



Fire Alarm System Plans Submittal Guidelines For New and Existing Systems

The Temecula Fire Prevention Bureau (TFPB) has established the following requirements for the submittal of all fire alarms, monitoring and emergency warning system installed within the TFPB jurisdiction. Plans not conforming to these minimum requirements will be returned and must be corrected. . These guidelines apply to all new installations and to alternations to existing alarm system(s). All system(s) being installed shall comply with the codes, standards and ordinances as adopted by the State of California and the City or County as enforced by TFPB.

PURPOSE

To maintain consistency in TFPB's review of fire alarm plans and provide information to designers and installers of these systems in order to facilitate the design and installation of fire alarm systems that comply with all applicable Standards.

APPLICATION: CODES & STANDARDS FOR SYSTEM REQUIREMENTS

Health & Safety Code (HSC) Section 13145,
California Code of Regulations (CCR), Title 19 (T19);

California Code of Regulations (CCR), Title 24 (T24) Part 2 (2001 California Building Code),
CCR Part 3 (1999 California Electrical Code),
CCR Part 4 (1998 California Mechanical Code), and
CCR Part 9 (2001 California Fire Code),
(CFC) and the National Fire Protection Association (NFPA) 72, 1999 edition as amended
in Chapter 11B and 35 of the 2001 CBC.

SUBMITTAL REQUIREMENTS

1. Three copies of plans and three copies of the manufacturer's equipment data sheets must be submitted with the plans. All data sheets shall be current and complete. All plans and data sheets shall be clearly legible. [CFC 1001.3]
2. Highlight all sets 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] Fire alarm plans must also include, but are not limited to:
 - Mechanical duct-smoke detector velocities, smoke/fire dampers, etc. [CBC 713.10, CMC 608]
 - Smoke control equipment. [CBC 905]

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

Temecula Fire Prevention Required Information:

1. The applicable codes and standards used for system design and installation are the 2001 CFC, CBC, CMC and 1999 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 3-4.1]

Provide the following notes verbatim on the plans:

- A. A minimum of four inspections are required for approval of the fire alarm system:
 - a. First Inspection – Rough Wiring Inspection
 - b. Second Inspection – Device Verification Test
 - c. Third Inspection – Function Test
 - d. Fourth Inspection – Battery Standby Test and Final Approval

- B. 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. A 24-hour emergency response phone number, for the alarm company representative shall be permanently installed adjacent to the control panel. [CFC 1007.3.4.3]

- C. After installation and testing has been completed and witnessed by a Fire Inspector from the TFPB, a completed NFPA Certificate of Compliance shall be issued from the installing company to the fire department and business owner. [CFC 1007.3.4.2]

- D. All equipment, e.g. automatic detection devices, manual pull stations, duct detectors, etc, shall be located in accordance with their listing(s), and all exterior devices shall be listed for outdoor use. [CFC Article 10; NFPA 72: Title 19, Chapter 1.5, Article 1, Section 200]

- E. Manual pull or break glass stations shall be mounted at a height of 36-inches to 54-inches on center from finished floor. Manual pull or break glass stations shall be located in the normal path of every exit from every level and spaced at a distance not to exceed 200 feet. [NFPA 72 Section 5.8; CFC 1007.3.3.1]

- F. Sprinkler system water flow alarm and supervisory initiating devices and their circuits located outside of buildings shall be so designed and installed that they cannot be readily tampered with, opened, or removed, without initiating a signal. In addition, all cable used in wet/damp or underground locations shall be listed for this use. [NFPA 72-3.8.10.1]

- 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 and certificate. [NFPA 4-2.1]

- 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 an approved “F” and “T” methods. This will be field inspected. [CBC 714]

The following information shall be provided on the plans:

1. Provide a written sequence of operations, in matrix form on the plans, including the system operating sequence following actuation of any fire and life safety device. [CFC 1001.3]
2. Identify zone assignments including “addresses” for addressable system, 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 and 1007.3.3.7(a)]
3. Provide a copy of the installing contractor(s) identification card or provide the contractor(s) registration number, California Life Safety certification, license class, and expiration date in the blue-line drawings. [CFC 1001.3]
4. The installing contractor(s) company name, address, phone number, contact person. [CFC 1001.3]
5. The fire alarm engineering or designing company name, address, phone number, contact person shall be provided on the blueprints. [CFC 1001.3]
6. Specify if any other suppression systems that 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 a separate zone and be supervised at the main fire control panel (The main FACP shall annunciate all alarms generated by the ancillary panel including general alarm conditions, trouble and supervisory signals). [CFC 1001.3, 1007.3.3.7, 1007.3.3.7(a) and 1007.3.3.7.1]
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 plans by type of use and occupant load served (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, and quantities. [CFC 1001.3]
10. Provide voltage drop calculations on the plans for all notification circuits or other circuits as required by the manufacturer. Show all values used and voltage to be checked at end of line in the field. 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 including, 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 entire notification circuit. 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 72-1-5.2.6 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 CFC1001.3]
15. For Existing Fire Alarm System(s) - Secondary power calculations shall be shown on the plans. 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 72-1-5.2.6 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. New and existing systems provide compatibility listing sheets for all 2-wire smoke detectors, controllers, analog devices (protocol), synchronizing modules, etc.[CFC 1001.3, NFPA72-1-5.3]

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 assignment(s), address(es), and wiring sequence(s) 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 72-1-5.7.1]
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 Alarm Fire 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 1-5.7.1]
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 72-1-5.2.6]
22. Provide fire alarm primary power supply details for volts and over-current protection. [CFC 1001.3; NFPA 72-1-5.2.5]
23. Provide conductors and cable schedules on the plans . 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 72-1-5.5.4, CFC 1001.3; NEC 760]
24. Provide raceway, conduit, back-box, J-box, pull-box, etc. schedule including types, sizes, fill factors, etc. [NFPA 72-1-5.5.4, 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, pulls 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, and 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 manufacture 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 on the specific circuit and at the appropriate end-of-line device(s). Each address shall be placed adjacent to each device referenced on the plans. [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 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 1007.2.9.2. [CFC 1007.2.9.2; CBC 310.10]
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, horizontal exits, fire sprinkler zone(s) or smoke barrier walls shall be separate zones. [CFC 1001.3, 1007.3.3.7 and NFPA 72-1-5.7]
32. 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 of response (riser room). Verify the location of remote annunciator(s) with TFPB. [NFPA 72-1-5.7.1.1 and CFC 1007.3.3.7.1]
33. Provide automatic fire detection in all room(s) or area(s) which contain central control equipment i.e., FACP, transponders, power boosters, etc. [NFPA 72-1-5.6]
34. Any system that annunciates an emergency condition to the occupants shall provide both audible and visual devices; this includes “water flow monitoring systems.” These devices shall be located in normally occupied locations and shall also be located in the areas specified by the CBC Ch.11b and NFPA 72 as

modified by Ch. 35. Visual notification appliances are required adjacent to stairwells not inside of the stairwells when installed. [CFC 1007.3.3.3.4; CBC 1105.4.6; NFPA 72 Chapter 6]

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 1007.3.3.3; 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 visible, such devices shall be synchronized. [NFPA 72 6-4.4.1.1; Chapter 6]
37. Regardless of the number of fire sprinkler heads on an automatic fire sprinkler systems, all fire sprinkler systems shall be monitored at an approved UL central station, remote station, or proprietary station acceptable to the TFPB. All valves shall be monitored by the building FACP. [CFC 1003.3.1 & Temecula City Ordinance] These systems are required to be provided with a private mode fire alarm system with a minimum of one exterior audible and one interior audible/visible device located at a point normally occupied location. (Multiple tenant spaces shall have an interior audible/visible notification device within each tenant space). Every public restroom shall also be equipped with a single visible device. All devices shall sound a coded temporal signal. All exterior audible devices shall have placards adjacent to them reading “SPRINKLER FIRE ALARM – WHEN ALARM SOUNDS CALL 911”. [CFC 1003.3.2 & Temecula City Ordinance]
38. 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 TFPB and shown on plans. [NFPA 72-4-2.4.1]
39. All emergency warning systems for the usage, handling, and storage of hazardous, materials shall have visual notification appliance 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 U.L. central station, remote station, or proprietary station acceptable to TFPB. [CFC 8003.1.10]
40. All fire control panels shall be interconnected with all other fire alarm control panels located within the facility and function as one system. [NFPA 72-3-11]