

**SUMMIT COUNTY FIRE DEPARTMENTS
COMMUNITY SERVICES BUREAU POLICY
FIRE PROTECTION SYSTEMS POLICY
April 2008**

CONCEPT

The intent of this policy is to establish countywide uniformity of fire protection and life safety systems while reducing the occurrence of false activations. This policy provides additional details not covered by NFPA, and the currently adopted International Codes, as amended. The "authority having jurisdiction" (AHJ) is the organization or individual responsible for approving equipment, installation, or a procedure.

PLAN REVIEW SUBMITTAL

Every fire suppression and detection system plan submitted for review must contain the items required in this section. Fire protection and life safety systems shall conform with, be designed, installed, and maintained in accordance with the most currently adopted edition of the International Codes, as amended; the most current edition of NFPA standards; other nationally recognized standards; and manufacturers' requirements. See section seven (7), for requirements for residential occupancies.

- 1.1 **Application.** The plan review application shall include all plans, specification sheets, calculations, application form, and fees. The application form and fees shall be submitted, paid, and approved **PRIOR** to work being started. The AHJ reserves the right to conduct an investigation and assess additional fees, as outlined on the Fire District's Fee Schedule, if the above procedure is not followed.
- 1.1.1 **Fire Alarm Systems.** Two complete sets of plans or drawings are required. Technical specification sheets shall provide information on component operation, primary panel configuration, along with all devices and their operation. Battery draw, in stand-by and alarm mode, shall be highlighted. An equipment list shall be provided with the number of devices, part numbers, and description of equipment.
- 1.1.1.1 **Battery type and capacity.** Calculations supporting the capacity proposed shall be provided. At a minimum, the batteries shall support 24 hours of standby time, followed by 5 minutes of alarm. Cut sheets from the battery manufacturer shall be provided with the calculations.
- 1.1.1.2 **Wire size calculations.** The plan submittal shall include a statement that a wire size calculation has been performed and that the proposed system meets the equipment manufacturer specifications. The AHJ may require supporting documentation. Voltage drop calculations & supporting documentation are required.
- 1.1.1.3 **Point to point wiring diagram.** The AHJ may require a point-to-point wiring diagram showing the exact number of devices per circuit superimposed over a floor plan.
- 1.1.1.4 **Riser diagram.** Riser diagram shall indicate the zone configuration and designate the number of devices per floor as required by the AHJ.
- 1.1.2 **Sprinkler Systems.** Two complete sets of plans or drawings are required. Specification sheets shall provide information on all component operational functions. An equipment list shall be provided with the number of devices, part numbers, and description of equipment.
- 1.1.2.1 **Hydraulic Calculations.** The water demand requirements, on new or existing sprinkler systems using the hydraulic calculation method shall provide at least a 10 percent or 10 psi buffer (whichever is higher) between the system demand curve and the water supply curve. The AHJ reserves the right to increase this buffer on a case by case basis. Hydrant data, used for hydraulic calculations, shall be approved by the AHJ.
- 1.1.2.2 **Gridded Systems.** Hydraulic calculations for gridded systems shall be peaked to verify the most hydraulically demanding combination of sprinklers.

- 1.1.2.3 **Owner's Certificate.** An owner's certificate shall be submitted with all drawings, cut sheets, and specifications for all NFPA 13 and/or 13R systems.
- 1.1.3 **Kitchen Hood Systems.** Two complete sets of plans or drawings are required. Specification sheets shall provide information on all component operational functions. An equipment list shall be provided with the number of devices, part numbers, and description of equipment.
- 1.1.4 **Other Extinguishing Systems.** Two complete sets of plans or drawings are required. Specification sheets shall provide information on all component operational functions. An equipment list shall be provided with the number of devices, part numbers, and description of equipment.
- 1.2 **Manuals.** Operation and maintenance manuals shall be provided to the customer as required by the AHJ.
- 1.3 **Approval Process.** Following the fire department review, a letter may be sent to the applicant indicating items that require corrections. One approved set of plans or drawings will be retained by the AHJ. Approved plans and permit card shall be kept on site during construction. The applicant shall be responsible for corrections before receiving final acceptance on the system.
 - 1.3.1 With **PRIOR** approval from the AHJ, alternative materials or methods may be substituted for those outlined in this policy. Proposed changes shall meet the intent of the policy. The burden of proof lies with the person requesting approval of the alternate materials or method of construction.
 - 1.3.2 **Rejection Process.** The AHJ may reject the submitted plans if they do not meet the requirements of the application process. A re-submittal fee may be required. See Fee Schedule for details.
- 1.4 **Components.** All fire protection and life safety system components shall be UL or FM listed and approved by the AHJ. Components shall be installed per the manufacturer's instructions, in locations approved by the AHJ.
- 1.5 **Table of Contents and Equipment List.** Shall be provided to provide for a quick reference during the plan review.

DEFINITIONS

Sprinkler Water Flow: the discharge of water from a sprinkler system activates a water flow switch. A water flow switch is an initiating device.

Valve Tamper: results from the closing of any sprinkler and/or standpipe control valve. The activation of any tamper alarm shall not sound an evacuation alarm. A valve tamper switch is a supervisory signal.

Sprinkler Low Air: results from the loss of air pressure in a dry pipe sprinkler system. The activation of a low air alarm shall not sound an evacuation alarm. A sprinkler low air switch is an initiating device.

Kitchen Hood Extinguishing System: is the manual or automatic activation of the extinguishing system. The extinguishing switch is an initiating device.

Trouble Signal: is a signal indicating a problem occurring with any circuits, devices, or wiring associated with the fire alarm system.

Fire Area: The aggregate floor area enclosed and bounded by fire walls and exterior walls of a building.

Supervision: A visual and audible alarm signal given at the central safety station to indicate when the system is in operation or when a condition that would impair the satisfactory operation of the system exists. Supervisory alarms shall give a distinct indication for each individual system component that is monitored.

GENERAL COMMERCIAL/MULTI-FAMILY REQUIREMENTS FOR FIRE ALARM SYSTEMS

- 2.1 **Primary Fire Alarm Panel.** All fire alarm panels shall be installed in an environment consistent with manufacturer requirements and as approved by the AHJ.
 - 2.1.1 A single silence switch shall control the evacuation alarms inside the building and the outside horn. All strobes shall remain activated (flashing) until the system has been reset. Outside horns may be required to remain active.
 - 2.1.2 Alarm verification shall be required as a feature of the primary fire alarm panel. The method of alarm verification shall be approved by the AHJ.
- 2.2 **Alarm Panel Direction.** A written narrative detailing the operation of the alarm panel shall be attached to the alarm panel prior to final inspection.
- 2.3 **Remote Annunciators.** Complexes with multiple buildings, remote access points, or a 24-hour front desk, may require remote panel annunciators. Remote buildings served by a common Fire Command Center shall be capable of providing retransmission signals as shown in this section.
- 2.4 **Fire Alarm Panels.** Addressable fire alarm panels shall be used for all fire alarm systems unless approved otherwise by the AHJ. Should a zoned panel be approved, zoning shall meet the requirements of the AHJ.

EXCEPTION: 1. The zone for a kitchen hood extinguishing system may not be required to sound an evacuation alarm.

- 2.4.1 All addressable fire alarm systems shall have an approved graphic illustration installed in an approved location. This illustration shall outline all points identified by the addressable fire alarm system.

- 2.5 **Transmission of Alarm Signals.** The following signals are required to be transmitted separately and distinctly by the alarm panel.

	Trouble	Supervisory	Sprinkler Low Air	Automatic Fire Alarm	Sprinkler Flow	Environmental Alarms	Kitchen Hood Suppression
Dispatch to Fire Department			X	X	X		X
Dispatch to Owner	X	X	X	X	X	X	X

- 2.6 **Supervision.** The fire alarm system devices shall be supervised. Removal of the signal circuit or loss of power to any device shall cause a system trouble signal per zone, both audibly and visually at the fire alarm control panel.

EXCEPTIONS: 1. Magnetic hold-open devices. 2. Remote annunciator if lamp test switch provided. 3. Remote indicating lights.

- 2.7 **Labeling.** The fire alarm, remote annunciator, remote indicating lights, mini-horns, and firefighter telephones shall have labels that are word graphic, of a durable material, and permanently attached.
- 2.8 **System Information Identification Label.** A label identifying the contracted service and monitoring company, business telephone number, 24-hour telephone number, and emergency telephone number shall be placed on the front of the primary fire alarm panel.
- 2.9 **Alarm Visual Signals.** Audible warning and alarm signals in public areas, dwelling units, and guest rooms in multiple family residential buildings required to be accessible to the handicapped or disabled persons shall have

simultaneous visual signals for the benefit of those with hearing disabilities. Handicap adaptable units shall be wired for future strobe installations. All strobes shall remain flashing during a silence function.

- 2.10 **Alarm Audibility.** Alarm audibility shall meet the requirements of the most current edition of NFPA 72. The fire alarm contractor shall be responsible for providing an ANSI Type II decibel meter at the time of final inspection.
- 2.10.1 Audible alarm devices signaling an evacuation alarm shall not be installed in an elevator car, in a stair tower, within 25 feet of the Fire Command Center, next to the primary fire alarm panel, or next to a fire fighter voice communication system. Emergency voice communication system speakers may be required in stair towers.
- 2.10.2 All buildings four stories or greater, (above or below grade) including mezzanines, shall sound an evacuation alarm on the fire floor, the floor above, and the floor below.
- 2.10.3 Evacuation signal characteristics shall be in accordance with the fire alarm systems output section, as outlined in the most current edition of NFPA 72.
- 2.11 **Ambient Noise.** The fire alarm system shall automatically disconnect power to the sound system of any occupancy with amplified sound.
- 2.12 **Audible and Visible Signals.** A clear or white outside flashing light (110 candela minimum) and an outside audible alarm (85 dBA minimum) shall be activated upon any general alarm activation. The location of the outside alarm horn and strobes shall be approved by the AHJ. Additional strobes may be required. All strobes shall remain flashing during a silence function.
- 2.13 **Key Box.** Access shall be provided for structures with fire protection or life safety systems as required by the most currently adopted edition of the IFC as amended. A Knox TM key box shall be installed in an **approved location**.
- 2.14 **Smoke Detection.** All system smoke detectors shall have an indicating light when in an alarm condition. They shall reset from the fire alarm panel.
- 2.14.1 Smoke detectors shall not be installed on the mounting plate until the building is cleaned, construction finished, and the area is ready for Certificate of Occupancy. If detectors are installed prior to the above conditions, the AHJ may require all devices to be cleaned or replaced per manufacturer specification.
- 2.14.2 In common areas, storage rooms, and areas susceptible to adverse environmental conditions, an alternate means of protection may be required.
- 2.15 **Ionization Detectors.** Factory certification of the altitude range for ionization smoke detectors shall be submitted with the plan review package.
- 2.16 **Thermal Detection.** Heat detectors shall be used in areas that are unsuitable for smoke detectors. Rate compensating, and fixed temperature heat detectors shall have a locking remote LED. The device shall have its own zone or system address. Rate of rise detectors shall not be installed.
- 2.17 **Duct Detection.** Where required by the most currently adopted edition of the IMC, duct detectors shall be provided in all return air handling systems exceeding 2000 CFM. All duct detectors shall have a red remote indicating light, a reset/test switch, be appropriately labeled, and be installed in an approved location. All duct detectors shall sound a trouble signal only at the panel. The monitoring company shall notify the building owner or the building manager in the event of a trouble signal.
- 2.18 **Manual Pull Stations.** Manual pull stations may be required. They shall be located as required by the AHJ. All manual pull stations shall be double action and may require an approved cover.
- 2.19 **Special Tools.** Any keys, tools, and/or key pad codes required for resetting or opening any fire protection or life safety system shall be provided by the system contractor and placed in an approved location.

- 2.20 **Wire.** Fire alarm wire shall be red in color, and shall not be painted. Fire alarm wire run through conduit shall have all junction box covers painted red or labeled "Fire Alarm System." Romex® wire will be allowed if the requirements of 2.20.1 are met.
- 2.20.1 Wire shall be labeled "Fire Wire" on a red tag with white letters. The spacing of labels shall be every 10' for Romex® wire and 20' for other listed fire wire. The wire shall also be labeled on each side of all walls and any other penetrations. Vertical wire risers shall be labeled on each floor.
- 2.21 **Inspections and Testing.** See Section 11 for details on inspections and testing.

GENERAL COMMERCIAL/MULTI-FAMILY REQUIREMENTS FOR FIRE PROTECTION SYSTEMS

- 3.1 Fire protection and life safety systems shall conform with, be designed, installed, and maintained in accordance with this policy, the most currently adopted edition of the International Codes, as amended; the most current edition of NFPA Standards; and all other nationally recognized standards.
- 3.1.1 Prior to connecting the sprinkler system riser to the water service line, the underground piping shall be flushed as outlined in NFPA 13 and 24. Flushing of the underground piping shall be witnessed by an approved agency. A "Contractor's Material and Test Certificate for Underground Piping" shall be filled out by a state licensed contractor and be provided to the fire department.
- 3.1.2 Multi-story buildings with commercial and residential occupancies may be required to be designed using NFPA 13 when the fire area is greater than 50% commercial.
- 3.1.3 Multi-story buildings, with balconies covered by a combustible roof, canopy, siding or over-hang exceeding four feet, shall provide sprinkler protection within the balcony area. Alternative materials and methods may be substituted.
- 3.1.4 Combustible decks, patios, or balconies with open-flame cooking devices or open-flame decorative devices shall provide sprinkler protection of the deck, patio or balcony area.
- 3.2 **Fire Alarm Zones.** The system designer shall work with the AHJ to establish zones as described below. The following zones are required to be monitored where applicable. All alarm initiating devices located within the listed zones shall sound an evacuation alarm. See exception below. Fire areas may be used to define individual buildings.
1. Main Sprinkler Water Flow.
 2. Sprinkler Water Flow - by floor, by unit, by area, or portion thereof (This zone must be approved by AHJ).
 3. Sprinkler Low Air.
 4. Valve Tamper.
 5. Each Kitchen Hood Extinguishing System.
- EXCEPTION:** 1. The zones for a kitchen hood extinguishing system and a sprinkler low air alarm may not be required to sound an evacuation alarm.
- 3.3 **Transmission of Alarm Signals.** The following signals are required to be transmitted separately and distinctly by the alarm panel. See the AHJ for signal requirements for fire pump systems.
1. Main Sprinkler Water Flow.
 2. Sprinkler Water Flow - by zone.
 3. Supervisory.
 4. Trouble.
 5. Kitchen Hood Extinguishing System.
 6. Fire Pump Activation – and other signals as outlined in NFPA 72.

- 3.4 **Supervision.** The system devices shall be supervised. Removal of the signal circuit or loss of power to any device shall cause a system trouble signal per zone, both audibly and visually, at the fire alarm control panel.
- 3.5 **Labeling.** All fire sprinkler systems shall have identification signs for system components and hydraulic labels that are word graphic, of a durable material, and permanently attached prior to the final inspection, as outlined throughout NFPA 13.
- 3.6 **Outside Horn and Strobe.** A clear or white outside flashing strobe (110 candela minimum) and an outside audible alarm (minimum 85 dBA) shall be activated upon any general alarm activation. The location of the outside alarm horn and strobe shall be approved by the AHJ.
- 3.7 **Key Box.** Access shall be provided for structures with fire protection or life safety systems as required by the Fire Code. A Knox TM key box shall be installed in an **approved location**.
- 3.8 **Special tools.** Any keys or tools required for resetting or opening any fire protection or life safety system shall be provided by the system contractor.
- 3.8.1 If a socket is provided for the installation of sprinklers, an approved handle is also required.
- 3.9 **Cross Contamination.** The sprinkler contractor shall be responsible for contacting the local water department for approval on the type of cross contamination device to be installed on all sprinkler systems.
- 3.9.1 RPZ cross contamination devices shall drain to the exterior of the building or to an approved floor drain. The drain system design shall be constructed per manufacturer's recommendation.
- 3.10 **Control Valves.** All indicating control valves shall be provided with approved supervision. A length of chain and an approved fire department lock for securing all indicating control valves shall be provided. The size of chain and control valve shall be compatible.
- 3.10.1 Indicating control valves shall be provided for each zone as required by the AHJ.
- 3.11 **Fire Department Connection.** All NFPA 13 & 13R systems shall have an approved Siamese connection with 2½" hose connections. The hose connections shall use National Hose Threads, shall be installed 36" to 48" above grade, and shall be accessible.
- 3.11.1 The fire department connection shall be protected in an approved manner from ice and snow build-up when located next to or on the building.
- 3.12 **Main Drains.** Main drains from all risers shall be plumbed to the exterior of the building or to an approved drain capable of handling the flow rate of the main drain test.
- 3.13 **Water Flow Alarm Switch.** The flow alarm switch shall be equipped with retard capabilities. The retard setting shall be set between 30 and 40 seconds.
- 3.14 **Alarm Test Connection.** The test connection shall be installed in an approved location. The discharge shall be at a point where it can be readily observed.
- 3.15 **Flushing.** All underground piping connected to any fire sprinkler system shall have a witnessed flush, prior to any system components being attached to the piping.
- 3.16 Hydraulic design calculations shall include elevation gain for sprig-ups located within the design area.
- 3.17 **Inspections and Testing.** See Section 13 for details on inspections and testing.

GENERAL REQUIREMENTS FOR KITCHEN HOOD EXTINGUISHING SYSTEMS

- 4.1 **Kitchen Hood Systems.** Fire extinguishing systems for commercial kitchen hoods shall be designed and installed in accordance with this policy, applicable NFPA standards, manufacturer's recommendations, and other nationally recognized standards.
- 4.2 **Kitchen Hood Zone.** The kitchen hood zone may not be required to sound an evacuation alarm as approved by the AHJ.

GENERAL REQUIREMENTS FOR SPECIAL EXTINGUISHING SYSTEMS

- 5.1 **System.** Special extinguishing systems shall be designed and installed in accordance with this policy, applicable NFPA standards, manufacturer's recommendations, and other nationally recognized standards.
- 5.2 **Zone.** Special extinguishing systems shall sound an evacuation alarm.
- 5.3 **Monitoring.** Special extinguishing systems shall be monitored.

SPECIAL REQUIREMENTS FOR FIRE ALARM SYSTEMS

- 6.1 **Alarm Systems within Elevator Shafts.** Special provisions for elevators shall comply with the most currently adopted edition of the International Codes, as amended, the most current edition of NFPA 72, and ASME standards.
- 6.2 **Computer Driven Systems.** Computer systems shall be reset with no more than one computer command sequence and/or one manual switch activation.
 - 6.2.1 An approved all points list shall be provided to the AHJ 48 hours prior to the acceptance test. This list shall be provided for terminology and accurate testing of devices.
 - 6.2.2 A replacement EPROM or tape (software) shall be provided and locked in a replacement parts cabinet.

EMERGENCY VOICE COMMUNICATION SYSTEMS

- 7.1 **Alarm Systems with Emergency Voice Communications.** Emergency Voice Communication Systems (EVCS) shall be installed in buildings that are more than four floors in height and or larger than 50,000 square feet. The design of the system shall be approved by the AHJ.
 - 7.1.1 The EVCS shall provide audibility in accordance with Section 2.10.

FIREFIGHTER COMMUNICATION SYSTEMS

8.1 **Firefighter Communications.** Firefighter communication systems shall be installed in buildings that are more than four floors in height or in buildings where normal methods of firefighter communication may be restricted. Approved shielded cable shall be installed for all firefighter communication systems.

EXCEPTION. In buildings where radio amplification is installed in accordance with local codes and policies, firefighter communication systems may not be required by the AHJ.

8.2 The AHJ shall approve all firefighter telephone locations. Each telephone shall be labeled with its location.

8.2.1 All firefighter telephones shall be hard wired and stored by a secured method.

8.2.2 A permanently installed fire department telephone handset shall be provided in the main sprinkler control valve room and fire pump room.

MONITORING

9.1 **Fire Alarm Monitoring.** Fire suppression and detection systems that are required by the most currently adopted International Codes, as amended, County Mitigation Codes, and/or the AHJ, shall be monitored at an approved location.

9.2 **Sprinklered Buildings.** Fire suppression systems that are required by the most currently adopted International Codes, as amended, County Mitigation Codes, and/or the AHJ, shall be monitored at an approved location.

9.3 **Transmission Alarm Codes.** Alarm signals shall send a distinct and separate code for each fire alarm signal. A reset code shall be transmitted when the alarm or trouble condition is cleared. Transmission of alarm signals shall be by an approved method.

RESIDENTIAL FIRE ALARM SYSTEM REQUIREMENTS

This section shall apply to all fire alarm and monitoring equipment installed in detached one and two family dwellings, including townhomes. Fire protection and life safety systems shall conform with the most currently adopted edition of the International Codes as amended; and be designed, installed and maintained in accordance with the most current edition of NFPA 72; and other nationally recognized standards.

10.1 See Section 1 for submittal requirements for Residential Fire Alarm Systems.

10.2 **Required Systems.** Required fire protection and life safety systems are systems that meet obligations imposed by the most currently adopted International Codes, as amended, County Mitigation Codes, and/or the AHJ.

10.3 **Verification.** Fire alarm monitoring companies shall voice verify an alarm at the residence prior to dispatching the fire department. If the fire alarm is false, the fire department shall not be notified. The verification procedure shall be approved by the AHJ.

10.4 **Key Box/Key Reset.** A Knox TM key box or Knox TM key reset switch as required by the AHJ shall be provided on the exterior of the dwelling in an approved location. The location of the key box or key reset switch shall be shown on the plans submitted for review. The key box or key reset switch shall be installed and functioning prior to the final acceptance test.

- 10.5 **Components.** All fire protection and life safety systems components shall be UL or FM listed. Components shall be installed per the manufacturer's instructions, in locations approved by the AHJ.
- 10.6 **Smoke Detector Locations.** In required systems, smoke detectors shall be located in accordance with the most currently adopted editions of the International Codes, as amended; and the most current edition of NFPA 72.
- 10.6.1 All system smoke detectors shall reset from the fire alarm panel or the key reset switch.
- 10.6.2 Smoke detectors shall not be installed on the mounting plate until the building is cleaned, construction is finished, and the area is ready for a final acceptance test. If detectors are installed prior to the above conditions, the AHJ may require all devices to be cleaned or replaced per manufacturer's specifications.
- 10.7 **Ionization Detectors.** Factory certification of the altitude range for ionization smoke detectors shall be submitted with the plan review package.
- 10.8 **Thermal Detection.** Heat detectors shall be used in areas that are unsuitable for smoke detectors. Rate compensating, and fixed temperature heat detectors shall have a locking remote LED. The device shall have its own zone or system address. Rate of rise detectors shall not be installed
- 10.8.1 **Garage Spaces.** Garages with living area above shall be protected with thermal detection.
- 10.8.2 **Panel Protection.** The fire alarm system control panel, not the keypads, shall be protected with a smoke detector, or a heat detector if the conditions of the environment are not suitable for a smoke detector.
- 10.9 **Alarm Audibility.** All fire alarm systems shall provide a sound level of not less than 75 dBA at all areas of a sleeping room with all intervening doors closed. All other areas of the home shall have a sound level of not less than 70 dBA. No single audible appliance shall be more than 120 dBA.
- 10.9.1 **Interior Sounders.** Interior sounders connected to the fire alarm system shall be labeled "Fire."
- 10.10 **Exterior Audible and Visual Signals.** A clear or white outside flashing light (75 candela minimum) and an outside audible alarm (85 dBA minimum) shall be activated upon any general alarm activation. The location of the outside alarm horn and strobes shall be approved by the AHJ. Additional strobes may be required.
- 10.11 **Transmission Alarm Codes.** Alarm signals shall send a distinct and separate code for each fire alarm signal. A reset code shall be transmitted when the alarm or trouble condition is cleared. Transmission of alarm signals shall be by an approved method. Phone seizure shall be implemented where only one phone line is utilized.
- 10.11.1 All required, monitored fire alarm systems shall have an automatic test signal sent to the monitoring company every 24 hours.
- 10.12 **Wire.** Fire alarm wire shall be red in color, and shall not be painted. Fire alarm wire run through conduit shall have all junction box covers painted red or labeled "Fire Alarm System." Romex® wire will be allowed if the requirements of 10.12.1 are met.
- 10.12.1 Wire shall be labeled "Fire Wire" on a red tag with white letters. The spacing of labels shall be every 10' for Romex® wire and every 20' for other listed fire wire. The wire shall also be labeled on each side of all walls and any other penetrations. Vertical wire risers shall be labeled on each floor.
- 10.13 **Retrofitted Fire Alarm Systems.** A monitored retrofitted fire alarm system shall provide, as a minimum, smoke or heat detector, or combination of both, on each floor and in the basement of the dwelling unit. An approved battery operated smoke detector shall also be installed in every sleeping room. See Section 10.9 for audibility requirements.
- 10.14 **Voluntary Fire Alarm Systems.** Shall comply with the requirements of Sections 10.1 through 10.10 and Section 10.12.
- 10.15 **Device Location.** Initiating device placements will be handled on a case-by-case basis by the AHJ.

- 10.16 **Inspections and Testing.** See Section 11 for details on inspections and testing.

INSPECTIONS, TESTING, AND SYSTEM CERTIFICATION OF ALL FIRE ALARM SYSTEMS

- 11.1 **Inspections.** A rough-in inspection is required of all system components **PRIOR** to the installation of insulation and or any wall coverings.
- 11.2 **Final Acceptance Testing for Fire Alarm Systems.** All fire alarm systems shall be pre-tested by the installer **PRIOR** to the final acceptance test. All fire alarm systems shall have a final acceptance test and a completed "Fire Alarm Testing and Inspection Form" from the installer before a Certificate of Occupancy will be issued and the system can be monitored. A copy of the "Fire Alarm Testing and Inspection Form" can be found in the most current edition of NFPA 72.
- 11.2.1 The fire department will witness a test of the fire alarm system as designed and approved. During the final testing the installer shall provide all needed test equipment. All initiating devices, audible appliances, visual appliances and resetting devices shall be tested.
- 11.2.2 After the final fire alarm acceptance test, the system fire alarm panel shall be clear of all alarm and trouble conditions prior to occupancy.
- 11.3 **Inspection Scheduling.** All rough-in inspections and final acceptance testing shall be requested at least 48 hours **PRIOR** to the inspection. It is recommended that commercial systems schedule final acceptance tests seven days in advance. The system installer shall request and be present for all inspections.
- 11.4 As-built drawings and/or calculations of commercial fire alarm systems shall be submitted in an electronic format acceptable to the AHJ.
- 11.5 **Test and Inspection Reports.** Annual test and inspection reports of commercial fire alarm systems shall be performed in compliance with the most current edition of NFPA 72, and a copy of the report shall be submitted to the AHJ within 30 days of completion of the test.

RESIDENTIAL SPRINKLER REQUIREMENTS

This section shall apply to all fire extinguishing systems installed in detached one and two family dwellings including townhomes. Fire protection and life safety systems shall conform to the most currently adopted edition of the International Codes, as amended; and be designed, installed, and maintained in accordance with this policy; the most current edition of NFPA 13D; and other nationally recognized standards.

- 12.1 **Application.** See Section 1 for details.
- 12.2 **Approval Process.** See Section 1 for details.
- 12.3 **Components.** See Section 1 for details.
- 12.4 **Required Systems.** Required fire protection and life safety systems are systems that meet obligations imposed by the most currently adopted edition of the International Codes as amended.
- 12.4.1 The quantity of water required for NFPA 13D systems, that use stored water as the sole source of supply, shall be based on water demand of the system and the driving time of the fire department to that location, but no less than 10 minutes of water supply.
- 12.4.2 Sprinkler protection shall be provided within all attached garages in all NFPA 13D systems.

- 12.4.3 The design criteria for a NFPA 13D system, within a single-family residence 5000 square feet or larger, shall be a minimum of three (3) sprinkler heads. The system shall provide a discharge of not less than 13 gpm per sprinkler head, but the discharge shall not be less than the listing of the sprinkler head.
- 12.4.4 System design for slopes greater than 8/12 shall be per the sprinkler head manufacturer's design criteria.
- 12.5 **Key Box.** See Section 3.7
- 12.6 **Alarm Audibility.** Voluntary and required fire extinguishing systems shall provide a sound level of not less than 75 dBA at all areas of a residence including the sleeping room with all intervening doors closed. No single audible appliance shall be more than 120 dBA.
- 12.6.1 **Outside Horn and Strobe.** Clear or white outside flashing light (75 candela minimum) and an outside audible alarm (85 dBA minimum) shall be activated upon any general alarm activation. The location of the outside alarm horn and strobe shall be approved by the AHJ. Additional strobes may be required.
- 12.7 **Fire Department Connection.** All NFPA 13D systems shall have an approved single 2½" hose connection. The hose connections shall use National Hose Threads. The fire department connection shall be located between 36" and 48" above the finished grade. See AHJ for specific exceptions.
- 12.8 **Transmission Alarm Codes.** Alarm signals shall send a distinct and separate code for each fire alarm signal. A reset code shall be transmitted when the alarm or trouble condition is cleared. Transmission of alarm signals shall be by an approved method. All NFPA 13D systems shall have one phone line available for use as outlined in Section 10.11.
- 12.9 **Flushing.** All underground line(s) connected to any fire sprinkler system shall have a witnessed flush, prior to any system components being attached to the line(s).
- 12.10 **Inspections and Testing.** See Section 13 for details on inspections and testing.

INSPECTIONS, TESTING, AND SYSTEM CERTIFICATION OF ALL FIRE PROTECTION SYSTEMS

- 13.1 **Inspections.** A rough-in inspection is required of all system components **PRIOR** to the installation of any insulation and/or wall coverings. Hydrostatic testing of the sprinkler systems shall include all portions of the systems, including the fire department connections.
- 13.2 When the sprinkler system is provided by an individual tank and pump system, or pump assist system, the sprinkler contractor shall conduct a functional flow test on all NFPA 13,13D, and 13R systems. Contact the AHJ for details on the procedures for a functional flow test.
- 13.3 **Final Acceptance Testing.** All fire extinguishing systems shall be **pre-tested** by the installer **PRIOR** to the final acceptance test.
- 13.3.1 The sprinkler contractor shall provide the AHJ with a copy of the "Contractor's Material and Test Certificate for Aboveground Piping" at the time of the final acceptance test. The Contractor's Certificate is required before the AHJ signs off on a Certificate of Occupancy with the Building Department.
- 13.3.2 The sprinkler contractor shall provide proof to the AHJ that the owner or their representative has received a current edition of NFPA 25 from the installer for all NFPA 13 and/or NFPA 13R systems.
- 13.4 All rough-in inspections, hydrostatic tests, and final acceptance tests shall be requested at least 48 hours **PRIOR** to the inspection. Any fire extinguishing system that fails an inspection or acceptance test may be subject to re-inspection fees per the District Fee Schedule. The fee shall be paid before any additional inspections or tests can be scheduled. See the AHJ for details.

- 13.5 The fire department will witness a test of the fire extinguishing system as designed and approved. During the final testing the installer must provide all needed test equipment. All initiating devices, audible appliances, visual appliances, and resetting devices are required to be tested.
- 13.6 As-built drawings of commercial fire extinguishing systems shall be submitted in an electronic format acceptable to the AHJ. Additional hydraulic calculation may also be required by the AHJ.
- 13.7 **Test and Inspection Reports.** Annual test and inspection reports of commercial fire alarm systems shall be performed in compliance with the most current edition of applicable NFPA standards, and a copy of the report shall be submitted to the AHJ within 30 days of completion of the test.

INSPECTIONS, TESTING, AND SYSTEM CERTIFICATION OF SPECIAL EXTINGUISHING SYSTEMS

- 14.1 **Final Acceptance Testing.** All fire extinguishing systems shall be **pre-tested** by the installer **PRIOR** to the final acceptance test
- 14.2 The fire department will witness a test of the fire extinguishing system as designed and approved. During the final testing the installer must provide all needed test equipment. All initiating devices, audible appliances, visual appliances, and resetting devices are required to be tested.
- 14.3 **Test and Inspection Reports.** Annual test and inspection reports of commercial fire alarm systems shall be performed in compliance with the most current edition of applicable NFPA standards, and a copy of the report shall be submitted to the AHJ within 30 days of completion of the test.