



Benicia Fire Department – Fire Prevention Policies

Subject: INSTALLATION AND/OR MODIFICATION TO FIRE ALARM SYSTEMS

Section: D

Effective Date: April 2, 2009

Standard D-401

Page: 1 of 11

Revised Date: July 1, 2015

I. INTENT

It is the intent of this policy to provide fire alarm design guidelines consistent with local needs. Specific requirements for the plan submittal review process, the acceptance test and maintenance criteria are provided to reduce nuisance alarms and develop an effective method of fire detection and Fire Department notification within the community.

It is the intent of this Standard that when a fire alarm control panel is required to be replaced or more than 25% of devices are replaced the entire system shall be upgraded to comply with this Standard.

It is the intent of this Standard that all problematic fire alarm systems installed after the inception of this Standard (January 1, 2010) shall be maintained in accordance with the current revisions of this Standard in order to continue to achieve the goal of reducing nuisance alarms within the community.

II. AUTHORITY

City of Benicia Resolution 10-04 and California Fire code (CFC), California Building code (CBC), NFPA 72®, (as currently adopted by the State of California).

III. TYPE OF SYSTEMS AND REQUIRED COMPONENTS

- A. For the purpose of this policy, there are four (4) basic types of fire alarm systems:
 - 1. Protected Premise (Local) Fire Alarm System.
 - 2. Manual Fire Alarm System
 - 3. Automatic Fire Alarm System
 - 4. Dedicated Function Fire Alarm System.

- B. This section is a general overview of their components and operation.
 - 1. Protected Premise Fire Alarm
 - a. Single manual fire alarm box
 - b. Single horn/strobe audible throughout the facility



Benicia Fire Department – Fire Prevention Policies

Subject: INSTALLATION AND/OR MODIFICATION TO FIRE ALARM SYSTEMS

Section: D

Effective Date: April 2, 2009

Standard D-401

Page: 2 of 11

Revised Date: July 1, 2015

Additional notes:

These systems are not required to be interconnected with other fire protection devices and do not require a fire alarm control unit or emergency power.

2. Manual Fire Alarm System
 - a. Manual fire alarm box (with optional listed protective cover on all devices)
 - b. Audio-visual notification appliances (horn/strobes)
 - c. System wiring
 - d. Listed fire alarm control unit (F.A.C.U.) with integrated dialer
 - e. Monitoring by a listed central station

3. Automatic Fire Alarm System
 - a. Manual fire alarm boxes (with optional listed protective cover on all devices)
 - b. Automatic fire detection devices
 - c. Audio/visual notification appliances (horn/strobes)
 - d. System wiring
 - e. Listed fire alarm control unit (F.A.C.U.) with integrated dialer
 - f. Monitoring by a listed central station

Additional notes to above III-B2 and 3:

- The sprinkler system or any other type of fire protection system must always be a part of any required automatic or manual fire alarm system
- Manual fire alarm boxes in exterior locations must be provided with a means to minimize malicious or weather related nuisance alarms. (Listed protective covers may be provided on all devices)
- The activation of an automatic or manual fire alarm system shall initiate the operation of fire protection equipment such as, fire doors, HVAC fire/smoke dampers, etc. (when required)
- Voice evacuation systems may be required for specific occupancies in accordance with the referenced codes and standards.



Benicia Fire Department – Fire Prevention Policies

Subject: INSTALLATION AND/OR MODIFICATION TO FIRE ALARM SYSTEMS

Section: D

Effective Date: April 2, 2009

Standard D-401

Page: 3 of 11

Revised Date: July 1, 2015

4. Dedicated Function Fire Alarm System
 - a. Water flow and valve tamper switches
 - b. Smoke or Heat detector provided in the F.A.C.U. room
 - c. At least one occupant notification device
 - d. One fire alarm box (with optional listed protective cover)
 - e. Listed fire alarm control unit (F.A.C.U.) with integrated dialer
 - f. Monitoring by a listed central station.

IV. FIRE ALARMS, SPECIFIC METHODS AND REQUIRED ADDITIONAL DEVICES

- A. High-Rise Buildings in accordance with City of Benicia Ordinance 09-73 are defined as “any building having floors used for human occupancy located more than 75-feet above the lowest level having building access.
- B. Voice Evacuation Message. The content and operation of pre-recorded messages used in voice evacuation alarm systems shall be in accordance with NFPA 72®.
- C. Residential Based Licensed facility (R-3.1 and R-4). Where a Fire Alarm System is required by CBC Section 425, a stand-alone fire alarm system shall be installed in accordance with Section III-B.1 of this Standard.
 1. Smoke alarms required by CBC Section 907.2.10 must be 120VAC hardwire with battery back up and all smoke alarms in the facility shall be interconnected.

V. SPECIFICATIONS FOR ZONE ASSIGNMENT, ANNUNCIATION AND IDENTIFICATION

The zoning, annunciation and identification of fire alarm systems shall adhere to these specifications:

- A. All monitored alarm systems in City of Benicia shall be designed, programmed and installed in a manner that the signal reports (to the Central Station) **the exact location of each device**.
 1. A floor plan diagram must be posted in all buildings clearly indicating the type of device, the location of the device and the zone identification, which corresponds to the keypad annunciation display. The verbiage on the annunciator must be



Benicia Fire Department – Fire Prevention Policies

Subject: INSTALLATION AND/OR MODIFICATION TO FIRE ALARM SYSTEMS

Section: D

Effective Date: April 2, 2009

Standard D-401

Page: 4 of 11

Revised Date: July 1, 2015

descriptive, such as “Zone 3: Heat detector 2nd floor east end”; “Zone 5: C02 System garage” “PT2: Smoke detector 2nd floor east wing”, etc.

2. The silence, clear memory and reset instructions shall be posted on the diagram in legible print. The reset code must also be posted on the diagram. The functions of the keypad must be obvious to the user following simple instructions. The Fire Department reset code shall be programmed as “4275”. Program an additional “1” for each required digit past four digits, if the system requires more digits.

VI. BENICIA FIRE DEPARTMENT SPECIFIC REQUIREMENTS

A. Fire Alarm Control Room Protection

1. The required smoke detector shall be installed if the F.A.C.U. or control equipment is located in a climate-controlled area that is regularly maintained and where it will not be affected by adverse conditions. The door to the room containing the fire alarm control equipment will be labeled in 3-inch high letters stating “F.A.C.U. INSIDE” contrasting the background color.

Exception: A heat detector (combination Rate-of Rise and Fixed Temperature Type) shall be installed instead of the required smoke detector in rooms or areas containing a fire alarm control unit affected by adverse conditions.

B. Remote Annunciation

1. The Benicia Fire Department requires the installation of a remote annunciator, located immediately adjacent to the building entrance, in buildings with a common lobby. The annunciator shall meet all the specifications of Section V of this Standard. In multi-tenant buildings without common lobbies, the annunciator shall be mounted the proximity of the FACU; if the FACU does not have annunciator capabilities acceptable to the BFD.

C. Duct Detectors and Area Smoke Detectors

1. When installed, duct detectors, which are required to be monitored by the Fire Alarm System, shall be provided with listed remote annunciator lamps. The lamps shall be installed on the ceiling or on the wall immediately adjacent to the detector location. The lamps may also be installed above the door providing access to the mechanical room where the detector is located.
2. Where the detector is not readily accessible, a remote test reset switch shall be installed in the locations specified above in Section VI-C.1. When connected to the fire alarm system, duct smoke detectors shall be monitored for supervision only,



Benicia Fire Department – Fire Prevention Policies

Subject: INSTALLATION AND/OR MODIFICATION TO FIRE ALARM SYSTEMS

Section: D

Effective Date: April 2, 2009

Standard D-401

Page: 5 of 11

Revised Date: July 1, 2015

building owners and/or their representatives are responsible for resetting and maintaining duct smoke detectors in an approved manner to ensure their proper operation and to avoid “nuisance alarms” being transmitted.

3. When the building is equipped with a dedicated function fire alarm system only, duct detectors may be interconnected to the F.A.C.U.
4. The elevator lobby smoke detectors installed to initiate recall shall be identified as “elevator lobby smoke detector_floor”. Detectors in elevator hoist ways and elevator machine rooms shall meet Cal-OSHA requirements per CCR Title 8.
5. Smoke and fire detection devices in buildings requiring an evacuation alarm must be installed and monitored in accordance with NFPA 72®
6. All smoke detection initiating zones shall provide alarm verification as permitted per NFPA 72®. *Exception: In lieu of alarm verification, the contractor may install “intelligent detectors” which will indicate the need for maintenance to the alarm company.*

D. Alarm, Trouble and Supervisory Signal silence

1. In Group A, E, R-1 and I Occupancies, a key or key operated switch is required to be installed for the purpose of silencing or resetting the fire alarm system. Other methods, which provide equivalent protection against unauthorized use, may be considered in accordance with the National Fire Alarm Code® (NFPA 72®). A duplicate key shall be accessible in the KNOX Box® for department use.
2. The only persons authorized to “silence or reset” audible notification appliances are members of the Benicia Fire Department and licensed fire alarm contractors while actively performing maintenance or testing of the fire alarm system. The building maintenance staff or property management personnel are **NOT** authorized to “silence or reset” audible notification appliances without approval from the Fire Department.

E. Manual Fire Alarm Boxes

1. All manual fire alarm boxes may be equipped with a listed protective cover. This requirement is retroactively required to all fire alarm systems within the boundaries of the Benicia Fire Department.



Benicia Fire Department – Fire Prevention Policies

Subject: INSTALLATION AND/OR MODIFICATION TO FIRE ALARM SYSTEMS

Section: D

Effective Date: April 2, 2009

Standard D-401

Page: 6 of 11

Revised Date: July 1, 2015

VII. FIRE ALARM SYSTEM PLAN SUBMITTALS

For details regarding Fire Alarm Plan submittals and the review process, see Policy D “Fire Alarm Submittal for Contractors”.

VIII. FIRE ALARM SYSTEM INSPECTION, TESTING AND MAINTENANCE

1. All fire alarm systems and sprinkler monitoring systems shall be inspected and tested in accordance with NFPA 72® (as currently adopted by the State of California) and California Fire Code Chapter 9 (current edition).
2. **Persons performing inspections and testing shall be qualified and experienced as outlined in NFPA 72®.** Qualifications shall include at least one of the following: Factory Certified (for each manufacturer of panel worked on), NICET Level II Fire Alarm Certification, IMSA Inside Fire Alarm Certified, trained and qualified employees of a UL or FM Listed company for servicing and testing of fire alarms, or third party certification for testing and servicing fire alarm systems as approved by the Chief.
3. **Notification:** Prior to testing of any fire alarm system, the technician shall: (1) notify the designated building representative that the fire alarm system is being tested and (2) notify the monitoring central station of the test as to avoid a false dispatch of fire equipment. If the Fire Department is dispatched during a system test, a Notice of Payment Due will be issued to the responsible person or company that caused the dispatch. A copy of the Notice of Payment Due will be sent via United States Postal Service to the company the responsible person works for.
4. **Initial System Testing:** All new systems shall be tested in accordance with NFPA 72®.
5. **Reacceptance Testing:** When components are added or deleted or after any system modification or repair, the operational changes shall be 100 percent tested. In addition to testing new or repaired components, a minimum of 10 percent of the remainder of the system shall be tested.
6. **Testing Frequency:** Systems shall be inspected and tested in accordance with NFPA 72®. These test frequencies are minimums and more frequent testing may be required.
7. **System repairs for noted deficiencies discovered during inspections or testing:** When a deficiency is discovered, repairs shall be performed in accordance with NFPA 72® for Central Station Service and the California Fire Code.
8. **Alarm Test and Maintenance Records:** Initial acceptance and maintenance testing records shall be accessible and located in a resilient cover either attached to or adjacent to the fire alarm control unit, and maintained in accordance with NFPA 72®



Benicia Fire Department – Fire Prevention Policies

Subject: INSTALLATION AND/OR MODIFICATION TO FIRE ALARM SYSTEMS

Section: D

Effective Date: April 2, 2009

Standard D-401

Page: 7 of 11

Revised Date: July 1, 2015

9. UL Certificate or FM Placard:

- a. UL Certificate: Shall be current and located in a resilient cover attached to or adjacent to the FACU.
- b. FM Placard: Shall be mounted in accordance with Section 9.1, FM Approvals Class Number 3011, Approval Standard for Central Station Service for Fire Alarms and Protective Equipment Supervision, 1999 Edition.



Benicia Fire Department – Fire Prevention Policies

Subject: INSTALLATION AND/OR MODIFICATION TO FIRE ALARM SYSTEMS

Section: D

Effective Date: April 2, 2009

Standard D-401

Page: 8 of 11

Revised Date: July 1, 2015

APPENDIX 1

CENTRAL STATION MONITORING

SCOPE

This policy is applicable to all fire alarm systems, which are monitored by a Central Station Service Company.

APPLICATION

1. When required by the California Fire Code (CFC) and the BFD Fire Alarm System Standard D-401, a Central Station listed by Underwriters Laboratories or Factory Mutual shall perform the Fire Alarm monitoring.
2. The fire alarm company conducting the installation, maintenance, testing and runner service for the fire alarm system will be staffed or contract with qualified personnel, who shall be competent to install, maintain and test the fire alarm equipment installed at the protected premises. Personnel providing runner service, or who test and maintain fire alarm equipment shall have on their person a form of identification listing their qualifications and shall produce it to any member of an AHJ who requests such copy. Individuals providing runner service must be competent to restore the fire alarm system. If the fire alarm system cannot be restored, the building owner/property manager must immediately provide staff for a fire watch in accordance with the California Fire Code. The local fire station must be contacted regarding the fire watch. The Fire Department must authorize the fire watch.
3. Runner Service/Technician Dispatch Agreement shall be provided as per NFPA 72®. A copy of the Runner Service/Technician dispatch agreement shall be required to be submitted with the plan check documents of the fire alarm or water flow monitoring system.



Benicia Fire Department – Fire Prevention Policies

Subject: INSTALLATION AND/OR MODIFICATION TO FIRE ALARM SYSTEMS

Section: D

Effective Date: April 2, 2009

Standard D-401

Page: 9 of 11

Revised Date: July 1, 2015

APPENDIX 2

NOTIFICATION APPLIANCES

SCOPE

The appendix is applicable to notification appliances installed as a part of any fire alarm or water flow monitoring systems in buildings which are classified as A, E or I occupancies.

The following are the categories for notification appliances listed by Underwriter's Laboratories in the Fire Protection Equipment Directory:

1. Signaling Devices and Equipment for the Hearing Impaired (UUKC)
2. Speakers and Amplifiers for Fire Protective Signaling Systems (UUMW)
3. Audible Signal Appliances (ULSZ)



Benicia Fire Department – Fire Prevention Policies

Subject: INSTALLATION AND/OR MODIFICATION TO FIRE ALARM SYSTEMS

Section: D

Effective Date: April 2, 2009

Standard D-401

Page: 10 of 11

Revised Date: July 1, 2015

APPLICATION

A. Visual Notification Appliances

1. **The standard requires a minimum of one (1) listed visual appliance per room.**

The appliance must be installed and located in accordance with the applicable standards, the listing of the appliance and the manufacturer's published instructions.

Exception: Individual offices or work areas with one non-hearing impaired occupant, closets and storerooms. In these rooms, visual notification appliances may be omitted with the Fire Prevention Bureau approval.

2. When a room or building requires more than one (1) visual notification appliance, the appliances must be synchronized in accordance with NFPA 72®
3. The system designer must accurately designate the placement of visual notification appliances. The imprudent placement of a single appliance may result in the need to install additional appliances. Visual notification appliances have extremely specific installation requirements. The designer must adhere to the manufacturer's listed specifications.

B. Audible Notification Appliances

1. The primary guideline for the audibility design of the notification appliances shall be the ability of the system to be clearly heard at a minimum sound level in the required location.
2. When combination audible/visual notification appliances are installed, the location shall be determined per the requirements for the visual appliance and in accordance with NFPA 72®
3. When the room or building requires more than two audible notification appliance, all appliances must be synchronized.
4. The audibility level for these appliances shall be between 45 dBA and 110 dBA in most areas.



Benicia Fire Department – Fire Prevention Policies

Subject: INSTALLATION AND/OR MODIFICATION TO FIRE ALARM SYSTEMS

Section: D

Effective Date: April 2, 2009

Standard D-401

Page: 11 of 11

Revised Date: July 1, 2015

5. In sleeping rooms, the minimum operating level shall be 75 dBA measured at the approximate location of the head of the bed.
6. The alarm signal for all new fire alarm systems shall be the “Temporal Code Three” pattern.
7. The signal shall be keyed for two cycles to one-half “on” and one-half second ”off” and one cycle of one-half second “on” and one and one-half second “off” for the duration of the fire alarm system actuation.
8. In all cases. The audible levels from the notifications appliance(s) shall produce a sound level 15 dBA above ambient noise levels and not to exceed 110 dBA within room(s) or area(s) or area(s) where audible notification is required in accordance with NFPA 72®