where, during normal operation, products of combustion are present in sufficient quantity to actuate a smoke detector.



Department of Fire Services

AUTOMATIC FAS

780 CMR 907.2 –

Where an NFPA 13 or NFPA 13R automatic sprinkler system is provided and connected to the building FAS, automatic heat detection required by 780 CMR 907.2 shall not be required.



Department of Fire Services

AUTOMATIC FAS

780 CMR 903.4 – Approved audible and visual alarm devices shall be connected to every water sprinkler system. Such alarm devices shall be activated by waterflow and shall be located in an approved location on the exterior of the building and throughout the building in accordance with the requirements of 780 CMR 907.



Department of Fire Services

FAS REQUIREMENTS



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FAS REQUIREMENTS

780 CMR 907.2.1 – Assembly Use Groups.

A manual FAS shall be installed in Group A occupancies having an occupant load of 50 or more.

Portions of Group E occupancies occupied for assembly purposes shall be provided with a FAS as required for the Group E occupancy.



Department of Fire Services

FAS REQUIREMENTS

780 CMR 907.2.1 – Assembly Use Groups.

Activation of the FAS in Group A occupancies having an occupant load of 300 or more shall initiate a signal using an emergency voice/alarm communications system.

Where the FD determines that partial or selective evacuation is not desired, but rather total evacuation is required, then a distinctive signal in lieu of a voice alarm is permitted.

FAS REQUIREMENTS

780 CMR 907.2.1.2 – A-2nc Use.

The activation of any FPS element shall automatically:

- 1. Cause immediate illumination of all areas and components of the required means of egress, and;*
- 2. Cause immediate full activation of all other house lighting, and;*
- 3. Cause immediate stopping of any and all sounds and visual distractions that conflict/compete with the fire protective signaling system.*



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FAS REQUIREMENTS

780 CMR 907.2.2 – Business Use Groups.

A manual fire alarm system shall be installed in Group B occupancies having:

1. An occupant load of 500 or more persons, or;
2. An occupant load of more than 100 persons above or below the lowest level of exit discharge.



Department of Fire Services

FAS REQUIREMENTS

780 CMR 907.2.3 – Educational Use Groups.

A manual and automatic FAS with emergency voice/alarm capabilities shall be installed in Group E occupancies.

Exceptions:

1. Group E occupancies with an occupant load <50.
2. Buildings equipped throughout with an automatic sprinkler system are not required to be equipped with an automatic fire detection system.



FAS REQUIREMENTS

780 CMR 907.2.3.1 – Educational Use Groups.

Where an automatic system is required the automatic detectors shall be smoke detectors. Coverage shall be in accordance with NFPA 72.



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FAS REQUIREMENTS

780 CMR 907.2.4 – Factory/Industrial Use Groups.

A manual FAS shall be installed in Group F occupancies that are two or more stories in height and have an occupant load of 500 or more persons above or below the lowest level of exit discharge.



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FAS REQUIREMENTS

780 CMR 907.2.5 – High Hazard Use Groups.

A manual FAS 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.



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FAS REQUIREMENTS

780 CMR 907.2.6 – Institutional Use Groups.

A manual FAS and an automatic fire detection system shall be installed in Group I occupancies. An automatic smoke detection system shall be provided in waiting areas that are open to the public.



Department of Fire Services

FAS REQUIREMENTS

780 CMR 907.2.6 – Institutional Use Groups.

Exception: Manual fire alarm boxes in patient sleeping areas of Group I-1 and I-2 occupancies shall not be required at exits if located at all nurses' control stations or other constantly attended staff locations, provide such stations are visible and continuously accessible and that travel distances required in 780 CMR 907.3.1 are not exceeded.



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FAS REQUIREMENTS

780 CMR 907.2.6.1 – I-2 Use Groups.

Corridors in nursing homes (both intermediate-care and skilled nursing facilities), detoxification facilities and spaces open to the corridors shall be equipped with an automatic fire detection system.



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FAS REQUIREMENTS

780 CMR 907.2.6.1 – I-2 Use Groups.

Exceptions:

1. Corridor smoke detection is not required in smoke compartments that contain patient sleeping rooms where patient sleeping units are provided with smoke detectors that comply with UL 268. Such detectors shall provide a visual display on the corridor side of each patient sleeping unit and an audible and visual alarm at the nursing station attending unit.



Department of Fire Services

FAS REQUIREMENTS

780 CMR 907.2.6.1 – I-2 Use Groups.

Exceptions:

2. Corridor smoke detection is not required in smoke compartments that contain patient sleeping rooms where patient sleeping unit doors are equipped with automatic door-closing devices with integral smoke detectors on the unit side installed in accordance with their listing, provided that the integral detectors perform the required alerting function.



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FAS REQUIREMENTS

780 CMR 907.2.6.2 – I-3 Use Groups.

Group I-3 occupancies shall be equipped with a manual and an automatic FAS installed for alerting staff.

Actuation of an automatic fire extinguishing system, a manual fire alarm box or a fire detector shall initiate an approved fire alarm signal which automatically notifies staff.



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FAS REQUIREMENTS

780 CMR 907.2.6.2.2 – I-3 Use Groups.

Manual fire alarm boxes are not required to be located in accordance with 780 CMR 907.3 where the fire alarm boxes are provided at staff attended locations having direct supervision over areas where manual fire alarm boxes have been omitted. Manual fire alarm boxes shall 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.

FAS REQUIREMENTS

780 CMR 907.2.6.2 – I-3 Use Groups.

780 CMR 907.2.6.2.3 – Smoke Detectors.

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



Department of Fire Services

FAS REQUIREMENTS

780 CMR 907.2.6.2 – I-3 Use Groups.

780 CMR 907.2.6.2.3 – Smoke Detectors.

Exception:

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.



Department of Fire Services

FAS REQUIREMENTS

780 CMR 907.2.7 – Mercantile Use Groups.

A manual fire alarm system shall be installed in Group M occupancies having:

1. An occupant load of 500 or more persons, or;
2. An occupant load more than 100 persons above or below the lowest level of exit discharge.



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FAS REQUIREMENTS

780 CMR 907.2.7 – Mercantile Use Groups.

Exception:

Manual fire alarm boxes are not required if the building is equipped throughout with an automatic sprinkler system and the alarm notification appliances will activate upon sprinkler waterflow.



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FAS REQUIREMENTS

780 CMR 907.2.7.1 – Mercantile Use Groups.

Occupant Notification: During times that the building is occupied, in lieu of the automatic activation of alarm notification appliances, the manual fire alarm system shall be allowed to activate an alarm signal at a constantly attended location from which evacuation instructions shall be initiated over an emergency voice/alarm communication system.



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FAS REQUIREMENTS

780 CMR 907.2.8 – R-1 Use Groups.

FAS shall be installed in Group R-1 occupancies as required in 780 CMR 907.2.8.1 through 907.2.8.3 and in accordance with Table 907.2.8.



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FAS REQUIREMENTS

780 CMR 907.2.8 – R-1 Use Groups.

Table 907.2.8:

TABLE 907.2.8 - RESIDENTIAL FIRE PROTECTION REQUIREMENTS

Use Group	Number of Units	Unit Occupant Protection	Other Occupant Protection	Standby Power	Manual Stations	Zoned	Provision for Fire Department Notification
R-2	1 or 2	Yes	Note a.	Yes	N.A.	N.A.	N.A.
R-1	3 to 12	Yes	Yes	Yes	Yes	N.A.	N.A.
R-2	3 to 12	Yes	Yes	Yes	Yes	N.A.	N.A.
R-1	13 or more	Yes	Yes	Yes	Yes	Yes	Yes
R-2	13 or more	Yes	Yes	Yes	Yes	Yes	Yes

Note a: When common areas exist.



Department of Fire Services

FAS REQUIREMENTS

780 CMR 907.2.8 – R-1 Use Groups.

780 CMR 907.2.8.1 – A manual FAS shall be installed in Group R-1 occupancies.

Exception:

A manual FAS is not required in buildings not over two stories in height where all individual guestrooms and contiguous attic and crawl spaces are separated from each other and public or common areas by at least 1-hr fire partitions and each individual guestroom has exit directly to a public way, exit court or yard.

FAS REQUIREMENTS

780 CMR 907.2.8 – R-1 Use Groups.

780 CMR 907.2.8.2 – An automatic FAS shall be installed throughout all interior corridors serving guestrooms.

Exception:

An automatic fire detection system is not required in buildings that do have interior corridors serving guestrooms and each guestroom has a means of egress door opening directly to an exterior exit access that leads directly to an exit.

FAS REQUIREMENTS

780 CMR 907.2.9 – R-2 Use Groups.

A manual FAS and an automatic fire detection system shall be installed in Group R-2 occupancies and in accordance with Table 907.2.8.

Exception:

A manual FAS is not required in buildings with 12 or less dwelling units.



Department of Fire Services

FAS REQUIREMENTS

780 CMR 907.2.9 – R-2 Use Groups.

Table 907.2.8:

TABLE 907.2.8 - RESIDENTIAL FIRE PROTECTION REQUIREMENTS

Use Group	Number of Units	Unit Occupant Protection	Other Occupant Protection	Standby Power	Manual Stations	Zoned	Provision for Fire Department Notification
R-3	1 or 2	Yes	Note a.	Yes	N.A.	N.A.	N.A.
R-1	3 to 12	Yes	Yes	Yes	Yes	N.A.	N.A.
R-2	3 to 12	Yes	Yes	Yes	Yes	N.A.	N.A.
R-1	13 or more	Yes	Yes	Yes	Yes	Yes	Yes
R-2	13 or more	Yes	Yes	Yes	Yes	Yes	Yes

Note a: Where common areas exist.



Department of Fire Services

This should be 'no', See 780 CMR 907.2.9 Exception.

FAS REQUIREMENTS

Other 780 CMR building FAS requirements:

907.2.11 – Special amusement buildings.

907.2.12 – High-rise buildings.

907.2.13 – Atriums connecting more than 2 stories.

907.2.14 – High-piled combustible storage.

907.2.15 – Delayed egress locks.

907.2.16 – Aerosol storage uses.

907.2.17 – Lumber, plywood and veneer mills.



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FAS REQUIREMENTS

Other 780 CMR building FAS requirements (cont.):

907.2.18 – Underground buildings with smoke exhaust system.

907.2.19 – Underground buildings.

907.2.20 – Covered mall buildings.

907.2.21 – Residential aircraft hangers.

907.2.22 – Airport traffic control towers.

907.2.23 – Battery rooms.

907.2.24 – Buildings with sleeping areas.



Department of Fire Services

ALARM NOTIFICATION



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NOTIFICATION

780 CMR 903.4 – Approved audible and visual alarm devices shall be connected to every water sprinkler system. Such alarm devices shall be activated by waterflow and shall be located in an approved location on the exterior of the building and throughout the building in accordance with the requirements of 780 CMR 907.



Department of Fire Services

VISIBLE NOTIFICATION

780 CMR 907.9.1 – Visible notification appliances shall be provided in accordance with 780 CMR 907.9.1.1 through 907.9.1.3. (also refer to 521 CMR requirements in buildings or portions thereof, open to the public).

Exceptions:

1. Visible alarm notification appliances are not required in alterations, except where an existing FAS is upgraded or replaced, or a new FAS is installed.



Department of Fire Services

VISIBLE NOTIFICATION

780 CMR 907.9.1 –

Exceptions:

1. Visible alarm notification appliances are not required in alterations, except where an existing FAS is upgraded or replaced, or a new FAS is installed (also refer to 521 CMR requirements in buildings or portions thereof, open to the public).



Department of Fire Services

VISIBLE NOTIFICATION

780 CMR 907.9.1 –

Exceptions:

2. Visible alarm notification appliances shall not be required in exits as defined in 780 CMR 1002.1. (also refer to 521 CMR requirements in buildings or portions thereof, open to the public).



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VISIBLE NOTIFICATION

780 CMR 907.9.1.1 – Visible alarm notification appliances shall be provided in public areas and common areas (also refer to 521 CMR requirements in buildings or portions thereof, open to the public).



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VISIBLE NOTIFICATION

521 CMR 40.3 - At a minimum, visual signal appliances, if provided, shall be provided in buildings and facilities in each of the following areas: restrooms, meeting rooms, hallways, lobbies, classrooms, and any general usage areas open to the public.

521 CMR 40.3.1 - Visual alarm signal appliances shall be integrated into the building or facility alarm system. If single station audible alarms are provided, then single station visual alarm signals shall be provided.



Department of Fire Services

VISIBLE NOTIFICATION

521 CMR 40.3.2 - Visual alarm signals shall have photometric features in accordance with NFPA Section 7.5, 2002.

521 CMR 40.3.3 - Visual alarm signals shall be located in accordance with NFPA Section 7.5, 2002.



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VISIBLE NOTIFICATION

780 CMR 907.9.1.2 – Employee Work Areas

Where employee work areas have audible alarm coverage, the wiring systems shall be designed so that visible alarm notification appliances can be integrated into the alarm system.



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VISIBLE NOTIFICATION

780 CMR 907.9.1.3 – Groups I and R.

Refer to 521 CMR for requirements for visible alarms in Group I and R sleeping units – such visible alarm notification appliances shall be activated by both the in-room smoke alarm and the building fire alarm system.



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VISIBLE NOTIFICATION

780 CMR 907.9.1.4 – Group R-2.

In Group R-2 occupancies required by 780 CMR 907.0 to have a FAS, all dwelling units and sleeping units shall be provided with the capability to support visible alarm notification appliances in accordance with *521 CMR*.



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AUDIBLE NOTIFICATION

780 CMR 907.9.2 – Audible Alarms.

Where the average ambient noise is greater than 105 dBA, visible notification appliances shall be provided in accordance with NFPA 72 and audible alarm notification appliances shall not be required.

Exception: Visible alarm notification appliances shall be allowed in lieu of audible alarm notification appliances in critical-care areas of I-2 occupancies.

AUDIBLE NOTIFICATION

780 CMR 907.9.2 – Audible Alarms.

Audible alarm notification appliances shall be provided and shall be provided and shall sound that is not to be used for any purpose other than that of a fire alarm. The audible alarm notification appliances shall provide a sound pressure level in accordance with NFPA 72.



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ANCILLARY FAS ISSUES



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FAS ZONING

780 CMR 907.8 – Each floor shall be zoned separately and a zone shall not exceed 22,500 ft². The length of any zone shall not exceed 300' in any direction.

780 CMR 907.8.1 – 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 cancelled by the operation of an audible-silencing switch.

ANCILLARY FAS ISSUES

780 CMR 907.10 – 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 panel where a FAS is required by 780 CMR 907.2. Detectors shall, upon actuation, perform the intended function and activate the alarm notification appliances and where provided a visible and audible supervisory signal at a constantly attended location.

ANCILLARY FAS ISSUES

780 CMR 907.10 – Fire Safety Functions.

In buildings not required to be equipped with a FAS, 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.



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ANCILLARY FAS ISSUES

780 CMR 907.11 – Duct Smoke Detectors.

Duct smoke detectors shall be connected to the building's fire alarm control when a FAS is provided. Activation of a duct smoke detector shall initiate a visible and audible supervisory signal at a constantly attended location. Duct smoke detectors shall not be used as a substitute for required open area detection.



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ANCILLARY FAS ISSUES

780 CMR 907.11 – Duct Smoke Detectors.

Exceptions:

1. The supervisory signal at a constantly attended location is not required where duct smoke detectors activate the building's alarm notification appliances.
3. Duct smoke detectors may be used as a substitute for an open area protection in accordance with 780 CMR 907.2.6.2.3.



ANCILLARY FAS ISSUES

780 CMR 907.11 – Duct Smoke Detectors.

Exceptions:

2. In occupancies not required to be equipped with a FAS, actuation of a smoke detector shall activate a visible or audible signal in an approved location and shall be identified as air duct detector trouble.



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ANCILLARY FAS ISSUES

780 CMR 907.13 – Fire-Extinguishing Systems.

Automatic fire-extinguishing systems shall be connected to the building FAS where a FAS is required by another section of 780 CMR or is otherwise installed.



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SUPERVISION



Department of Fire Services

SUPERVISION

780 CMR 907.14.2 – Fire Suppression Systems:

All automatic fire suppression systems required by 780 CMR shall be supervised by one (owner's choice) of the following methods:

- a. UL or FM Central Station Service FAS.
- b. Propriety Supervising Station FAS.
- c. Remote Supervising Station FAS.



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SUPERVISION

780 CMR 907.14.2 – Fire Suppression Systems:

Continued:

d. Alarms to an Auxiliary FAS with
supervisory signals supervised by one or
two above or at a constantly attended
location approved by the FD.



Department of Fire Services

SUPERVISION

780 CMR 907.14.2 – Fire Suppression Systems:

Exceptions to supervision:

1. Underground gate valves w/ roadway boxes.
2. Halogenated or CO₂ extinguishing systems that are not an integral part of a required automatic fire suppression system.
3. Dry and wet chemical extinguishing systems.



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SUPERVISION

780 CMR 907.14.2 – Fire Suppression Systems:

Exceptions to supervision:

4. Limited area sprinkler systems.
5. R Use Groups containing less than 13 dwelling units, no more than 4 stories in height and equipped with a suppression system conforming to NFPA and supervised in accordance with NFPA 13R.



Department of Fire Services

SUPERVISION

780 CMR 907.14.3 – Fire Protective Signaling Systems and Automatic Fire Detection Systems:

All fire protective signaling systems and automatic fire detection systems required by 780 CMR shall be supervised by one (owner's choice) of the following methods:

* Same as for the Fire Suppression Systems.



Department of Fire Services

SUPERVISION

780 CMR 907.14.3 – Fire Protective Signaling Systems and Automatic Fire Detection Systems:

- a. UL or FM Central Station Service FAS.
- b. Propriety Supervising Station FAS.
- c. Remote Supervising Station FAS.
- d. Alarms to an Auxiliary FAS with supervisory signals supervised by one or two above or at a constantly attended location approved by the FD.

SUPERVISION

780 CMR 907.14.3 – Fire Protective Signaling Systems and Automatic Fire Detection Systems:

Exceptions to supervision:

1. For Use Group R, see Table 907.2.8.
2. Single and multi-station detectors as required by 780 CMR 5303.13.



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SUPERVISION

780 CMR 907.14.3 – Fire Protective Signaling Systems and Automatic Fire Detection Systems:

Exceptions to supervision (continued):

3. Smoke detectors in occupancies in Use Group I-3.
4. Smoke detectors in patient sleeping rooms in occupancies in Use Group I-2.



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SUPERVISION

780 CMR 907.14.4 – Use Group H.

Emergency alarm systems in Use Group H occupancies shall be monitored by an approved supervising station:

Exception: When approved by the Head of the FD, on-site monitoring at a constantly attended location shall be permitted provided that notifications to the FD will be equal to those provided by an approved supervising station.

CONSTRUCTION DOCUMENTS



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CONSTRUCTION DOCUMENTS

780 CMR 907.1.1 – Construction Documents

Expanded requirements for required specific construction documentation at specific times:

- To accompany the building permit application.
- Prior to the installation of fire alarm equipment or devices.
- Prior to acceptance testing of fire alarm equipment or devices.

CONSTRUCTION DOCUMENTS

780 CMR 907.1.1.1 – Construction documents required to accompany an application for a building permit:

1. Narrative report

- a. Basic methodology of design for the protection of the occupancy and hazards for compliance with 780 CMR and applicable NFPA standards.
- b. Sequence of operation of all fire protection systems.
- c. Testing criteria to be used for final system acceptance.



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CONSTRUCTION DOCUMENTS

780 CMR 907.1.1.1 – Construction documents required to accompany an application for a building permit (cont.):

2. Dedicated plans that indicate:

- a. The use of all rooms.
- b. The location of all FA equipment and devices.
- c. The sequences of operation shall appear also appear on FA plans as well as the narrative report.



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CONSTRUCTION DOCUMENTS

780 CMR 907.1.1.1 – Construction documents required to accompany an application for a building permit (cont.):

3. FA equipment and device symbol legend.
4. Primary power connection.
5. Details of ceiling height and construction.



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CONSTRUCTION DOCUMENTS

780 CMR 907.1.1.1 – Construction documents required to accompany an application for a building permit (cont.):

6. The interface of fire safety control functions.
7. The location of any equipment or devices that directly interfaces with the FAS.
8. FAS riser.



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CONSTRUCTION DOCUMENTS

780 CMR 907.1.1.2 – Construction documents required prior to the installation of FA equipment or devices:

1. Manufacturers, model numbers and listing information for equipment, devices and materials.
2. Circuitry layout, conductor types and sizes.
3. Voltage drop calculations.



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CONSTRUCTION DOCUMENTS

780 CMR 907.1.1.2 – Construction documents required prior to the installation of FA equipment or devices (cont):

4. Battery calculations.

5. Any amendments to the documents provided under 780 CMR 907.1.1.1.



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CONSTRUCTION DOCUMENTS

780 CMR 907.1.1.3 – Construction documents required prior to acceptance testing of FA equipment or devices:

1. As-built plans.
2. Input/output matrix.
3. Any amendments to the documents provided under 780 CMR 907.1.1.1 and 907.1.1.2.



INPUT/OUTPUT MATRIX

**2007 NFPA 72:
Figure A.10.6.2.3(9)**

2007 NFPA 72:
Figure A.10.6.2.3(9)

System Inputs		System Outputs																																	
		Control Unit Annunciation										Notification					Required Fire Safety Control										Supplementary								
		Actuate common alarm signal indicator	Actuate audible alarm signal	Actuate common supervisory signal indicator	Actuate audible supervisory signal	Actuate common trouble signal indicator	Actuate audible common trouble signal	Actuate 1st floor (zone 1) alarm indicator	Actuate 1st floor (zone 2) alarm indicator	Actuate 1st floor (zone 3) alarm indicator	Actuate 2nd floor evacuation signals	Display/print evacuation signals	Transmit fire alarm signals	Transmit supervisory signal to supervising station	Release trouble signal to supervising station	Recall elevators to primary recall doors	Recall smoke-free fire dampers in rated floor	Actuate 1st floor smoke exhaust	Actuate 2nd floor smoke exhaust	Actuate 3rd floor smoke exhaust	Initiate suppression system	Energize suppression system	Actuate releasing solenoids	Pressurize graphics system	Shutdown process #1	Shutdown process #2	Shutdown process #3	Actuate exterior strobe at l.d. response point							
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG		
1	Manual fire alarm boxes – 1st floor	●	●				●			●			●	●			●								●				●				●	1	
2	Manual fire alarm boxes – 2nd floor	●	●					●			●		●	●			●								●				●				●	2	
3	Manual fire alarm boxes – 3rd floor	●	●						●			●		●			●								●				●				●	3	
4	Smoke detectors – 1st floor	●	●				●			●			●	●			●	●			●				●			●					●	4	
5	Smoke detectors – 3rd floor	●	●					●			●		●	●			●	●				●			●			●					●	5	
6	Smoke detectors – 1st floor	●	●						●			●		●	●			●	●				●			●		●						●	6
7	Smoke detectors – 1st floor elev. lobby	●	●				●			●			●	●			●		●					●			●		●					●	7
8	2nd floor computer rm. smoke det.-zone 1	●	●					●			●		●	●			●	●						●		●		●						●	8
9	2nd floor computer rm. smoke det.-zone 2	●	●						●		●		●	●			●	●						●			●		●					●	9
10	In-duct smoke detector – supply fan 1	●	●				●						●	●			●							●			●		●					●	10
11	In-duct smoke detector – supply fan 2	●	●				●						●	●			●							●			●		●					●	11
12	In-duct smoke detector – 1st floor return	●	●				●						●	●			●							●			●		●					●	12
13	In-duct smoke detector – 2nd floor return	●	●					●					●	●			●							●			●		●					●	13
14	In-duct smoke detector – 3rd floor return	●	●						●				●	●			●							●			●		●					●	14
15	Heat detectors – 1st floor mech. rm.	●	●				●						●	●			●	●						●			●		●					●	15
16	Heat detectors – 2nd floor storage room	●	●					●					●	●			●	●						●			●		●					●	16
17	Heat detectors – 3rd floor janitor's closet	●	●						●				●	●			●	●						●			●		●					●	17
18	Waterflow – 1st floor	●	●				●						●	●			●	●			●				●			●		●				●	18
19	Waterflow – 2nd floor	●	●					●					●	●			●	●			●				●			●		●				●	19
20	Waterflow – 3rd floor	●	●						●				●	●			●	●						●			●		●					●	20
21	Sprinkler control valve – 1st floor			●	●								●		●												●							●	21
22	Sprinkler control valve – 2nd floor			●	●								●		●												●							●	22
23	Sprinkler control valve – 3rd floor			●	●								●		●												●							●	23
24	Fire pump running	●	●										●	●			●								●			●						●	24
25	Fire pump power failure/phase reversal			●	●								●		●												●								25
26	Fire alarm ac power failure					●	●									●																			26
27	Fire alarm system low battery					●	●									●																			27
28	Open circuit					●	●									●																			28
29	Ground fault					●	●									●																			29
30	Notification appliance circuit short					●	●									●																			30

CONSTRUCTION DOCUMENTS

780 CMR 901.7.1.4 – As-built plans.

Where changes to original shop drawings are minor, a list of as-built changes shall be permitted to be submitted where sealed and reviewed and approved by the PE or legally recognized professional performing construction control.



Department of Fire Services

FAS DESIGN



Department of Fire Services

FAS DESIGN

780 CMR 901.7.1.3 –

All fire protection systems (FPS) and FPS operation... shall be designed and specified by a qualified Registered Professional Engineer (PE) or legally recognized professional (MGL c. 112 s. 81R).

All plans shall bear the original seal and signature of the PE or legally recognized professional.



Department of Fire Services

FAS DESIGN

780 CMR 901.7.1.3 – (cont).

The PE or legally recognized professional shall be responsible for the review and certify that all shop drawings conform to the approved fire protection construction documents as submitted for the building permit and approved by the building official.



Department of Fire Services

FAS DESIGN

Neither 780 CMR nor the Board of Registration require that a PE review within his/her discipline. The Board only requires that an engineer reviews projects that he/she is competent.

Therefore, as an example, a properly registered Electrical (or HVAC, Sanitary, etc...) Engineer can stamp a fire alarm submittal. It does not have to be a Fire Protection Engineer.



Department of Fire Services

FAS DESIGN

Division of Professional Licensure licenses all
Professional Engineers and Registered Architects.

Verify all licenses are valid via:

www.mass.gov/dpl




Department of Fire Services

FAS DESIGN

Division of Professional
Licensure Complaint Form

PDF



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Consumer fact sheets will provide you with some "inside information" when engaging the services of any of the individual licensed professionals.

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SEARCH CRITERIA

Profession: Engineer
Last Name: beginning with Stenberg

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LIC. BOARD	LIC. TYPE	LIC. NUMBER	NAME	CITY/STATE	LIC. STATUS
Engineers & Land Surveyors	Mechanical Engineer	13683	ERIC R. STENBERG	YARMOUTH PORT, MA	Expired - Beyond 1 Renewal Cycle
Engineers & Land Surveyors	Mechanical Engineer	28988	JOHN T. STENBERG	FALMOUTH, ME	Expired - Beyond 1 Renewal Cycle
Engineers & Land Surveyors	Mechanical Engineer	41131	KURT A. STENBERG	PROVIDENCE, RI	License Suspended
Engineers & Land Surveyors	Mechanical Engineer	17269	MARTIN A. STENBERG	SPRINGFIELD, MA	Expired - Beyond 1 Renewal Cycle

Your search has resulted in 4 licenses

Note: If the licensee cannot be found by name and the name typically has apostrophes, spaces, hyphens or periods try doing the search again without these characters. Examples:
- If the last name is "O'Donnell", try searching for "ODonnell" or "O Donnell"
- If the last name is "McDonald", try searching for "Mc Donald"
- If the last name is "St. Helens", try searching for "StHelens" or "St Helens"

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LICENSEE


Name: KURT A. STENBERG
PROVIDENCE, RI

NEW SEARCH



LICENSEE INFORMATION

Licensing Board:	ENGINEERS & LAND SURVEYORS
License Type:	MECHANICAL ENGINEER
License Number:	41131
Status:	LICENSE SUSPENDED
Expiration Date:	6/30/2010
Issue Date:	3/25/1999
Exam Date:	
School:	BROWN UNIV



This web site displays disciplinary actions dating back to 1993.
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CASE #	FINDINGS OF CLOSED COMPLAINTS	DATE CASE CLOSED
20051004EN012	LICENSE SUSPENDED	2/5/2009
20050802EN005	LICENSE SUSPENDED	2/5/2009

NOTE:

This complaint information represents only closed complaints filed since 1993 in which disciplinary action has been taken. Open complaints are not yet fully investigated and are not included in the information presented on this Web site. If you require further information, please call the Office of Investigations (Division of Professional Licensure) at (617)727-7406.

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FAS DESIGN

Legally Recognized Professional (MGL c.112 s.81R) -

“nothing in said sections shall be construed to prevent or to affect -- the practice of any other legally recognized profession including... the practice of any trade, including... the preparation of plans, specifications or shop drawings by any person, firm, partnership, corporation or association practicing any such trade, *for work to be installed or being installed by the same* person, firm, partnership, corporation or association preparing such plans, specifications or shop drawings.”

FAS DESIGN

DESIGN APPROVAL

PE Design & Shop

- PE seal (design PE)

PE#1 Design/PE #2 Shop

- PE#2 seal (contractor PE)
- PE#1 approval stamp
(design PE)

* Check licenses



Department of Fire Services

FAS DESIGN

DESIGN APPROVAL

PE Design & 81R Shop

- Contractor #, info,
81R claim
- PE approval stamp
(design PE)

81R Design & Shop

- (Build-Design)
- Contractor #, info,
81R Claim



Department of Fire Services

FAS INSTALLATION

Division of Professional Licensure licenses all of the following:

- Electrical businesses.
- Fire and security business.
- Electricians.
- Fire alarm and security installers.

Verify all licenses are valid via:

www.mass.gov/dpl



Department of Fire Services

CONSTRUCTION CONTROL



Department of Fire Services

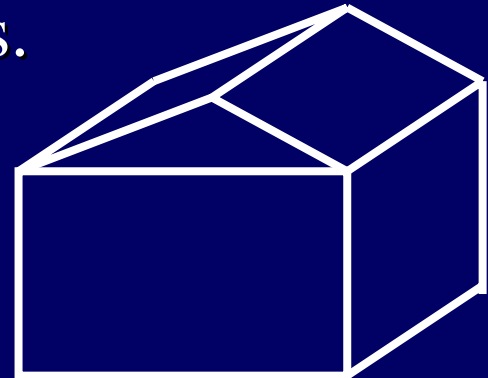
CONSTRUCTION CONTROL

780 CMR 116.1 – Architectural or professional engineering services (construction control) are required for any building containing 35,000 ft³ or more of enclosed space.

This volume is measured to the exterior surfaces of walls and roofs and to the top of a ground support floor... For additions to existing buildings, the volume of enclosed space shall include the entire existing building and all proposed additions.



Department of Fire Services



CONSTRUCTION CONTROL

Division of Professional Licensure licenses all
Professional Engineers and Registered Architects.

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Department of Fire Services

FAS INSTALLATION



Department of Fire Services

FAS INSTALLATION

780 CMR 901.7.3 – FPS Installation.

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



Department of Fire Services

FAS INSTALLATION

Division of Professional Licensure licenses all of the following:

- Electrical businesses.
- Fire and security business.
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- Fire alarm and security installers.

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Department of Fire Services

FAS INSTALLATION

527 CMR 1.06(2) and 527 CMR 10.03(15) -

Requires an installation permit from the head of the fd for the installation of any fire protection equipment.

- Permit issued by FD to Fire Alarm Contractor *prior* to work.
- FP-6 based on MGL Ch. 148 S. 10A
- Review time???



Department of Fire Services

The Commonwealth of Massachusetts
Department of Fire Services - Office of the State Fire Marshal
P.O. Box 1025, State Road, New, MA 01775

APPLICATION FOR PERMIT

City or Town _____
Date _____

DIG SAFE NUMBER
Start _____

In accordance with the provisions of M.G.L. Chapter 148, as provided in Section _____ application is hereby made by _____
(Full name of person, firm or corporation)

Address _____
(Street or P.O. Box) (City or Town)

For permission to (state clearly purpose for which permit is requested) _____

Name of competent operator (if Applicable) _____ Cert. No. _____

Date issued/rejected _____ By _____
(Signature of Applicant)

Date of expiration _____ Fee _____ \$ Paid _____ Due _____

The Commonwealth of Massachusetts
Department of Fire Services - Office of the State Fire Marshal
P.O. Box 1025, State Road, New, MA 01775

PERMIT

City or Town _____
Date _____

DIG SAFE NUMBER
Start Date _____

Permit Number (if applicable) _____

In accordance with the provisions of M.G.L. Chapter 148, as provided in _____ this permit is granted to _____
(Full name of person, firm or corporation)

for _____

Restrictions: _____
at _____
(Give location by street and no., or describe in such manner as to provide adequate identification of location)

Fee Paid \$ _____ This Permit will expire on _____

Signature of Official Granting Permit _____ Title _____

➡ This permit must be conspicuously posted upon the premises ⬅

REVIEW TIME



Department of Fire Services

REVIEW TIME

780 CMR 110.8 -

- Up to 10 Working days.
- Can be up to 30 Calendar days (Building Official must have given extensions).
- Automatic approval if no disapproval given on time.

The Head of the FD disapproves the submittal, he/she must cite 780 CMR sections of non-compliance.

VIOLATIONS

MGL Chapter 148 Section 28A:

The head of the FD or any person designated by him who, in the performance of his official duties, observes any condition which he believes to be a violation of any provision of the state building code or any amendments thereto, shall report the same to the authority charged with the enforcement of such provision.

527 CMR 1.03(2)

Whenever an inspector from any agency or department observes an apparent or actual violation of some provision of some law, ordinance, code or by-law of the jurisdiction, not within the inspector's authority to enforce, the inspector shall report the findings to the code official having jurisdiction.

BUILDING PERMIT

780 CMR 113.2 - Compliance with Code.

The building permit shall be a license to proceed with the work and shall not be construed as authority to violate, cancel or set aside any of the provisions of 780 CMR or any other law or regulation, except as specifically stipulated by modification or legally granted variation as described in the application.



Department of Fire Services

CONTACTS

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Stow MA 01775
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(978)567-3376

South/Along Mass Pike: Jacob.Nunnemacher@state.ma.us
(978)567-3377

