

**Moreno Valley Fire Department
Fire Prevention Bureau**

**New and Existing Fire
Alarm & Signaling Systems
Guideline**



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New and Existing Fire Alarm & Signaling Systems

PURPOSE

Fire alarm and signaling systems are designed to provide early warning to people so losses in property and life, from fire and smoke, are limited or eliminated. The intent of this guideline is to facilitate the design, installation, and consistent review of fire alarm, signaling, and monitoring systems that comply with all applicable codes and standards.

SCOPE

The Fire Prevention Bureau has established the following requirements for the submittal of all fire alarm, monitoring, and emergency warning systems being installed within its jurisdiction. The Fire Prevention Bureau shall be notified prior to any installation or alterations of equipment or wiring. These guidelines apply to all new installations and alterations to existing alarm and signaling systems. Plans not conforming to these minimum requirements will be returned as not approved. All system installations shall comply with the current codes, standards, and ordinances as adopted by the State of California, and The Fire Prevention's jurisdiction.

CODES & STANDARDS FOR SYSTEM REQUIREMENTS

- Health & Safety Code Section 13145
- California Code of Regulations (CCR), Title 19
- CCR, Title 24, Part 2: 2016 California Building Code (CBC)
- CCR, Title 24, Part 3: 2016 California Electrical Code (CEC)
- CCR, Title 24, Part 4: 2016 California Mechanical Code (CMC)
- CCR, Title 24, Part 9: 2016 California Fire Code (CFC)
- National Fire Protection Association (NFPA) 72, 2016 edition, as amended in Chapter 80 of the 2016 CFC

SUBMITTAL REQUIREMENTS

1. GENERAL REQUIREMENTS

- A. Submit three sets of legible, scaled plans with ONE set of current and complete technical data sheets. These plans shall contain the following information and items:

- 1) Scope of work for the project, including number and type of devices added, relocated, replaced or removed. Indicate the type of system provided (i.e., monitoring, fire alarm system, etc.).
- 2) Complete address of the project (including the tract and lot numbers).
- 3) Name and phone number of the project coordinator, facility owner, and system designer. Evidence of the designer's qualifications is to be provided upon request by the Fire Prevention Bureau. (NFPA 72 10.5.1.2/10.5.1.3)
- 4) Provide a copy of the installing contractor's C-10 License or the C-10 License number and expiration date. (NFPA 72 10.5.2.2)
- 5) With the exception of some security system information and mechanical calculations, the plans shall contain only fire alarm system information or building information needed to demonstrate compliance proper design.
- 6) When a fire alarm system or component is voluntarily installed, a note shall be provided on the plans clearly indicating the building owner's intent.
- 7) Provide a copy of the MVFD fire alarm notes on the plans. Insure all the fields under Note #15 (see Page 8) are complete.

2. DATA SHEETS

- A. Highlight one set of data sheets (style, type, model, amps, volts, etc.) for all fire alarm components. This shall include cut sheets for new and existing duct detectors when the scope of work includes installing an alarm system.
- B. Provide ONE copy of current California State Fire Marshal (CSFM) listing sheets for all devices and equipment to be installed. (CFC 907.1.2)

3. SPECIFIC PLAN REQUIREMENTS

- A. Provide a scale floor plan at least 1/16"=1' showing the location of all initiating and signaling devices, control and trouble-signaling equipment, annunciators, power connectors and all egress-control devices.
- B. Identify all initiating zones and notification circuits. Each address shall be placed adjacent to each device. (CFC 907.1.2, NFPA 72 10.16)
- C. Provide the ceiling configuration, surface, and height. (NFPA 72 17.7.3.1.2)

- D. Identify zone assignments. This is also required for addressable systems. Any existing suppression system or future suppression system shall be on a separate zone. All ancillary systems shall be on a separate zone and shall be supervised by the main fire alarm control unit (FACU), which shall initiate upon general alarm. (CFC 907.6.4 and NFPA 72 10.17.5)
- E. Provide a matrix of the manufacturer, model numbers, and listing information for all equipment, devices, and materials. Include the CSFM listing numbers and the quantities of each component. (CFC 907.1.1)
- F. In matrix form, provide the sequence of operations that identifies the required action for the actuation of any fire and life safety device or ancillary device tied into the fire alarm system (i.e. special egress control, smoke control, leak detection, and HVAC duct detection). See NFPA 72 Figure A.14.6.2.4 (9) for a typical matrix layout. (CFC 907.1.1)
- G. If duct detectors are required by code, provide cut sheets demonstrating the detectors are listed for the complete range of air velocities, temperature, and humidity expected at the detector present in the duct. Duct smoke detectors shall be connected to the building's fire alarm control unit when a fire alarm system is installed. Activation of a duct smoke detector shall initiate a visible and audible supervisory signal at a constantly attended location and shall perform the intended fire safety function in accordance with this code and the California Mechanical Code. Duct smoke detectors shall not be used as a substitute for required open area detection (CFC 907.2.13.1.2, 907.3.1 and NFPA 17.7.4.3)
- If duct detectors are part of the alarm system, their activation shall initiate a shutdown of all applicable HVAC system(s) and a supervisory alarm signal to the central station. Activation of the duct detector alone shall not put the alarm system into general alarm. A remote L.E.D. shall be provided in the ceiling at the detector location. (CFC 907.3.1 Amended, NFPA 72 17.4.8)
- H. A supervised remote annunciator(s) is required if the FACU is not located in an area that the fire department would normally respond to. The annunciator shall be placed in an area that the fire department would respond to, typically the front lobby. (CFC 907.6.4.1.1)
- I. In strip malls or multi-tenant suites with individual exterior exits, the remote annunciator shall be located in the lowest numbered or lettered suite, i.e. "A" or "1". If each suite has a different address, the suite with the lowest street address shall contain the remote annunciator. (CFC 907.6.4.1.1)

- J. Specify the fire alarm device mounting heights and locations. (NFPA 72)

4. SECONDARY POWER SUPPLY

- A. Voltage drop calculations shall be on the plans. The voltage drop shall not exceed the minimum device specifications needed to meet their listing. Voltage drop calculations shall be provided for the most demanding circuit(s) in the area of work.
- B. Standby battery calculations shall be on the plans. These shall include both standby and alarm conditions. Calculations are to be performed for 100% of the load. Any security device load shall be included. The battery size shall be identified. (NFPA 72 7.4.10, NFPA 72 10.6.7.2.1 and CFC 907.1.1)
- C. Storage batteries shall be permanently marked with the month and year of manufacture, using the month/year format. The marking shall be permitted to be applied by either the battery manufacturer or the installer. (NFPA 72 10.6.10.1.1)
- D. Where the battery is not marked with the month/year by the manufacturer, the installer shall obtain the date-code and mark the battery with the month/year of battery manufacture. (NFPA 72 10.6.10.1.2)
- E. Provide a means of monitoring the batteries and charger integrity so that a battery charger failure is detected. (NFPA 72 10.6.9.1)
- F. Failure of battery charger shall result in the initiation of a trouble signal in accordance with NFPA 72 10.6.9.1.1.
- G. When auxiliary power and/or control panels are being added to an existing system, detailed "point to point" connection between this equipment and the main control panel, including relays and modules, shall be on the plans. Only circuit zones affected by this work need to be identified on the drawings.

5. AUXILIARY EQUIPMENT CONNECTIONS

- A. All new or modified automatic fire extinguishing systems (wet agent, gaseous suppression, etc.) shall be monitored by required or optional fire alarm systems in accordance with NFPA 72. (CFC 904.3.5 Amended)
- B. When an existing sprinkler monitored building requires a fire alarm or a fire detection system the existing duct detectors shall be connected to

the new fire alarm control unit for supervision. (CMC 608.1, CFC 907.3, CFC 907.3.1) New or existing smoke detectors installed in ducts shall be listed for the air velocity, temperature and humidity present in the duct.

- C. If special egress-control systems are located in the building, the alarm contractor shall provide a copy of the approved architectural plans that demonstrate compliance with all provisions of CBC 1010.1.9.7, 1010.1.9.8 and 1010.1.9.9.
- D. All card reader and egress-control devices shall be indicated on the fire alarm plans. The code may impose additional requirements such as smoke detection throughout.

6. REQUIREMENTS FOR VISUAL DEVICES IN A TENANT IMPROVEMENT

- A. When tenant improvements create a new or altered common use area within an existing building, the area of remodel shall be provided with visual warning devices installed in accordance with NFPA 72 and CFC 907.5.2.3.
- B. If an existing fire alarm system is extended or modified by the addition of more than two devices or the addition of a new circuit, and that portion of the fire alarm system serves an area of common use, then the affected area (existing or new) shall also be provided with visual warning device.
- C. In all cases, priority shall be given to the product listing criteria in determining the extent of visual warning device placement and coverage.

7. MISCELLANEOUS

- A. All emergency warning systems for 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 system. An approved UL central station, remote station, or a proprietary station approved by the MVFD shall supervise these emergency alarm systems. (CFC 5004.9 and 908)
- B. Manual fire alarm pull station covers shall be evaluated on a case by case basis and shall be subject to the approval of MVFD. If the installation is allowed the station cover shall not be equipped with a sounding device. (CFC 907.4.2.5)
- C. Minimum fire alarm audibility may be affected by the occupancy use or operations, some equipment may be required to be shut down by a relay. If this is needed to achieve minimum audibility levels, include on the sequence of operations matrix.

- D. The circuit disconnect providing power to the fire alarm unit shall only be accessible to authorized personnel, and shall be identified as "FIRE ALARM CIRCUIT".
- E. The inspection, testing, and maintenance of systems, their initiating devices, and notification appliances shall comply with the requirements of NFPA 72 Chapter 14 and conform to the manufacturer's published instructions.

8. WATERFLOW/MONITORING SYSTEMS

- A. The Dedicated Function Fire Control Unit shall be placed in an area that the fire department would respond to, typically the front lobby or within an electrical, mechanical, service, or riser room which can be accessed from the exterior of the building and is identified by a sign indicating "Fire Alarm Control Unit". In strip malls or multi-tenant suites with individual exterior exits, the FACU shall be located in the lowest numbered or lettered suite, i.e. "A" or "1". If each suite has a different address, the suite with the lowest street address shall contain the FACU.

An annunciator panel shall be required if the FACU does not provide specific alarm conditions on site. The annunciator location shall comply with the above mentioned requirements for the FACP.

Provide the following notes on the plan, verbatim, under the heading "MORENO VALLEY FIRE DEPARTMENT NOTES":

1. The applicable codes and standards are the 2016 California Fire Code (CFC), 2016 California Building Code (CBC) and NFPA 72.
2. The system shall be pre-tested prior to the Fire Prevention Bureau inspection to determine the system is properly installed and functions in accordance with the approved plans and the manufacturer's installation and maintenance manual. NFPA 72 14.4.1.1
3. Upon completion, a copy of "as built" drawings and written operation and maintenance instructions shall be provided to the owner/occupant.
4. A 24-hour emergency response phone number shall be permanently posted adjacent to the control panel.
5. The installing contractor shall provide an MVFD Record of Completion to the inspector and to the business owner following completion of alarm testing as witnessed by MVFD. CFC 907.8.2
6. Automatic fire sprinkler water flow alarms, supervisory initiating devices, and their circuits, shall be designed and installed so that they cannot be readily tampered with, opened, or removed without initiating a signal.
7. Through penetration fire stopping for all fire walls, floor/ceilings, and assemblies shall have an "F" or "T" rating per the CBC and standards. Installation of fire stopping shall comply with approved methods.
8. The circuit disconnect breaker providing power to the fire alarm unit shall only be accessible to authorized personnel, and shall be identified as "FIRE ALARM CIRCUIT".
9. All fire control units shall be interconnected with all other fire alarm control units located within the facility. NFPA 72: 23.8.2.1, 23.8.2.2 and 23.8.2.3
10. All audible alarm notification signals shall be a three pulse temporal pattern. CFC 907.6.2.1.3
11. Audible alarm sound level shall be the minimum specified by CFC 907.6.2.1.
12. When more than two visual notification appliances are located within the same room or area, they shall be synchronized. NFPA 72: 18.5.5.4.2
13. All fire sprinkler systems shall be monitored except those noted in CFC 903.4.1.
14. Where a building fire alarm system is installed, automatic fire-extinguishing systems shall be monitored by the building fire alarm or monitoring system in accordance with NFPA 72. (CFC 904.3.5 as amended)

15. The following must be completed:

The Central Station Monitoring Facility (CSMF) is: _____

The CSMF's address is: _____

The CSMF's phone number is: _____

Per the CBC, the occupancy classification is _____.

The square footage of the building is _____ and the square footage of the affected area is _____.

The building and/or room maximum occupant load is _____.