New Technology



# FIRE PREVENTION STANDARD

Title: Automatic Fire Alarm System

Number: D-04 Effective Date: 10/01/07 Revised Date: 10/29/09

Code References: Title 16, Chapter 16.16 of the Roseville Municipal Code, NFPA 72

**Note**: This standard is a summary of Fire Department clarifications of City and State Codes. Information contained herein applies to typical circumstances and may not address all situations.

## **PURPOSE**

This standard sets forth the requirements for the design, installation, testing, maintenance and monitoring of all fire alarm system installations in the City of Roseville, including those monitoring sprinkler systems. All such fire alarm systems shall conform to this standard including but not limited to:

- Plan Submittal

Required Installations
 Voluntary Installations
 Prohibited Systems
 Required Documentation
 System Acceptance Test
 Systems Out of Service

- General Requirements - False Alarms

- Installation Requirements

## SCOPE

These guidelines apply to any newly installed or modified fire alarm system within the Roseville City limits. If this standard conflicts with any other code or standard, the more specific and/or restrictive shall apply. Compliance with the American with Disabilities Act (ADA) shall be the sole responsibility of the owner/applicant.

#### **DEFINITIONS**

The following definitions are in addition to those found in National Fire Protection Association, Standard 72 (NFPA 72 hereafter) as amended, are provided to facilitate the consistent application of this guideline:

- Certificated alarm system An alarm system where the certificate issuing alarm company declares that the installed alarm service is complying with all UL standards. The City of Roseville requires a UUFX type Central Station Certificate for all buildings with fire alarm panels. This means that the monitoring company is a UL listed monitoring company and the installing company is a UL listed fire alarm service, geographically located within two-hours of the City of Roseville and able to issue UUFX type certificates through UL.
- 2. Listed Fire Alarm Company (installing company) A company that provides equipment, installation, inspection, testing, maintenance and runner service for a protected area with its own personnel, and which subcontracts the monitoring, retransmission, and associated record keeping and reporting to a listed central station monitoring company. A listed fire alarm company is considered to be a prime contractor and has been qualified to issue UL Certificates for alarm systems. This company issues the required UUFX type UL certification for the site where the equipment is installed. Each central station signaling system covered by a Certificate is required to be maintained by the prime contractor and is the alarm company responsible for issuing the Certificate.



- 3. Listed central station (monitoring company) An alarm monitoring facility that has demonstrated the ability to provide service complying with UL standards. In the case of listed central stations, UL requirements cover building structure, receiving and monitoring equipment, and staffing issues; in addition to installation and ongoing service. A central station monitoring company is recognized only for signal monitoring, retransmission, record keeping, and reporting.
- 4. Specialized systems Any suppression, supplemental suppression, or special hazard suppression system including, but not limited to; fire pumps, sprinkler systems, halogenated agents and replacements, wet or dry chemical, carbon dioxide, foam, etc.
- UUFX certificate A type of UL certificate issued for a site where the fire alarm equipment and associated services comply with UL standards for central station protective signaling service.

### **PLAN SUBMITTAL**

The process and requirements for plans shall be as follows:

- 1. All companies monitoring, installing, maintaining, or servicing fire alarm systems within the Roseville City limits shall have a valid City of Roseville business license
- 2. <u>Fees</u> shall be paid at submission of plans. Work shall not commence prior to approval of plans.
- 3. Fire alarm plans for new or modified installations shall be submitted to the Permit Center 311 Vernon Street, Roseville, CA 95678 (Phone: 916-774-5800) <a href="http://www.roseville.ca.us/fire/">http://www.roseville.ca.us/fire/</a>
- 4. A minimum of two sets of plans shall be submitted. The Division will retain one set and the other will be returned to the contractor with an approval or comments.
- 5. All fire alarm plans and calculations shall bear the stamp of approval by a valid State of California Professional Electrical Engineer (C-10) or a Fire Protection Engineer (C-16).
- 6. Provide a scope of work.
- 7. Current manufacturer's specification sheets shall be provided.
- 8. Current California State Fire Marshal (CSFM) listing sheets for all installed devices shall be provided.

#### Plans shall include a minimum of:

- 1. Minimum sheet size shall be 18" x 24"
- 2. Must be drawn to scale with the appropriate scale noted on the plan.
- 3. Name of the owner and occupant including the address of building and suite
- 4. Contractor/engineer's name, address, telephone number, license number, and signature
- 5. Type of system (Central Station only)
- 6. Required system type (locally required, building/fire code required, voluntary)
- 7. Occupancy and use of each room or area
- 8. Point of compass and symbol list
- 9. Sequence of operation matrix
- 10. Equipment list showing quantity, make model, and CSFM listing number of each device
- 11. Full height cross sectional diagram of the building where devices are mounted is required, including: ceiling construction, roof deck construction, beams, obstructions, or other barriers or finishes which will affect the design criteria described in NFPA 72 as amended.
- 12. Type and size of wire, cable, conduit, and conduit fill ratio.



- 13. Single line riser diagram and point-to-point wiring diagram
- 14. All additional breakers for power boosters and/or additional power supplies shall be noted and labeled.
- 15. Initiation device circuit class designations, style designation or both.
- 16. Standby Battery Calculations for each Control Panel, Sub Panel, Power Booster, Central Station Transmitter, Power supply. Battery calculations shall include a 10% safety factor.
- 17. Secondary power supply and voltage drop calculations shall be provided.
- 18. The maximum permissible voltage drop shall not exceed 10% of the system supply voltage.
- 19. The end-of-line resistance for each circuit shall not to exceed a maximum of 10% of the 24 volt system.
- 20. All supplementary power supplies shall be:
  - A. Readily accessible
  - B. Noted on the riser detail
  - C. Monitored for trouble

 Noted on the alarm panel, circuit breaker, and the initiation map

- 21. Location of each device
- 22. Mounting height of fire alarm control panel, manual fire alarm boxes, audible and/or visual notification devices, etc.
- 23. Details on support and anchorage of any fire alarm equipment weighing over 20 pounds.
- 24. Voice messaging content and languages, (if applicable).
- 25. Description of auxiliary features and operations (smoke evacuation, smoke/fire damper, door release services, special extinguishing systems, fire pump monitoring, etc.)
- 26. Description of any special features such as detector cross zoning or alarm verification

### **REQUIRED INSTALLATIONS**

- 1. An approved fire alarm system shall be installed per Chapter 9 of the California Building and Fire Codes.
- 2. Required fire alarm systems per the building and/or fire code shall be installed per NFPA 72.

### **VOLUNTARY INSTALLATIONS**

- 1. Voluntary systems shall meet this standard, NFPA 72, and be approved by the Roseville Fire Department.
- 2. Replacing of an exiting fire alarm panel shall be considered a new system for the purpose of permitting for plan reviews and inspections.

### **PROHIBITED SYSTEMS**

- Combination burglar/fire alarm systems are not allowed within the City of Roseville. Due
  to previous incidents where burglar alarm signals were incorrectly received as fire alarm
  signals, the systems shall be completely separate, including each system having its own
  dialer. This will help ensure safety of responding fire companies. Roseville Fire
  Department does not recognize NFPA 72, Section 6.8.4.1.
- 2. Burglar alarm devices that deploy smoke to confuse or incapacitate an intruder shall be prohibited.



 Any device that has the physical appearance of a life safety or fire protection equipment device but that does not perform a life safety or fire protection function shall be prohibited.

### **GENERAL REQUIREMENTS FOR ALL SYSTEMS**

### **UL Certification Required**

- 1. When required by the Fire Chief, fire alarm, automatic sprinkler systems and hazardous materials emergency alarms shall be monitored by central station service that is listed in the current edition of the Underwriter's Laboratories Fire Protection Equipment Directory under the category Central Station (UUFX). The listing shall indicate that the listed fire alarm company provides service to the Roseville area.
- 2. The Prime Contractor as listed in the current edition of the Underwriter's Laboratories Fire Protection Equipment Directory under the category Central Station (UUFX) shall notify the Roseville Fire Department Fire Prevention Bureau in writing, within eight (8) hours, of systems that are not found to be in compliance with applicable codes.
- 3. The required UUFX certification shall be site specific.

## Central Station Monitoring Required

1. All valves controlling the water supply for automatic sprinkler systems and water-flow switches on all sprinkler systems shall be electronically monitored for integrity by a "Central Station Fire Alarm System" meeting all the requirements for Central Station Service. Definitions for Central Station Service may be found in NFPA 72, in the glossary and the chapter covering the requirements for Central Station Fire Alarm Systems. All alarm transmitting devices and systems shall be maintained in accordance with all state laws and nationally recognized standards.

#### **Exceptions**

- 1. Underground key or hub valves in roadway boxes provided by the municipality or public utility need not be monitored.
- 2. Valves controlling ten or less sprinkler heads need not be monitored.

#### Alarm Transmission Standards

- The activation of a fire sprinkler system or a fire alarm/detection system shall cause the system to initiate a signal to the Central Station within ninety (90) seconds. Retransmission from the Central Station to the Fire Dispatch Center shall not exceed sixty (60) seconds.
- Automatic telephone dialing devices shall be in accordance with NFPA 72, Chapter 5.
   Two separate telephone lines (numbers) shall be provided from the protected premises to the Central Station, which use Digital Alarm Communicator Transmitter (DACT).
   All costs regarding the installation, maintenance, and continuous operation of those lines shall be the responsibility of the building owner.

### **INSTALLATION REQUIREMENTS**

- 1. All installed systems shall be maintained and monitored for integrity in accordance with this standard, including unoccupied areas.
- 2. Fire alarm systems shall be extended, altered or augmented as necessary to maintain and continue protection whenever the building is altered, remodeled or increased in size.



- 3. Buildings, in which 3 or less initiating devices (as defined by NFPA 72) are proposed to be installed, shall be required to have a minimum of 4 distinct zones.
- 4. Buildings, in which 4 or more initiating devices (as defined by NFPA 72) are proposed to be installed, shall be required to have fully addressable panels installed.
- 5. On systems with fully addressable fire alarm control panels, initiating devices shall be durably labeled with a simplified corresponding device address.
- 6. All specialized systems shall be connected to and monitored by the fire alarm panel as a separate zone.
- 7. Duct smoke detectors are not required to be monitored on basic waterflow/tamper type fire alarm systems. If they are connected to the building's fire alarm system, they shall report as SUPERVISORY only. See State Fire Marshal Interpretation 06-053.
- 8. At each new installation, a waterflow bell shall be installed outside of the fire control room. It shall only sound upon the waterflow switch being activated. In addition, a STROBE shall be installed outside of the fire control room. It shall activate whenever any "alarm" condition is present at the FACP. A single approved horn / strobe device shall be provided in the interior of the building in a normally occupied location within each space/dwelling unit and floor level.
- 9. An approved visible sign shall be posted at all control valves, control panels and monitoring panels that states the name of the monitoring company, the 24 hour phone number of the Central Station. It shall also state that the Central Station shall be called before doing any work or testing on any system being monitored.
- 10. Reset instructions and reset code shall be clearly posted at the FACP.
- 11. A laminated floor plan (11"x17" minimum) for each building floor shall be posted adjacent the FACP in the Fire Control Room. It shall indicate the location of all initiating devices, inspector's test valve, monitored valves and main corridors, stairwells and elevators. See Attachment 1 of this standard for a detail.
- 12. A key for the FACP and pull station(s) shall be provided in the KNOX Box.
- 13. Upon activation of the Fire Alarm System, all electronic security locks shall release (fail-safe).
- 14. No other equipment, such as HVAC units, water heaters, and/or domestic water supplies shall be allowed within the Fire Control Room. Exception: Electrical equipment is allowed when the fire control room is shared with the electrical room.
- 15. Fire alarm systems that use radio signals to transmit alarms shall be listed for use with the FACP. They shall also be capable of mirroring the exact same transmitting zones as the primary telephone line dialer.
- 16. Additional specialized systems that use a supplemental FACP shall be capable of transmitting a minimum of 4 distinct zones that mirror the exact same zones as the main FACP dialer. Panels that serve these specialized systems shall be identified in the fire control room on the laminated floor plan.

## **NEW TECHNOLOGY**

1. New technology, such as internet based transmission of fire alarm signals, shall be reviewed for approval prior to installation. It shall also be acceptance tested.



## **REQUIRED DOCUMENTATION**

- 1. The permittee shall provide the Certification of Completion in accordance with NFPA 72 to the authority having jurisdiction that the system has been installed in accordance with the approved plans and specifications.
- 2. The permittee shall also provide the Underwriter's Laboratories Central Station Certificate for the Protected Premises.
- 3. Any revisions, additions or deletions to the Protected Premises shall require an amended UL Certificate. An amended UL Certificate shall also be required when there is a change in Central Station.
- 4. Records of Inspection, Testing and Maintenance, as required per NFPA 72, shall be maintained on site and available for review by the Roseville Fire Department.
- 5. Maintenance shall be per the requirements of NFPA 72. A copy of the monitoring, maintenance, and runner service agreement, signed by both parties shall be provided and verified at time of plan review.
- 6. Installation, monitoring, maintenance, and runner service shall be established by contract prior to final fire sign-off of the building.

## **SYSTEM ACCEPTANCE TEST**

- 1. A Roseville Fire Inspector shall witness all tests required for system final. All testing shall be completed in the normal mode of the operating system panel.
- 2. Prior to requesting a final system inspection and acceptance test the installer shall perform a satisfactory, 100% test of the system. The entire system shall be installed to completion.
- 3. The central station monitoring UL certificate application shall be made available to the inspector and a copy maintained in the fire control room.
- 4. A "faxed back" confirmation from UL verifying certificate processing shall also be made available to the inspector.
- 5. A Record of Completion form shall be maintained by the owner and a copy in the fire control room.
- 6. Magnehelic gauge, decibel reader or any other equipment required to complete a system acceptance test shall be provided by the installing contractor to show compliance with this standard or NFPA 72.
- 7. Testing shall be completed per the approved manufacturer's specification sheets, NFPA 72 and/or this standard.
- 8. A test of the standby power supply shall be conducted including all supplemental power supplies.
- 9. A functional test of all new equipment shall be conducted. 10% of all existing components shall be tested for amended systems.
- 10. Signal initiation and central station retransmission shall be demonstrated. Signal initiation to central station shall not exceed 90 seconds. Retransmission to fire dispatch shall not exceed 60 seconds.
- 11. All required labeling including the laminated floor plan shall be ready at final inspection.
- 12. A 24-hour battery test, if applicable, shall be performed and witnessed by a member of this department. This required test shall include all additional power supplies and boosters. Power shut-off may be completed 24-hours prior to inspection; verification shall be through fax indicating the time of shut-off and the time restored.



- 13. All circuit breakers shall be tagged and labeled, including breakers for additional power supplies. Each circuit breaker shall be locked in the "on" position.
- 14. Additional 24-hour battery test may be performed, subject to the review by this department, once leased space exceeds 50% build-out.

## SYSTEMS OUT OF SERVICE

1. Refer to Roseville Fire Prevention Standard, <u>Fire Watch Procedures</u> for fire alarm systems out of service.

#### **FALSE ALARMS**

- 1. Prior to any person working on any monitored fire alarm system(s), the person shall place the system(s) in "test" through the monitoring company.
- 2. If an alarm is transmitted to Central Station and the Roseville Fire Department whenever anyone is working on a system, Cost Recovery will apply. See the Roseville Fire Department Fee Schedule, as adopted by City Council

## Attachment 1: Fire Control Room Map -- Laminated floor plan example

