



Kerrville Fire Marshal

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Section 4

Monitoring of Fire Alarm/Fire Sprinkler System

These guidelines are to be followed when a business, facility, or organization proposes to install or modify a fire sprinkler/fire alarm monitoring system within the City of Kerrville. These guidelines are not to be interpreted as containing all data required for proper design, installation, or approval.

All monitoring system for the purposes of these guidelines and any other guidelines or requirements of the Fire Marshal shall conform to the *International Fire Code* as adopted and amended by the City of Kerrville, NFPA 13 and NFPA 72 where applicable.

This guide does not replace, nor supersede any adopted codes and/or ordinances adopted by the City of Kerrville, or determinations and positions of the Fire Chief or Fire Marshal.

General Requirements

1. All valves controlling the water supply for automatic sprinkler systems, pumps, tanks, water levels and temperatures, critical air pressures, and water-flow switches except for fire department hose connection valves on all sprinkler systems shall be electronically supervised.
2. Backflow devices located in exterior vaults with locking vault lids are allowed to be chained in the open position with lock keys placed in the KNOX Box, otherwise electronic supervisions is required.
3. Sprinkler and standpipe system water-flow detectors shall be provided for each floor tap to the sprinkler system and shall cause an alarm upon detection of water flow for more than 90 seconds.
4. Dry systems and manual dry standpipe systems shall be supervised with a minimum of 10 psig and a maximum of 40-psig air pressure with a high/low alarm.
5. 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.
6. An approved, audible/visual device shall be connected to every automatic sprinkler monitoring system shall be provided in the interior of the building being served.
7. For buildings with multiple tenants, one audible/visible device shall be provided in each tenant space.
8. An audible and visible notification device shall be provided on the exterior of the building and located adjacent to the fire sprinkler riser room. The notification device shall operate on a water flow alarm only and shall continue to flash after the FACP panel is silenced. The notification device shall be wired from the fire alarm control panel as a latching circuit.
9. The alarm device required on the exterior of the building shall be a weatherproof horn/strobe notification appliance with a minimum 75-candela strobe rating, installed as close as practicable to the sprinkler riser room.
10. An approved manual device shall be located near the fire sprinkler riser.
11. Water flow alarms shall be programmed as latching and shall continue to operate after the FACP is silenced.
12. The time delay feature on the water flow switches must be set to a delay of 30-90 seconds.
13. The notification device is not permitted to be wired from the water flow switch, powered from 120 VAC, or provided on an unsupervised circuit.
14. Duct detectors shall alarm supervisory only.
15. Supervisory signals shall be transmitted to the monitoring company.

16. Fire pumps shall be monitored for "loss of power", "phase reversal," and "pump running" conditions on distinct circuits.
17. All fire alarm equipment shall be listed for its intended purpose.
18. **Conventional or zone fire alarm control panels shall not be permitted. Exception.** Conventional or zone fire alarm control panels shall be permitted if they function in the capacity of a slave panel in a data loop, with each device on a separate zone provided with monitor modules monitored by the main addressable fire alarm control panel with all devices addressed with device designation and location available at the main fire alarm control panel. Conventional or zone fire alarm control panels, utilized in the capacity above, shall also be capable of performing the operational requirements, as listed below, for the exterior horn/strobe, if monitoring a sprinkler system
19. The fire alarm control panel shall be listed, compatible with all devices, and capable of delivering all required signals.
20. All alarm systems, new or replacement serving 20 or more alarm actuating devices shall be addressable systems.
21. Alarm systems serving more than 40 smoke detectors or more than 100 total alarm-activating devices shall be analog intelligent addressable fire detection systems.
22. All fire alarm systems shall be installed in such a manner that a failure of any single initiating device or single open in an initiating circuit conductor will not interfere with the normal operation of other such devices.
 - a. All initiating device circuit and signaling line circuit conductors shall be Class "A" wired with a minimum of 12 inches separation between supply and return circuit conductors where installed vertically and 48 inches where installed horizontally.
 1. IDC – Class "A" Style D
 2. SLC - Class "A" Style 6
 3. NAC - Class "B" Style Y
 - b. The IDC from an addressable device used to monitor the status of a suppression system may be wired Class B, Style B provided the distance from the addressable device is within 10-feet of the suppression system device
23. Systems shall be resettable without any special knowledge or the use of an access code.
24. The notification devices shall be wired from the fire alarm control panel as a dedicated latching circuit.
25. The notification device is not permitted to be wired from the water flow switch, powered from 120 VAC, operated by a control relay or provided on an unsupervised circuit.
26. All alarms are required to be transmitted to the approved supervising station monitoring company with the device(s) designation and location, or addressable device identification. This commonly is referred to as addressable. (i.e., a water flow device must be listed as water flow (multiple sprinkler risers shall be differentiated), smoke detector must be listed as a smoke detector third floor room 116, pull station as pull station main lobby) Alarms shall not be permitted to be transmitted as a "General Alarm" or "Zone" condition. This information must be in turn, transmitted to the Kerrville 911 Dispatch Center, with correct designation. This is commonly referred to as CONTACT ID.

Submittal Requirements

27. Plans and specifications/cut sheets shall be submitted in PDF Format into the online platform. A second set of plans shall be submitted on paper at the request of AHJ if needed. Plans shall contain sufficient detail to enable the plan reviewer to accomplish a complete review.
28. Each submittal shall have a:
 - a. Kerrville Fire Marshal Fire Protection System Permit for Fire Alarm System
 - b. A copy of State of Texas Fire Alarm APS license is required for the designing contractor
 - c. A copy of liability insurance with the City of Kerrville listed as the "Certificate Holder".
 - d. If System is designed by a PE: A State of Texas Engineers stamp is required on all pages
 - e. A copy of State of Texas Fire Alarm ACR license is required for the installing company
29. The following information shall be provided on the plans:
 - a. "Wet" APS or PE signature and stamp
 - b. A title block that contains the following:

1. Location of the installation
2. Name and complete address of the business
3. Name and complete address of the installing company
4. Licensing information
5. Date
6. Drawn by
7. Building permit number
8. Authority Having Jurisdiction as the City of Kerrville
9. Designed in accordance with the International Fire Code 2018, and NFPA 72

- c. A legend that contains the following:
 1. All devices shown on plans
 2. Total number of devices of each type
 3. Symbol, device description, manufacturer, model number, and quantity for each device
- d. North arrow
- e. Floor plan. Ceiling tiles shall not be shown on the drawings
- f. Device location
- g. Device address numbers provided for addressable/analog intelligent systems
- h. Site map inset
- i. Type of device
- j. Provide a "point-to-point" wiring configuration
- k. Fire alarm control panel
- l. Announciators
- m. Show location of all fire sprinkler risers, flow switches, tamper switches, and fire pumps (if equipped)
- n. Notification devices shall indicate candela rating
- o. Heat detectors shall indicate temperature rating
- p. The notification device wiring shall be shown different from the initiating device wiring. When necessary, they shall be provided on different plan drawings
- q. The notes shall clearly indicate that the initiating circuit wiring shall be Class A
- r. Identification of the type of conduit used, if any
- s. Primary power to be a dedicated circuit
- t. The riser diagram shall include all devices as they are shown on the plans, or wired

30. Specification booklet shall contain the following:
 - a. Scope of Work
 - b. Data specifications sheets for all devices and equipment shall be provided
 - c. Listing of the system design, operation, and rest functions
 - d. Specific materials in the specification booklet are to be identified by an arrow or highlighter
 - e. Battery discharge curves
 - f. Wire specifications. Identification on the gauge and type of wire used
 - g. Sequence of Operations in matrix format
 - h. Equipment List
 - i. Contact ID/Address table
 - j. Type of primary power and secondary power (i.e. size and number of batteries to be provided)
 - k. Device mounting height diagrams
 - l. Voltage drop calculations clearly indicating each notification device and wire length
 - m. Battery calculations including Standby and Alarm
31. Each submittal shall indicate:
 - a. Pull Station near risers
 - b. Detector above panel
 - c. Location of notification devices
 - d. Identification of phone lines service to building and dialer
 - e. Dialer specs
 - f. Service type (central station, remote, or proprietary)
32. Radio Transmitter Type Systems shall:
 - a. Be Type 4 "Two-way Radio Frequency (RF) Multiplex Systems
 - b. Identify method of testing in accordance with NFPA 72

- c. Identify the redundant path and location of each receiver (must hit 2 separate towers)
- d. Provide test report showing signal strength from two separate towers

Additional Information

- 33. Plans approved by the City of Kerrville, Fire Marshal give authorization for construction and/or operation. Final approvals are subject to field verification. Any approval issued by the Fire Marshal does not release the contractor or property owner from the responsibility of full compliance with all applicable codes and ordinances relating to the construction project.
- 34. Installation, fabrication, or otherwise construction of the system is prohibited without approved plans and permit.
- 35. All installations and/or operations must concur with the approved plans. Any deviation from the approved plans requires a re-submittal to the Fire Marshal.
- 36. All fire marshal inspection forms and permits shall be kept in a permit packet on the job site until final inspection.