

***San Miguel Consolidated Fire Protection District***  
2850 Via Orange Way, Spring Valley, CA 91978  
Telephone 619-670-0500 Fax 619-670-5331  
[www.smgfire.org](http://www.smgfire.org)



***Fire Alarm System Guidelines***

***for***

***New and Existing Systems***

## ***Scope***

The San Miguel Consolidated Fire Protection District (SMCFPD) has established the following requirements for the submittal of all fire alarm, monitoring and emergency warning systems being installed within the SMCFPD jurisdiction. Plans not conforming to these minimum requirements will be returned as incomplete. These guidelines apply to all new installations and to alterations to existing alarm system(s). All system(s) being installed shall comply with the most current editions of codes, standards and ordinances as adopted by the State of California and San Diego County as enforced by SMCFPD.

## ***Purpose***

To ensure consistency in SMCFPD's review of fire alarm plans. To provide information to designers and installers of fire alarm systems, in order to facilitate the design and installation of fire alarm systems that comply with current standards.

## ***Application: Codes & Standards for System Requirements***

Health and Safety Code (HSC) § 13145, California Code of Regulations (CCR), Title 19 Public Safety (T19); CCR Title 24 (T24) Part 2 (1998 California Building Code), (CBC) Part 3 (1999 California Electrical Code), Part 4 (1998 California Mechanical Code), and Part 9 (2001 California Fire Code), (CFC) and the National Fire Protection Association (NFPA) 72, National Fire Alarm Code 2002 edition as amended in Chapter 35 of the 1998 CBC. San Miguel Consolidated Fire Protection District, Ordinance 2002-02, (SMCFPD)

## ***Submittal Requirements***

1. Provide three (3) copies of plans and equipment data sheets. One (1) set of plans shall be provided on electronic media such as a CD in **PDF format**. All data sheets shall be current and complete. All plans and data sheets shall be clearly legible [CFC 1001.3]
2. ***Highlight at least one set of data sheets*** (style, type, model, amps, volts, mfg., etc) for all fire alarm equipment to be installed as part of the fire alarm or life safety system(s). [CFC 1001.3]
3. Provide current California State Fire Marshal (CSFM) listings sheets for all devices and equipment to be installed. [CFC 1001.3]
4. Plans shall be legible, scaled and shall contain fire alarm system information only. [CFC 1001.3]  
Exception:
  - Mechanical duct-smoke detector velocities, smoke/fire dampers, etc. shall be shown on plans. [CBC 713.10, CMC 608]
  - Smoke control equipment shall be shown on plans. [CBC 905]

*The following information shall be on the title sheet of the blueprints under the heading of:*

**San Miguel Consolidated Fire Protection District Required Information:**

1. The applicable codes and standards used for system design and installation are the 2001 CFC, 1998 CBC, 1998 CMC and 2002 NFPA 72.
2. The building construction type and occupancy classification in accordance with California Building Code (CBC).
3. Project location, including the full address of the facility containing the alarm system, name and phone number of the project coordinator, facility owner and system designer. [CFC 1001.3]
4. The performance class and style of each initiating device circuit (IDC), signaling-line circuit (SLC), and notification appliance circuit (NAC). [NFPA 72: 5.4.1]

*Provide the following notes verbatim in blue line on the plan:*

- A. At completion of the project, a copy of “as built” drawings shall be provided to the owner/occupant along with written operating instructions, and maintenance/testing information for the fire alarm system. [NFPA: 72: 10.6.1 CFC 1006.3.4.3]
- B. After installation and testing has been completed and witnessed by a Fire Inspector from the SMCFPD, a completed NFPA **Record of Completion/Certificate of Completion** shall be issued from the installing company and provided to the fire department and business owner. *Existing systems being modified shall have the Record of Completion/Certificate of Completion updated.* [NFPA 72: 4.5.2.1 CFC 1006.3.4.2]
- C. Submit a copy of the contractors Statement of Compliant Installation & Affidavit of Personnel Qualifications, **prior to scheduling the final inspection.**
- D. All equipment, e.g., automatic detection devices, manual pull stations, duct detectors, etc., shall be located and installed in accordance with their listing(s), and all exterior devices shall be listed for outdoor use.[ NFPA 72:4.3.1, Title 19, Chapter 1.5, Article 1, § 200]
- E. Manual pull or break glass stations shall be mounted at a height of between 42” and 48-inches to top of manual pull box from finished floor. Manual pull or break glass stations shall be located in the normal path of all exiting at every exit from every level and spaced at a distance not to exceed 200 feet. [NFPA 72: 5.12.5, CFC 1006.3.3.1]
- F. Sprinkler system water flow alarm and supervisory initiating devices and their circuits located outside of buildings shall be so designed and installed that signal (security screws may be used on all electrical fixtures in lieu of transmitting a signal). In addition, all cable used in wet/damp locations shall be listed for this use. [NFPA 72:6.8.5.10.1]

- G. Central Station Monitoring Facility (CSMF) shall be identified on the drawings including the name, address, phone number, and copy of the U.L. or F.M. listing number. [CFC 1001.3]
- H. Through penetration fire stopping for all fire rated walls, floor/ceilings and assemblies shall have an “F” or “T” rating per the CBC and standards. Fire stopping detail(s) with UL System Number shall be provided on the blueprints. All Fire Stopping shall comply with approved “F” and “T” methods. This will be field inspected. [CBC 714]

***The following information shall be provided on the blueprints:***

1. Provide a written sequence of operations, in matrix form, including the system operating sequence following actuation of any fire and life safety device. [CFC 1001.3]
2. Zoning and Annunciation shall comply with NFPA 72:4.4.5. Identify zone assignments including “addresses” for all systems. Water flow, supervisory switched, manual pull stations, heat detection, smoke detection, duct detection and system trouble, etc., require separate annunciation. [CFC 1001.3 & 1006.3.3.7]
3. Provide a copy of the installing contractor(s) identification card or provide the contractor(s) registration number, license class and expiration date in the blue-line drawings. [CFC 1001.3]
4. The installing contractor(s) company name, address, phone number, and contact person. [CFC 1001.3]
5. The fire alarm engineering or designing company name, address, phone number, and contact person shall be provided on the blueprints. [CFC 1001.3]
6. Specify if any other suppression systems are installed or are to be installed in the future, e.g., ancillary extinguishing systems, fire sprinkler systems, etc. When a facility is equipped with an alarm system, all ancillary systems shall be on separate zones and supervised at the main fire control panel (the main FACP shall annunciate a general alarm when the ancillary panel has initiated a general alarm condition). [CFC 1006.3.3.7]
7. If duct detectors are required by the CBC or by the CMC (HVAC unit or air-moving system(s) over 2,000 CFM), velocity calculations shall be provided demonstrating the devices are installed according to their listings. [CMC 608]
8. Identify all areas and rooms on the blueprints by type of use (office, restroom, storage, warehouse, etc.). [CFC 1001.3]
9. All plans shall include a materials legend that identifies each device type, identification symbol, manufacturer, model number, quantity, etc. [CFC 1001.3]
10. Provide voltage drop calculations on the plans for all notification circuits or other circuits as required by the manufacturer. Voltage drop shall not exceed a maximum of 10% using either the engineer “point to point” or OHM’s law formulas. [CFC 1001.3 & State Guidelines]
11. Provide complete building cross sections; include attic, soffit, and ceiling details. [CFC 1001.3]
12. Provide on the drawings, all fire sprinkler system test valve locations. [CFC 1001.3]

13. ***For Existing Fire Alarm System(s):*** Voltage drop calculations shall be shown on the plans (notification circuits or other circuits as required by the manufacturer), for the area of work being performed. Voltage drop calculations must be provided for all new or modified circuits. Voltage drop shall not exceed 10% maximum using either the engineering point-to-point method or OHM's law. [CFC 1001.3 & State Guidelines]
14. Provide secondary power calculations. Specify the quantities, models, amps, and watts (for standby and alarm conditions) drawn by all equipment being installed on each circuit. This information shall be included within the battery calculations. Indicate what type of secondary power supply is being provided (battery, generator, etc.). Calculations are to include standby and alarm conditions for 100% load, refer to NFPA 72.4.4.1.5, 6 for required durations. Power supply calculations for FACP, auxiliary power supplies (APS), amplifiers, etc., shall include all components to be installed within each type of equipment (initiating, notifying, signaling, supervisory modules, etc.). [Title 19-1.5; NEC 760 and CFC 1001.3]
15. ***For Existing Fire Alarm System(s):*** Secondary power calculations shall be shown on the blueprints. Specify the quantity of devices, i.e., smoke detectors, speakers, visual devices, modules, etc., being added to the system. Identify the model, amperage, and wattage (for standby and alarm conditions) for each type of equipment being installed. This information shall be included within the battery calculations. Indicate what type of secondary power supply is being provided (battery, generator, etc.). Calculations are to include standby and alarm conditions for 100% load, refer to NFPA 72.4.4.1.5, 6 for required durations. The calculation shall indicate the loads for standby and alarm conditions prior to the system modifications as well as the new calculations resulting from system modifications. Power supply calculations for FACP, auxiliary power supplies (APS), amplifiers, etc., shall include all components to be installed within each type of equipment (initiating, notifying, signaling, supervisory modules, etc.). [Title 19, Chapter 1.5; NEC 760 and CFC 1001.3]
16. Provide a single line diagram. Indicate wiring sequence, number of devices per zone or circuit and zone assignments or addresses for all devices. [CFC 1001.3]
17. For new and existing systems, provide compatibility listing sheets for all 2-wire smoke detectors, controllers, analog devices (protocol), synchronizing modules, etc. [CFC 1001.3, NFPA 72.4.4.2]
18. ***For Existing Fire Alarm System(s):*** A riser diagram shall be provided. The riser shall include the number of devices per circuit, number of circuits per module, zone assignments, addresses, and wiring sequences for the area of work. Depending on the existing fire alarm design and equipment, this riser may include other floors/areas outside the area of work as well as the entire building(s). This riser diagram shall be updated with each system modification. The objective of this requirement is to afford the plan reviewer enough information to properly evaluate the alarm design and performance for code compliance and equipment listing(s). [T19, Chapter 1.5; NFPA 72.4.4.6.1]
19. Provide a full "point to point" wiring configuration for each device and the point of connection at the panel. All IDC, SLC and NAC circuits shall be identified on these drawings. When auxiliary power supplies and/or fire control panels are being added

- to the system, a detailed “point to point” connection between this equipment is required, including relays and modules. [CFC 1001.3]
20. ***For Existing Fire Alarm System(s): Provide a full “point to point.” Only circuit zones affected by the tenant improvement work shall be identified on these drawings. When auxiliary power supplies and/or fire control panels are being added to the system, a detailed “point to point” connection between this equipment is required, including relays and modules. The ancillary devices can be typical detail “point to point.”*** [CFC 1001.3; NFPA 72 .4.4.6.1]
  21. Provide circuit amperage, and secondary power supply (battery, generator, etc.) calculations are to include standby and alarm conditions (calculations are to be performed for 100% load unless stated differently by the manufacturer). [NFPA 72.4.4.1.5, 6]
  22. Provide fire alarm primary power supply details for volts and over-current protection. [CFC 1001.3; NFPA 72.4.4.1]
  23. Provide conductors and cable schedules on the blueprint. For example, the wiring schedule shall indicate the type, manufacturer, size, insulation type, solid or stranded wire, number of strands, tinned or untinned, etc. [NFPA 72.4.4.4.4, CFC 1001.3, NEC 760]
  24. Provide raceway, conduit, back-box, J-box, pull-box, etc., schedule including types, sizes, fill factors, etc. [NFPA 72.4.4.4.4, CFC 1001.3, NEC 760]
  25. Drawings shall include details showing the installation of exterior and underground fire alarm components, transition from exterior to interior, pull stations and visual devices (include installation height), fire alarm control panel (FACP), door hold open devices, heat and smoke devices, fire sprinkler water flow and control valves (PIV, OS&Y valves). This information will be field verified. [CFC 1001.3]
  26. Provide a floor plan indicating the location of devices, end of line (EOL) devices, SLC loops and addresses, conduit and wire runs, conduit sizes, and number and size of conductors. Conduit fill shall not exceed 40% or manufacturer specifications. [CFC 1001.3 and NEC Chapter 9]
  27. All initiating zones shall be indicated as “Z-1, Z-2, Z-3, etc.,” notification circuits as “N-1, N-2, N-3, etc.,” SLC devices with the address of each device or module. The zone, circuit, and address identification shall be placed adjacent to each device referenced on the blueprints. [CFC 1001.3]
  28. Candela rating of each strobe shall be indicated adjacent to each strobe on the blueprints including the floor plan, single-line riser detail, and point-to-point detail, materials legend, etc. [CFC 1001.3]
  29. All speakers shall be identified as to the wattage that each device will be tapped at. [CFC 1001.3]
  30. When a fire alarm system (voluntary or mandated) is installed in “R1, R2, or R3” occupancies, smoke detectors within sleeping areas and corridors or areas adjacent to the sleeping area shall be installed in accordance with CBC 310.9. (If this work is to be performed by others, state so on the plans.) Smoke detectors installed within rooms designed for the hearing impaired shall be installed in accordance with the CFC 1006.2.9.1.5 [CBC 310.9]

31. When two or more alarm zones are required, they shall be divided into zones to assist in determining the fire location. Multiplex, addressable, or analog systems shall include type and location of each device. Every floor of a building shall be a separate zone. Each section of a building that is separated by area separation walls or horizontal exits shall be a separate zone, etc. [CFC 1001.3, 1006.3.3.7 and NFPA 72:4.4.6]
32. When the FACP is not located within an area that is normally occupied, a supervised remote annunciator panel, which clearly indicates all conditions (floor, pull station, water flow, etc.) shall be installed adjacent to the fire department principle point(s) of response. Verify the location of remote annunciator(s) with SMCFPD. A remote annunciator is not required when the Fire Control Panel is located at the Fire Department point of entrance or within a Central Control Station as defined in the CBC 403. [NFPA 72:1-5.7 and CFC 1006.3.3.7]
33. Provide automatic fire detection in all rooms or areas that contain central control equipment (i.e., FACP, transponders, power boosters, etc.). [NFPA 72:1-5.6]
34. Alarm systems with local notification shall include both audible and visual devices. [CFC 1006.3.3.3.4, CBC 1105.4.6, NFPA 72 Chapter 7]
35. All alarm notification signals shall be coded temporal pattern with a minimum sound level of 15 decibels above ambient noise level not to exceed 120 decibels. [CFC 1006.3.3, NFPA 72-1-5.4.7]
36. The candela rating for each individual visual device shall be identified on the plan. This can be achieved either by placing the candela rating adjacent to the devices or by creating a clear legend to differentiate the candela ratings of the devices. *When more than two visual notification appliances are located within the same room or area, such devices shall be synchronized.* [NFPA 72 Chapter 4]
37. ***Sprinkler System Monitoring and Alarms. "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, Division 1.1 and 1.2 Occupancies.
  - One hundred or more in all other occupancies.Valve monitoring, 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 NFPA 72". [SMCFPD Ordinance 2002-02, CFC 1003.3.1]
38. ***Fire sprinkler systems shall have a minimum of one exterior audible and one interior audible sprinkler flow alarm, located at a normally occupied location. Each audible sprinkler flow alarm shall have an adjacent placard stating: "SPRINKLER FLOW ALARM – WHEN ALARM SOUNDS CALL 911."*** [CFC 1003.3.2]
39. Central station facilities are required to identify, (a) type of signal, (b) condition (alarm, supervisory, etc.), (c) point of origin (address). This information shall be verified by the SMCFPD and shown on plans. [NFPA 72:8.2.6.1.1, 2&3]
40. All emergency warning systems for the usage, handling, and storage of hazardous materials shall have visual notification appliances that are blue in color. Audible devices shall be of a different tone and pattern than the fire alarm systems. All emergency alarm systems shall be supervised by an approved UL central station, remote station, or proprietary station acceptable to the SMCFPD. [CFC 8003.1.10]

41. All fire control panels shall be interconnected with all other fire alarm control panels located within the facility and function as one system. [NFPA 72:6.8.2.1, 2]
42. Contact the San Miguel Consolidated Fire Protection District at (619) 670-0500, a minimum of 24-hours before you wish to conduct the required tests. Contractors shall have all required tools, personnel, cut sheets and approved drawings on site for tests.
43. All required **NFPA Record of Completion/Certificate of Completion documents shall be provided to the fire inspector prior to signing off on a final inspection.**
44. Submit a copy of the contractors Statement of Compliant Installation & Affidavit of Personnel Qualifications, **prior to scheduling the final inspection.**