



Kerrville Fire Marshal

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Section 4 Fire Alarm Systems

These guidelines are to be followed when a business, facility, or organization proposes to install a fire alarm 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 fire alarm systems 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 and *NFPA 72*.

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. This section is not meant to provide requirement for fire sprinkler monitoring systems, please refer to that section of guidance.

General Requirements

1. All alarm systems, new or replacement serving 20 or more alarm actuating devices shall be addressable fire detection systems.
2. Alarm systems serving more than 40 smoke detectors or more than 100 total alarm-activating devices shall be analog intelligent addressable fire detection systems.
3. Alarm systems shall be equipped with two (2) dedicated phone lines.
4. A manual fire alarm system shall be installed in Group A occupancies having an occupant load of 300 or more persons or more than 100 persons above or below the lowest level of exit discharge. Portions of Group E occupancies occupied for assembly purposes shall be provided with a fire alarm system as required for the Group E occupancy. (*IFC*, Section 907.2.1)
5. A manual fire alarm system shall be installed in Group E educational occupancies. When automatic sprinkler systems or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system. An approved smoke detection system shall be installed in Group E day care occupancies. Unless separated by a minimum of one hundred feet (100') open space, all buildings whether portable buildings or the main building, will be considered one building for alarm occupant load consideration and interconnection of alarm systems. (*IFC*, Section 907.2.3)
6. High-rise buildings. Buildings having any floors used for human occupancy located more than 55 feet above the lowest level of fire department vehicle access shall be provided with an automatic fire alarm system and an emergency voice/alarm communications system in accordance with the *International Fire Code*, Section 907.2.12.2.
7. Carbon Monoxide Detectors are required on first floor above a parking garage of multiple story residential building or structure.
 - a. Carbon Monoxide detectors shall be installed by a factory trained and certified installation contractor.
8. Addressable/analog intelligent systems shall contain a history file of the past 100 events.
9. Manual alarm actuating devices (pull stations) shall be an approved double action type.
10. All fire alarm systems shall be designed and installed in such a manner that an operation failure of any single initiating or signaling device or an open condition in an initiating or signaling device circuit conductor shall not interfere with the normal operation of such other devices installed on the circuit.
11. Hard-wired systems shall be zoned by device type (e.g., water flow, smoke, heat, manual pull, or fixed extinguishing system) per floor with a maximum 22,500 square feet zone.

12. Duct detectors shall be provided with remote test reset devices with LED in an accessible location or have the ability to be reset from the fire alarm panel.
13. When the fire alarm control panel is not located at the main entrance, a remote annunciator shall be located at the entrance.
14. An approved audible and visible notification device shall be provided on the exterior of the building where the sprinkler room is located. The notification device shall operate on a water flow alarm only, shall be non-silenceable and shall continue to flash after the panel is silenced on the condition the alarm was a water flow alarm only. The notification device shall be wired from the fire alarm control panel as a dedicated latching circuit.
15. A mini-horn shall be placed in all bedrooms and living room of an apartment regardless of the number of units and the height or stories. This shall be tied into the water flow of the sprinkler system.
16. Approved supervised indicating control valves shall be provided at the point of connection to the riser on each floor in high-rise buildings.
17. Fire pumps shall be monitored for "loss of power", "phase reversal" and "pump running" conditions on distinct circuits. (IFC 2018 Section 913.4)
18. A UL Listed surge suppressor shall be provided for each FACP or Power Supply and shall be located within 6 ft. wire run length from each protected device.
19. Systems shall be resettable without any special knowledge or the use of an access code.
20. Any Energy Management System (EMS) panel utilized for life safety features shall be UL listed for life safety.
21. An adequate number of fire alarm notification devices shall be provided such that a minimum sound level 15 dbl above average ambient will be achieved.
22. All systems and circuits shall be supervised.
23. Primary power shall be from a dedicated circuit that is listed on the approved building electrical plans and properly labeled in the panel.
24. All fire alarm equipment shall be listed for its intended purpose.
25. The fire alarm control panel shall be listed, compatible with all devices, and capable of delivering all required signals.
26. A record of completion in accordance with *NFPA 72* verifying that the system has been installed in accordance with the approved plans and specifications shall be provided.
27. Operating, testing and maintenance instructions and record drawings ("as-builts") and equipment specifications shall be provided at an approved location.

Mid Rise Residential Building

28. For residential structures, three or more stories in height, but not classified as a high-rise, see *Mid-Rise Building Construction Policy* for additional requirements.

Fire Department Connection Specifications

29. See *Fire Department Connection Guidelines* for requirements.

Fire Pumps

30. See *Fire Pumps Guidelines* for requirements.

Standpipes

31. See *Standpipe Guidelines* for requirements.

Monitoring

32. See *Monitoring of Fire Alarm/Fire Sprinkler Systems* Section for requirements.

Elevators

33. See *Elevator Recall and Shunt Trip Guidelines* for additional requirements.

Submittal Requirements

34. 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.
35. 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 Engineer's stamp and signature is required on all pages
 - e. A copy of State of Texas Fire Alarm ACR license is required for the installing company
36. Plans shall be clear and legible and all sheets shall be to scale.
37. 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*, 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. Annunciators
 - m. Square footage
 - n. Location of doors
 - o. Intended use of each room
 - p. Location of all air-handling units
 - q. Show location of all fire sprinkler risers, flow switches, tamper switches, and fire pumps (if equipped)
 - r. Notification devices shall indicate candela rating
 - s. Heat detectors shall indicate temperature rating
 - t. Indicate the length of wiring between devices
 - u. The notification device wiring shall be shown different from the initiating device wiring. When necessary, they shall be provided on different plan drawings
 - v. The notes shall clearly indicate that the initiating circuit wiring shall be Class A
 - w. Identification of the type of conduit used, if any
 - x. Primary power to be a dedicated circuit
 - y. The riser diagram shall include all devices as they are shown on the plans, or wired
38. 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

Additional Information

- 39. 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.
- 40. Installation, fabrication, or otherwise construction of the system is prohibited without approved plans and permit.
- 41. 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.
- 42. All fire department inspection forms **and permits shall be kept in a permit packet on the job** site until final inspection.

Inspection Requirements

- 43. Rough Wiring/ above ceiling: All fire alarm wiring will be inspected for proper installation and penetration of any firewalls. *Fire alarm wiring shall not be tied to ceiling grid wire.*
- 44. Audible Device Test: Ensure audible notification devices provide occupant notification for all areas without strobe devices.
- 45. Visual Device Test: Ensure that all areas that do not have audible notification have visual coverage.
- 46. Initiating Device Test: Test all smoke detectors and/or fire alarm initiating devices for Alarm and/or Standby conditions.
- 47. Water flow: The water flow alarm will be tested by opening the inspectors test connection. The time delay feature on the flow switch switches must be set to a minimum delay of 90 seconds or less.
- 48. Central Station Monitoring: Alarms and/or trouble signals are required to be monitored by a UL listed Central Station. Standard response to contact the Fire Department shall be within 90 seconds.
- 49. Device Address Test: All analog or addressable system will have all devices pulled and/or activated. The print out must comply with the devices that were pulled.
- 50. Final: Final inspection.