

Monitoring of Automatic Sprinkler Systems

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In the Beginning

Prior to 1990:

An approved audible sprinkler flow alarm shall be provided on the exterior of the building in an approved location.

Uniform Fire Code

- A code change was submitted in January 1990.

Uniform Fire Code

Sec 3803. (a) Supervision. Automatic sprinkler systems shall be supervised by ... (**Balance of paragraph to remain unchanged**)

(b) Alarm Devices. An approved audible alarm device shall be provided on the exterior of the building in an approved location.

EXCEPTION: Systems supervised by an approved central, proprietary or remote station service

Within two minutes of any flow of the sprinkler system shall cause activation of the exterior alarm device and initiate an approved interior fire alarm signal

Uniform Fire Code

- It was rejected.
- A revision was submitted in September 1990.

Uniform Fire Code

Sec 3803(b) of the proposal. Revise as follows:

(b) Alarm Devices: An approved audible sprinkler alarm device shall be provided on the exterior of the building in an approved location. Approved audible alarm devices shall be provided in the interior of the building in areas or locations as determined by the building official. Actuation of the alarm device by the automatic sprinkler system shall be set forth in U.B.C. Standard No. 38-1.

Remove the exception.

Uniform Fire Code

- This proposal was disapproved as well.
- In February 1991 a further revision was submitted.

Uniform Fire Code

Sec 3803. Revise as follows:

Sec 3803. (a) Supervision. All valves controlling the water supply for automatic sprinkler...

(Balance of paragraph to remain unchanged.)

(b) Alarms. An approved audible sprinkler flow alarm shall be provided on the exterior of the building in an approved location. An approved audible sprinkler flow alarm to alert the occupants shall be provided in the interior of the building in areas or locations approved by the building official. Actuation of the alarm shall be as set forth in U.B.C. Standard No. 38-1.

Uniform Fire Code

- During the floor debate in Austin Texas, a floor modification was offered.

Uniform Fire Code

3803

Sprinkler Monitors and Alarms

Section 3803. (a) When required. All valves controlling the water supply for automatic sprinkler systems and water-flow switches on all sprinkler systems shall be electrically monitored when the number of sprinklers are:

Twenty or more in Group I, Division 1 Occupancies

One hundred or more in all other occupancies

Valve monitoring and water-flow alarm and trouble signals shall be distinctly different and shall be automatically transmitted to an approved central station, remote station or proprietary monitoring station as defined by national standards.

2001 California Fire Code

1003.3 Sprinkler System Monitoring and Alarms.

1003.3.1 Where required. All valves controlling the water supply for automatic sprinkler systems and water-flow switches on all sprinkler systems shall be electrically monitored for integrity where the number of sprinklers is:

Twenty or more in Group I, Divisions 1.1 and 1.2 Occupancies.

One hundred or more in all other occupancies.

Valve monitoring and water-flow alarm and trouble signals shall be distinctly different and shall be automatically transmitted to an approved central station, remote station or proprietary monitoring station as defined *[For SFM]NFPA 72 as amended in Article 91* or, when approved shall sound an audible signal at a constantly attended location.

EXCEPTION: Underground key or hub valves in roadway boxes provided by the municipality or public utility need not be monitored.

2001 California Fire Code

1003.3.2 Alarms. An approved audible sprinkler flow alarm shall be provided on the exterior of the building in an approved location. A single approved audible sprinkler flow alarm shall be provided in the interior of the building in a normally occupied location. Actuation of the alarm shall be as set forth in the Fire Code (See Section 9003)

EXCEPTION: The separate interior alarm is not required when the sprinkler water flow switch activated the building fire alarm system notification appliances.

IFCI Formal Interpretation

The IFCI issued a formal interpretation regarding 1003.3 for the 1994 and 1997 Uniform Fire Code. Visual annunciation devices are not required by the UFC when only monitoring of a fire sprinkler system is required.

This interpretation also stated:

- Annunciation of a fire sprinkler flow alarm is not required to be throughout the protected premise.
- The NFPA 72 required smoke detector above the monitoring control panel does not then constitute a “fire alarm system,” with full audible and visual annunciation throughout the protected premise.
- The NFPA 72 required manual fire alarm pull station at the monitoring control panel does not then constitute a “fire alarm system,” with full audible and visual annunciation throughout the protected premise.

IFCI Formal Interpretation

The intent of Section 1003.3.2 (UBC 904.3.2) is simply to require a sprinkler flow alarm such as a water motor gong located at the exterior and single alarm signaling device within the interior of the building at a normally attended location such as a receptionist desk.

It was never the intention to have this section require visual and audible notification throughout the building. This section was placed in the code with the intention of increasing the likelihood that an occupant would call the fire department. It was not the intention to provide the alarm to initiate evacuation.

When a sprinkler system is required to be monitored per Section 1003.3.1 (UBC 904.3.1), the water flow alarm required by Section 1003.3.2 (UBC 904.3.2) was not intended to require audible and visual notification throughout the building. Those sections are independent of one another.

California State Fire Marshal Code Interpretation 06-053
CBC 904.3.1 (2001) and CMC 609 (2001)

The following questions pertain to where a designer/owner chooses to utilize a fire alarm panel to comply with the requirements of the Fire Code/Building Code specific to fire sprinkler monitoring.

Question 1: Where a fire sprinkler monitoring system is achieved by the use of a fire alarm panel are the requirements of CBC Section 1114(B).2.4 (which provides for visual warning devices for the hearing impaired) applicable?

No. CBC Section 1114(B). 2.4 requires a means of warning the hearing impaired when a NFPA 72 compliant fire alarm system is required. CBC Section 904.3.2 and CFC Section 1003.3.2 only require an approved audible sprinkler flow alarm on the exterior and an approved audible flow alarm in the interior of the building at a normally occupied location. It is not the intent of either code section to require the installation of an NFPA 72 Fire Alarm System with occupant notification throughout (See SFM interpretation 01-005)

California State Fire Marshal Code Interpretation 06-053
CBC 904.3.1 (2001) and CMC 609 (2001)

Question 2: Where a fire alarm control unit is provided for sprinkler monitoring only, are the smoke detectors installed for HVAC shut-down per CMC, Section 609, required to be connected to this designated sprinkler monitoring panel?

No.

California State Fire Marshal Code Interpretation 01-004
Section 904.3 CBC (1998) and Section 1007.3.3.3.4 CFC
(1998)

When installing an automatic fire sprinkler monitoring system, is Section 1007.3.3.4 of the California Fire Code (which requires the installation of strobes and horns) impacted by Section 904.3 of the California Building Code?

No. Section 904.3.2 of the California Building Code only requires an approved audible sprinkler flow alarm in the interior of the building at a normally occupied location. It is not the intent of Section 904 to require the installation of a fire alarm system in a building where not otherwise required.

2007 California Fire Code

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 water-flow switches on all sprinkler systems shall be electrically supervised.

Exceptions:

- Automatic sprinkler systems protecting one- and two-family dwellings.
- **Limited area systems serving fewer than 20 sprinklers.**
- 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.
- Jockey pump control valves that are sealed or locked in the open position.
- Control valves to commercial kitchen hoods, paint spray booths or dip tanks that are sealed or locked in the open position.
- Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.
- Trim valves to pressure switches in dry, preaction and deluge sprinkler systems that are sealed or locked in the open position.

2007 California Fire Code

903.4.1 Signals. Alarm, supervisory and trouble signals shall be distinctly different and shall be automatically transmitted to an approved central station, remote supervising station or proprietary supervising station as defined in NFPA 72 or, when approved by the fire code official, shall sound an audible signal at a constantly attended location.

Exceptions:

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

2007 California Fire Code

903.4.2 Alarms. Approved audible devices shall be connected to every automatic sprinkler system. Such sprinkler water-flow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. **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.

2007 California Fire Code

907.2 Where required – new buildings and structures. An approved manual, automatic or manual and automatic 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 907.10, unless other requirements are provided by another section of this code. Where automatic sprinkler protection is installed in accordance with Section 903.3.1.1 or 903.3.1.2 is provided and connected to the building fire alarm system, automatic heat detection required by this section shall not be required.

The automatic fire detectors shall be smoke detectors. Where ambient conditions prohibit installation of automatic smoke detection, other automatic fire detection shall be allowed *where approved*.

A minimum of one fire alarm box shall be installed for each fire alarm system at a location approved by the enforcing agency.

Exception: *Fire alarm systems dedicated to elevator recall control, supervisory service and fire sprinkler monitoring only.*

NFPA 72®
National Fire Alarm Code®
2002 Edition

3.3.67 Fire Alarm System. A system or portion of a combination system that consists of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices and to initiate the appropriate response to those signals.

NFPA 72®
National Fire Alarm Code®
2002 Edition

3.3.39 Control Unit. A system component that monitors inputs and controls outputs through various types of circuits.

NFPA 72®
National Fire Alarm Code®
2007 Edition

3.3.64.2.1 *Dedicated Function Fire Alarm Control Unit.* A protected premises fire alarm control unit which is intended to provide operation of a specifically identified fire safety function, such as **sprinkler alarm** and supervisory control unit or an elevator recall control and supervisory control unit **(SIG-PRO)**

3.3.67.5.2 *Dedicated Function Fire Alarm System.* A protected premises fire alarm system installed specifically to perform fire safety function(s) where a building fire alarm system is not required. **(SIG-PRO)**

NFPA 72®
National Fire Alarm Code®
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6.3.3.2* Dedicated Function Fire Alarm Systems.

A.6.3.3.2 Examples of dedicated function fire alarm systems would include an elevator recall control and supervisory control unit as addressed in 6.16.3.2, or **a system used specifically to monitor sprinkler waterflow and supervisory functions.**

6.3.3.2.1 In facilities without a building fire alarm system, a dedicated function fire alarm system shall be permitted and shall not be required to include other functions or features of a building fire alarm system.

6.3.3.2.2 When a dedicated function fire alarm system exists and a building fire alarm system is subsequently installed, the system shall be interconnected and comply with section 6.8.2. (*Fire Alarm Control Units*)

Conclusions

- There is no requirement for an interior notification appliance.
- If there are no other requirements for a fire alarm system within the occupancy, other devices such as duct detectors are not required to be interconnected.
- NFPA 72® 2007 Edition has provisions for a Dedicated Function Fire Alarm System which includes sprinkler alarm and supervisory monitoring.
- The Dedicated Function Fire Alarm System is not required to meet the requirements for a building fire alarm system.
- This would include the smoke detector over the control and a manual means to actuate the system.

Thank You

Are there any questions?