

# FREMONT FIRE DEPARTMENT

## FIRE ALARM SYSTEMS INSTALLATION STANDARD #25A Rev.8 - 05/01/20

### **PURPOSE**

The purpose of this standard is to define the City of Fremont requirements for fire alarm & life safety system installation, maintenance, inspection, signal initiation, transmission, notification, and alarm annunciation. In addition, this standard establishes requirements for alarm system performance and reliability.

### **SCOPE**

This standard shall apply to all new and existing fire alarm and life safety systems. **Exception:** this standard does not apply to residential care facilities and single-family residences less than 12,000 square feet unless required as an alternate method.

### **STANDARDS**

The installation, maintenance and testing of fire alarm systems shall be in accordance with this standard and the most recent adoption of the 2019 California Electrical Code; 2016 NFPA 72, 2016 NFPA 20; 2016 NFPA 22, 2019 California Building Code, 2019 California Fire Code, Ordinance #11-2019 and CCR Title 19.

Compliance with this standard does not relieve the permittee of additional Federal, State, County, Local, Codes, Ordinances and Regulations. The Fire Chief may modify these standards as needed or determined to be necessary.

### **DEFINITIONS**

Definitions used in this standard are per CFC and NFPA 72.

### **PROCEDURE**

#### **I. Permitting Requirements:**

- A. A permit must be obtained from the Building Department's Fire Specialist prior to system installation, modification, or any changes to the Fire Alarm Control Unit or system programming.
- B. 2 copies of plans, 2 sets of original equipment data sheets and California State Fire Marshal Listings shall be submitted to the Building Department's Plans & Permit Counter for review and approval.

A permit is not required for emergency repairs conducted during non-business hours. Verification of permit and inspection requirements must be initiated by the next business day by contacting a Building Department's Fire Specialist at (510) 494-4460.

- C. Companies installing a fire alarm system shall obtain an Underwriters Laboratory certificate, a certificate from a Nationally Recognized Testing Laboratory, or arrange for a certificate prior to system final. A copy of this certificate shall be posted at the FACU (Fire Alarm Control Unit).
- D. Once the fire alarm system has received final approval an annual permit will be required. The following documentation will be required to receive an annual permit:
  - 1. A copy of the current UL certificate or a certificate from a Nationally Recognized Testing Laboratory that meets the requirements established in NFPA 72.
  - 2. A copy of the proceeding year (s) test and maintenance records.
  - 3. A copy of the current monitoring and maintenance contract.

When the required documentation has been received a permit & decal will be issued to the property owner. The decal will be affixed to the upper left corner of the control panel and indicate the permit expiration date.

## **II. Conditions of Approval:**

### **A. Required & Voluntary systems**

All Fire Alarm systems including required and voluntary systems shall be submitted for plan review and permitting. All systems shall comply with NFPA 72, be certified and maintain certification with a nationally recognized testing laboratory.

### **B. Plan Check**

The following minimum information shall be provided on all plan check submittals.

- 1. Address of the protected premises.
- 2. Owner of the protected premises.
- 3. Authority having jurisdiction

4. Applicable codes, standards, ordinances and other design criteria to which the system is required to comply.
5. Equipment list, including manufacturer model numbers; CSFM listings; quantities; technical installation procedures (cut sheets) for all devices installed or monitored.
6. All plans shall be to scale and dimension. Minimum Scale 3/32.
7. U.L. monitoring company/contract.
8. Intended area(s) of coverage.
9. Point to point wiring diagram. (Riser diagram required for multi-level buildings).
10. Notification Appliance circuit point to point voltage drop calculations.
11. Standby battery calculations.
12. Primary power source.
13. Each device and panel function shall be distinctively and descriptively annunciated by an address or a zone\* to the FACU, annunciator and the central station for alarm, supervisory and trouble signals.
14. Maintenance Contract. (contract cost may be excluded)
15. Phone line dedication/method of alarm transmission.
16. Complete sequence of operation matrix detailing all inputs, outputs and control functions.
17. Initiating & Notification devices. A reflected ceiling plan and HVAC register location plan shall be submitted when heat and smoke detection is provided.

\* Each zone shall only consist of one device or one panel function.

### **C. Alterations**

Any alterations to the approved plans will require "as-built" plans which shall be submitted to the Building Department's Plans & Permits counter ( 2 copies) for approval prior to final acceptance of the system. Additional fees are charged for plan review revisions and archiving of plans.

### **D. Calculations**

Show the procedure and formulas used for all calculations.

The following minimum calculations shall be provided:

1. Voltage Drop (10% voltage drop limitation).
  - a) Group R-2 Occupancies required to have a Fire Alarm System (voltage drop calculations shall include all dwelling/sleeping units pre-wired notification devices).

2. Battery calculations safety factor shall meet the manufactures specification. (Include minimum 20 % safety factor)
  - a) Group R-2 Occupancies required to have a Fire Alarm System (battery calculations shall include a minimum of two (2) most remote dwelling/sleeping units or 10 percent if <300 units and 5 percent >300 units)

**E. Miscellaneous Initiating Devices**

1. Water tanks high/low conditions shall be supervised (NFPA 22).
2. Fire pump
  - a) Diesel Pump shall be supervised - Pump run, pump fail, and pump not in auto, (NFPA 20).
  - b) Electric Pump shall be supervised - Motor run, loss of phase, and phase reversal, (NFPA 20).

**3. Fixed Extinguishing Systems:**

When a fire alarm system exists, all required devices shall be monitored as approved by the Chief (i.e. flow/micro switch for clean agent, CO2, Dry Chemical, and Liquid Agent.) Spray booths and kitchen systems shall be included.

- a) Clean Agent, CO2, Dry Chemical and Pre-Action monitoring points;

General Alarm/1<sup>st</sup> Detector Alarm  
 2<sup>nd</sup> Detector Alarm (when actable)  
 Discharge/Waterflow  
 Low Air/OS&Y Tamper (when actuable)  
 General Trouble

- b) Spray Booths monitoring points

Waterflow  
 OS&Y Tamper (when actable)

- c) Kitchen Systems

General Alarm

4. Other devices such as hose cabinets, vapor detection systems, key boxes and emergency alarm systems, shall be supervised when required by the Chief.
5. All duct smoke detectors installed in HVAC units shall be monitored by the alarm monitoring system and report by device as a supervisory condition in sprinklered buildings and fire condition in non-sprinklered buildings. These devices shall be installed per manufactures UL listed installation methods.
6. All duct smoke detectors used with fire smoke dampers must report as a fire condition. For each duct that a duct smoke detector is used with a fire smoke damper the air flow shall be great enough to support the duct smoke detector manufacture specification requirement of cfm (cubic feet per minute) or sfm (square feet per minute) flows.

**F. Fire Alarm Control Unit**

1. New Installation & Retrofit of Existing Fire Alarm Control Units and Systems
  - a. All fire alarm systems shall be zoned as required by the Authority having jurisdiction (Fire Chief) or his/her designee.

All systems required by the Fire Department that have more than one zone, shall have each device and panel function to be distinctively and descriptively annunciated by a address or a zone\* to the FACU, annunciator and the central station for alarm, supervisory and trouble signals. .

\* Each zone shall only consist of one device or one panel function.

7. Ordinance #17-2013 requires a remote annunciator be installed at the main entrance. A sign or map is required at the remote annunciator that indicates the location of the FACU and the 120V circuit/panel from which the FACU is supplied in a protective covering screwed to the wall.

**The property owner is responsible for all Fire Prevention Systems in the building.**

## **G. Reset Procedures**

A keypad or annunciator with the ability to acknowledge, silence and reset the fire alarm system shall be located at the Fire Alarm Control Unit.

Reset devices (key, button or keypad) shall not reset both functions of a combined fire and burglary alarm system unless provided with a separate key or code.

The following reset methods are acceptable.

- A) Codes or keys to reset the Fire Alarm Control Unit and keys to any lockable device (i.e. manual pull station) shall be located in the Knox key storage box.
- B) Provide specific step-by-step instructions for all acknowledge, silence and reset functions in the Knox box and Fire Alarm Control Unit.

## **H. Primary Power Supply:**

1. Connections shall be on a dedicated branch circuit.
2. Connections and circuits must be mechanically protected (California Electrical code)
3. The dedicated branch circuit shall have a lock on plate, be marked in red and labeled Fire Alarm Control Unit.
3. The dedicated branch circuit shall be accessible only to authorized personnel.
4. Location of the dedicated branch circuit shall be identified at the Fire Alarm Control Unit.

## **I. Secondary Power Supply:**

Back-up power supply shall be provided to all system components according to NFPA 72.

## **III. Monitoring Requirements**

- A. All required automatic fire alarm systems shall be supervised by an approved monitoring company and shall comply with NFPA 72 for notification requirements.

EXCEPTION: Residential care facilities, Single Family Residences less than 12,000 Square Feet, or as approved by the Fire Marshal or his/her designee.

- B. Monitoring - All systems which are required to have off site monitoring shall have the monitoring performed at a UL Listed Protective Signaling Systems Central Station.

Upon receipt of any signals indicating that a sprinkler system water supply has been shut off or tampered with, both service personnel and the Fire Department should be immediately notified. Upon restoration of the system the Fire Department shall be notified.

#### **IV. Notification:**

The approved monitoring company and the Alameda County Regional Emergency Communication Center shall be notified whenever any required fire alarm system is placed temporarily out of service and upon restoration of service. Alameda County Regional Emergency Communication Center can be contacted at 925-422-7594.

#### **V. Maintenance:**

- A. Fire Alarm Systems shall be maintained and tested in acceptance with the manufacturer recommendations and the National Fire Alarm Code NFPA 72. Maintenance and testing of fire alarm systems shall be performed only by qualified personnel familiar with the principles of operation of fire alarm systems and possessing the following qualifications:
  1. Hold a current Fremont Business Tax License;
  2. Hold a current C10- license issued by the Contractor, State License Board;
  3. Hold a current listing by Underwriters Laboratory as a (UUJS) or (UUFX) Local Service Company or a (UUFX) Full Service Company or demonstrate an equivalent level of certification

#### **VI. Testing:**

1. Complete and satisfactory tests shall be made of all devices and circuits in

- accordance with NFPA 72.
2. Reacceptance testing shall be performed after any of the following:
    - a. Added or deleted system components.
    - b. Any modification, repair, or adjustment to system hardware or wiring.
    - c. Any changes to site specific software.
    - d. Change of the off-site monitoring company.
  3. Any new, added, modified or repaired system shall undergo a 100% pre-test of alarms, supervisory, troubles and panel functions and a printout from central station of that test shall be faxed to the inspector (510-494-4398) 48 hours before scheduling the acceptance inspection.

## **VII. UL Certificates:**

Before any new fire alarm installation will be approved, the alarm company or building owner shall provide the Building Department's Fire Specialist with a copy of a valid UL Fire Alarm Certificate issued for the premise. If a certificate is not available at the time, a UL certificate serial number fax-back confirmation of the alarm certificate request and a fire alarm system description worksheet shall be provided prior to approval. In this case the actual UL Certificate can be provided at a later date, but not later than ten weeks.

**It is the responsibilities of the building owner to provide and maintain a current certificate from a Nationally Recognized Testing Laboratory on the building's fire alarm system.**

The system components, features and areas of protection described on the Certificate shall be acceptable to the Fire Department and shall reflect the criteria noted in these guidelines and in other relevant ordinances and regulations. A concise description of the system components and protection provided, the maximum service call response time, and the minimum testing frequency provided for various systems components shall be provided on the Certificate.

**A copy of the current Certificate shall always be posted at the Fire Alarm Control Unit .**

## **VIII. Inspections and UL reports:**

The alarm company shall retain detailed records of all tests, which clearly show the individual test conducted and the results obtained. These records shall be



readily available for inspection. Any deficiencies identified as a result of the testing shall be corrected immediately.

If requested by the Fire Department, the alarm company shall provide the following:

- a) Schedule an inspection of the Fire Alarm system with UL. Notify Fire Department personnel who will accompany UL field staff during inspections of their certificated systems.

**IX. Canceled Certificates:**

It is the alarm company's responsibility to immediately notify the Fire Department in writing if for any reason a UL Fire Alarm Certificate is canceled.

**X. Termination of Service:**

It shall be the responsibility of the approved maintenance and monitoring companies to provide written notification to the Fire Department in the event that the contract(s) is canceled or not renewed. Such notification shall be made as follows:

- a. Notify immediately via telephone and,
- b. Written notification within ten working days prior of such cancellation.

**XI. Problematic Systems:**

A problematic fire protection system is defined as a system that is malfunctioning, disconnected or initiating repeated nuisance alarms.

Upon notification or determination that a fire protection system is problematic or out of service (8 hours or more) the Fire Marshal, Building Official or his or her designee will require a fire watch be posted. The fire watch will be posted until the affected system is repaired and certified. When the affected systems have been repaired and certified the building owner will contact Fremont Fire Department, at (510) 494-4280.

A fire watch will be in accordance with Fire Watch Standard # 4216.17