



STANDARD 510 FIRE ALARMS

The information contained in this standard is provided solely for the convenience of the reader and was being enforced by the Ventura County Fire Protection District at the time of its publication. The District reserves the right to make changes and improvements to this standard as and when required by law, or otherwise, at any time. The District's current standards will be posted and made available for downloading by the public at the following web site: www.vcfd.org.

Please note that the District assumes no liability for any damages incurred directly or indirectly as a result of any errors, omissions, or discrepancies between this standard and any applicable law. It is the sole responsibility of the person or persons conducting any work pursuant to this standard to ensure their work complies with any and all applicable codes, ordinances, and regulations.

Supersedes: VCFPD Standard 14.7.3

CHAPTER 1 – ADMINISTRATION

1.1 Purpose. This standard is prepared for the use and guidance of those charged with designing, installing, testing, and maintaining Fire Alarm Systems and associated appurtenances.

1.2 Scope. This standard applies to the design and installation of automatic and manual Fire Alarm Systems and systems whose sole purpose is to provide fire sprinkler monitoring within the jurisdiction of the Ventura County Fire Protection District (VCFPD). This standard shall be used in conjunction with the current adopted edition of the Ventura County Fire Code (VCFC), the California Building Code (CBC), NFPA Standard 72, and other applicable standards.

1.3 Applicability. This standard shall apply to all Fire Alarm Systems installed within the jurisdictional boundaries of the Ventura County Fire Protection District.

1.3.1 General. All individuals and companies who intend to engage in the installation or alteration of Fire Alarm Systems are subject to the requirements of this standard.

1.3.2 Design and Installation. The design and installation of a Fire Alarm System shall be completed as follows:

- (1) Plans shall be designed by an individual who holds a current State of California C-10 Electrical License or by a qualified person as defined in NFPA 72.
- (2) Fire alarms shall be installed by an individual who holds a current State of California C-10 Electrical License.
- (3) Contractors may only design systems that their firm has a contract to install.

1.4 Permits. A construction permit is required for the installation of or modification to a Fire Alarm System as required by the VCFC.

1.4.1 Construction permits shall automatically become invalid unless an inspection authorized by such permit is commenced within 12-months of being issued. An inspection shall be required at a minimum of every 12-months thereafter for the permit to remain valid.

1.4.2 Construction permits that have become invalid may be re-issued if all the following conditions are met:

- (1) The permit was issued or an inspection has occurred within the previous 12-months.
- (2) No changes have been made or will be made in the original construction documents.
- (3) Previously approved construction documents shall be submitted to the Fire District.
- (4) Fees equal to one-half the amount for a new permit have been paid.

CHAPTER 2 – DEFINITIONS

Fire Alarm System. A system consisting of components and circuits arranged to monitor and annunciate the status of fire alarm or supervisory signal-initiating devices and to initiate the appropriate response to those signals.

Dedicated Function Fire Alarm System. A protected premises Fire Alarm System installed specifically to perform fire safety function(s) where a building Fire Alarm System is not required per the VCFC.

Dwelling Unit. One or more rooms arranged for complete, independent housekeeping purposes with space for eating, living, and sleeping; facilities for cooking; and provisions for sanitation.

Fire Sprinkler Monitoring System. A system designed for the sole purpose of monitoring an automatic fire sprinkler system as described in the VCFC.

Ventura County Fire Code. The current adopted VCFPD Ordinance consisting or the current adopted edition of the California Fire Code; portions of the current adopted edition of the International Fire Code; and the VCFPD amendments thereto.

CHAPTER 3 – FIRE SPRINKLER MONITORING SYSTEMS

3.1 General. All commercial automatic fire sprinkler systems with 20 or more sprinklers shall be monitored by a UL listed central station.

3.2 Minimum Requirements. Fire alarm systems dedicated to fire sprinkler monitoring only shall be provided with the following minimum devices:

3.2.1 Fire Alarm Control Unit. Underwriters Laboratory (UL) and California State Fire Marshal (CSFM) listed control panel. (Fire alarm wiring only)

3.2.2 Annunciator Panel. An annunciator panel may be required in an approved remote location (building lobbies, reception areas, etc.) when deemed necessary.

3.2.3 Smoke Detector. Smoke detection shall be provided at the location of each fire alarm control unit.

3.2.4 Waterflow Switch. All new waterflow switches shall be electrically supervised.

3.2.5 Tamper Switch. All new valves controlling the water supply shall have a tamper switch that is electrically supervised.

3.2.6 Audible Device. One exterior approved audible device shall be connected to every automatic fire sprinkler system in an approved location. The fire sprinkler bell shall meet this requirement and no interior devices shall be required unless a building Fire Alarm System is required by the VCFC.

3.3 Duct Detectors. Duct detectors shall be connected to the Fire Sprinkler Monitoring System.

CHAPTER 4 – GROUP R-2 OCCUPANCIES

4.1 Visible Notification. All Dwelling Units in Group R-2 occupancies required to have a Fire Alarm System in accordance with Section 907 of the VCFC shall be provided with the capability to support visible alarm notification appliances in accordance with NFPA 72.

4.2 Code Interpretation. The interpretation by VCFPD is the Fire Alarm System shall be designed to accommodate any future installation of visual appliances in any units. The intent of the code is having the flexibility to convert any unit in Group R-2 occupancies to a hearing-impaired unit. Although the code is not clear at what level the system should be designed for future expansion, the flexibility to convert any Dwelling Unit requires all system components to be installed except for the visual appliance (i.e. junction boxes, conduit, wire sized to support expansion of the system, and power supplies). Power supplies are permitted to be provided or expandable.

4.3 Plans. One separate set of plans shall be submitted upon initial submittal for Group R-2 occupancies detailing complete future expansion.

CHAPTER 5 – EXISTING FIRE ALARM SYSTEMS

5.1 General. Alterations to an existing Fire Alarm System shall be approved by the VCFPD.

5.2 Fire Alarm Control Panels. Any replacement or upgrade of the fire alarm control panel in an existing Fire Alarm System shall be approved.

5.3 Communication Methods. Any proposed changes to the communication methods of an existing Fire Alarm System shall be approved.

5.4 Plans. Plans shall reflect an accurate scope of work, show existing number of devices, proposed number of new devices, and applicable requirements stated in Chapter 4 of this standard.

5.5 Inspections. A minimum of 50% of all existing devices shall be randomly tested. All new devices shall be tested.

CHAPTER 6 – PLANS SUBMITTAL

6.1 General. Plans and specifications shall be submitted to the VCFPD's Fire Prevention Bureau as indicated elsewhere in this document.

6.2 Building Permits. Obtain any applicable permits from the appropriate Building and Safety Department to install the fire sprinkler system.

6.3 Plans and Specifications Submittal. At the time of building permit application for new structures designed to accommodate a fire alarm system, or for any installation of or modification to an existing fire alarm system, plans and specifications shall be submitted to review and approval. In addition to the information required by the appropriate standard, the submittal shall include the information specified herein. Once approved, a copy of the approved plan shall be maintained on the premises.

6.4 Submittal Requirements. Submit a minimum of one set of digital plans, one copy of the manufacturer's data sheets, CSFM listings on all system components and devices, UL certificate for a central station monitoring company, Fire Prevention Bureau fire permit application form and the appropriate fees to the VCFPD's Fire Prevention Bureau located at 2400 Conejo Spectrum St, Thousand Oaks, CA 91320. Fire Prevention counter hours are Monday through Friday 7:30a.m. to 5:00 p.m.

6.5 Fees. Appropriate fees can be found in the VCFPD's Fee Schedule at vcfd.org or by calling the Fire Prevention Bureau at (805) 389-9738. Fees can be paid by check/money order, or by credit card. Plan check fees include the original plan check and one re-check. Please ensure that all corrections are made prior to re-submission to avoid additional fees. All fees shall be paid at the time of plan submittal.

6.6 Plan Approval. Plans will be checked and if approved, will be stamped "**Acceptable**", signed and dated. The VCFPD will retain a digital copy of the plans.

6.7 Record Number. The VCFPD has instituted the use of a "**Record Number**" for tracking all projects submitted for review. To provide faster customer service, please refer to your Record Number when you contact this Department. Your Record Number will also be listed on the Fire District approved plans.

6.8 Field Changes. Field changes may require re-submittal of plans along with additional plan check fees.

CHAPTER 7 – PLANS SPECIFICATIONS

7.1 Review and Certification. Design and installation of systems shall be performed only by persons properly trained and qualified to design and/or install the specific system being provided. The installer shall provide certification to the authority having jurisdiction that the installation complies with the terms of the listing and the manufacturer's instructions and/or approved design.

7.2 Size and Scale. Plans shall be drawn on a minimum of 24" x 36" paper or submitted digitally and shall be drawn to an indicated scale of not less than 1/8 inch = 1 foot.

7.3 Plans. The following items shall be included in all Fire Alarm System plans specifications:

- (1) Scope of work for the project.
- (2) Name of owner and/or occupant.
- (3) Location of project, including Assessor's Parcel Number (APN), street address, street name, and city.
- (4) Applicable codes and standards used for the system design.
- (5) Complete site plan.
- (6) Building occupancy classification.
- (7) Building elevations and full height cross-sections showing building construction types.
- (8) Total occupant load for each floor level.
- (9) Identify sprinklered buildings.
- (10) List of initiating and signaling zone assignments.
- (11) Room use/description.
- (12) Sequence of operations.
- (13) Designated ADA room(s).
- (14) Device and locations devices.
- (15) Provide overlay of coverage for all visual devices.
- (16) Control locations.
- (17) Smoke/fire damper locations.
- (18) Location and identification of fire protection systems (hoods, clean agent, pre-action, etc.).
- (19) Location and purpose of all external devices/relays (door holders, elevator recall, etc.).
- (20) Point-to-point system wiring diagram.
- (21) Interconnection of identified devices.
- (22) Conduit connection and size.
- (23) Type and size of wire or cable.

- (24) Symbol list and equipment identification per NFPA 170.
- (25) Model number and manufacturer's name.
- (26) Quantity of each device type.
- (27) California State Fire Marshal listing number.
- (28) Riser diagram.
- (29) Single line interconnection of devices.
- (30) Conductor quantity, either hash marks or number.

7.4 Voltage Drop Calculations. The following information shall be contained in the voltage drop calculations:

- (1) Quantity of audio/visual indicating devices on furthest circuit and current consumption.
- (2) Length of furthest circuit and resistance of wire.
- (3) Formula on drawing and acceptable limit.

7.5 Battery Calculations. The following information shall be contained in the battery calculations:

- (1) Standby power consumption for all current drawing devices, multiplied by the minutes required by the applicable NFPA Standard.
- (2) Alarm power consumption of all current drawing devices, multiplied by the minutes required by the applicable NFPA Standard.

CHAPTER 8 – VERBATIM NOTES

8.1 Verbatim Notes. The following notes shall be completed and placed verbatim on the working Fire Alarm System plans:

8.1.1 Construction Permits. Construction permits shall automatically become invalid unless an inspection authorized by such permit is commenced within 12-months of being issued.

8.1.2 Compliance with the Code. The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of the VCFC or of any other ordinance of this jurisdiction. Permits presuming to give authority to violate or cancel the provisions of the VCFC or other ordinances of this jurisdiction shall not be valid. The issuance of a permit based on construction documents and other data shall not prevent the fire code official from requiring the correction of errors in the construction documents and other data. Any addition to or alteration of approved construction documents shall be approved in advance by the fire code official, as evidenced by the issuance of a new or amended permit

8.1.3 Current 5-Year Inspection Certification. A current 5-year inspection certification tag shall be affixed to the fire sprinkler system riser(s) and a copy of the inspection report shall be on file with this

department per the current adopted edition of the Ventura County Fire Code and NFPA 25-California Edition prior to final inspection.

8.1.4 Codes. This Fire Alarm System shall be designed and installed per the current adopted edition of the Ventura County Fire Code, California Building Code, NFPA 72, and other applicable codes, ordinances, regulations, and standards.

8.1.5 Wiring. All Fire Alarm System wiring shall be installed per National Electrical Code requirements.

8.1.6 Tamper Protection. Automatic fire sprinkler waterflow alarms, supervisory initiating devices, and their circuits shall be designed and installed so they cannot be readily tampered with, opened, or removed without initiating a signal.

8.1.7 Power Lockout. The circuit disconnect breaker providing power to the fire alarm unit shall be locked and identified in red as “**FIRE ALARM CONTROL UNIT**”.

8.1.8 Interconnection. All fire alarm control units shall be interconnected with any other fire alarm control units located within the facility.

8.1.9 Signals. All audible alarm notification signals shall be a three-pulse temporal pattern. Fire installations with a voice evacuation system, submit the voice evacuation message for review and approval by VCFPD.

8.1.10 General Alarm. Upon general alarm, all doors with electro-magnetic locks shall release.

8.1.11 Combined Alarm Units. Combination Fire/Burglary alarm units are not permitted within Ventura County Fire Protection District’s jurisdiction. A listed combination control panel may be used for fire alarm purposes only. An engraved plastic placard with white letters on a red background shall be permanently affixed to the front of the FACU and shall read “**FIRE ALARM CIRCUIT WIRING ONLY**”.

8.1.12 Duct Detectors. Duct detectors shall send a “**SUPERVISORY SIGNAL**” to the panel, and may initiate notification appliances when approved by the Ventura County Fire Protection District, but are not permitted to transmit a general alarm signal to a central station.

8.1.13 Dampers. Duct detectors shall shut down the individual unit along with its smoke/fire dampers.

8.1.14 Duct Detector Labeling. Duct detectors that are not readily visible shall have a remote LED with label mounted on the ceiling directly below the detector.

8.1.15 Duct Detector Reset. Duct detectors connected to a Fire Sprinkler Monitoring System shall be monitored for power loss and must be capable of being reset from the panel or LED/reset switch.

8.1.16 Shut Down. Manual pull stations, area smoke detectors, and heat detectors shall shut down all HVAC units and close smoke/fire dampers, unless otherwise approved by the fire code official.

8.1.17 Signage. Provide a sign at the door to the fire control panel to read “**FIRE ALARM CONTROL PANEL INSIDE**”.

8.1.18 Acceptance Testing. Upon completion of the work on the approved plans, a satisfactory test of the entire installation shall be conducted in the presence of a Ventura County Fire Protection District's Fire Prevention Bureau representative.

8.1.19 Pre-testing. The contractor shall conduct a 100% pre-test of the system prior to inspection. The inspection will include an actual test of the system. If during the inspection, deficiencies are noted, the test may be stopped, and re-inspection fees may be charged.

8.1.20 Record of Completion. A final copy of the record of completion shall be given to the system owner and the fire code official after completion of alarm testing as witnessed by a VCFPD representative.

CHAPTER 9 – INSPECTIONS

9.1 General. The The inspection fee that is paid at the time of plan submittal will provide you with a pre-determined number of inspections to complete the project. For projects that exceed this limit, inspection requests will not be accepted unless additional fees are paid prior to scheduling an inspection.

9.2 Responsibility. It is the responsibility of the installing contractor to be on the job site during the inspection with approved plans. Failure to do so will result in the cancellation of the inspection. Cancelled inspections will be counted as one inspection.

9.3 Inspection Requests. Inspection requests can only be fielded from the installing contractor. Inspections shall be requested Monday through Friday prior to 3:30 p.m., one business day prior to the inspection.

9.3.1 It is the intent of the VCFPD's Fire Prevention Bureau to perform inspections one business day after the inspection has been requested. However, do to training requirements, meetings, emergency services and other scheduled and non-scheduled events, it cannot be guaranteed that all inspections will be conducted the next business day

9.4 Schedule by Phone. Call (805) 389-9744 one business day prior to inspection for scheduling an inspection. The inspection request line is open Monday through Friday between 8:00 a.m. and 3:30 p.m.

9.5 Schedule by E-mail. Schedule by e-mail at fire.inspections@ventura.org one business day prior to the inspection.

9.6 Contact Information. Be sure to leave your phone number, when you schedule an inspection by phone or email, where the inspector can call you back, after 7:30 a.m. the day of the inspection, to notify you of the inspection time.

9.7 Inspection Times. Inspection times are approximate and may vary because of delays at previous inspections or emergency response by Fire District personnel. Please allow time on either side of the inspection time for the inspector to arrive.

CHAPTER 10 – ACCEPTANCE TESTING

10.1 General. Inspections of Fire Alarm Systems will be conducted prior to plans being approved.

10.2 Pre-Test. The contractor shall conduct a 100% pre-test prior to scheduling an inspection.

10.3 Rough Inspection. Rough inspections are not required by VCFPD, but may be performed when requested.

10.4 Final Inspection. The Fire Alarm System and all the related components shall be tested and accepted by the VCFPD's Fire Prevention Bureau at the final inspection stage, prior to occupancy being granted.

10.4.1 At the time of new system acceptance, a final copy of the record of completion shall be provided to the system owner and the fire code official.

CHAPTER 11 – INSPECTION AND MAINTENANCE

11.1 General. The maintenance and testing schedules and procedures for fire alarm and fire detection systems shall be in accordance with the VCFC and NFPA 72.

11.1.1 The building owner shall be responsible to maintain the fire and life safety systems in an operable condition at all times.

11.2 Service Personnel. Service personnel shall be qualified and experienced; and maintain an appropriate and valid contractor's license with the California Contractors State License Board.

11.3 Annual Testing. Fire Alarm Systems shall be tested in accordance with the inspection and testing requirements of NFPA 72 and records shall be retained until the next test and for 1-year thereafter.

11.4 Inspections. Visual inspections shall be performed in accordance with the inspection and testing requirements of NFPA 72 and records shall be retained until the next inspection and for 1-year thereafter.

11.5 False Alarms. Fire Alarm Systems that transmit excessive false alarms will be evaluated by the VCFPD's Fire Prevention Bureau and may be assessed fees in accordance with the current fee schedule.