



Approval:   
Travis Davis – Fire Chief

## Operational Guideline

### Life Safety Policy

1401

Latest Revision: 08/01/2020

#### PURPOSE:

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 the National Fire Protection Association (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.

#### SCOPE:

##### Section 1: Plan Review Submittal

- 1.1 **General.** 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 comply with, be designed to, and be installed and maintained in accordance with the most current adopted edition of the International Codes, as amended; the most current edition of NFPA standards; other nationally recognized standards; and manufacturers' requirements. See Sections 11 - 14, for residential occupancy requirements. All submittals shall include a copy of the plans, calculations, and specifications in a portable document format (PDF). At least one (1) printed (hardcopy) version may be required.
- 1.2 **Application.** The plan review submittal shall include an application form, plans, specification sheets, calculations, and fees. Work shall not start until all documentation and fees have been submitted and paid. If this procedure is not followed, then the AHJ reserves the right to conduct an investigation and assess additional fees, as outlined on the Fire District's Fee Schedule.
  - 1.2.1 **Fire Alarm Systems.** Technical specification sheets shall be provided for system components, primary panel configuration, communication equipment, and all devices. Specification sheets shall include information on component operation and device operation. Design specific components and battery draw (in standby and alarm modes) shall be highlighted or outlined in red. An equipment list shall be provided, and it



shall include the number of devices, part numbers, and equipment descriptions. All plans shall be submitted by a NICET Level III or equivalent certified designer.

- 1.2.1.1 **Battery Type and Capacity.** Battery calculations and manufacturer specifications shall be provided. At a minimum, the batteries shall support 24 hours of standby time plus 5 minutes of alarm time.
- 1.2.1.2 **Wire Size Calculations.** The plan submittal shall include wire size calculations and a statement that the proposed system meets the equipment manufacturer specifications. Voltage drop calculations and supporting documentation shall be required.
- 1.2.1.3 **Point-to-Point Wiring Diagram.** The AHJ may require a point-to-point wiring diagram that shows the exact number of devices per circuit.
- 1.2.1.4 **Riser Diagram.** The riser diagram shall indicate the zone configuration and designate the number of devices per floor.
- 1.2.2 **Sprinkler Systems.** Specification sheets shall provide information on all component operational functions. An equipment list shall be provided. It shall include the number of devices, part numbers, and equipment descriptions.
  - 1.2.2.1 **Hydraulic Calculations.** The hydraulic calculation method shall be used to provide at least a 10 percent or 10 psi safety factor (whichever is greater) between the system demand curve and the water supply curve. The hydrant data source shall be approved by the AHJ.
  - 1.2.2.2 **Gridded Systems.** Hydraulic calculations for gridded systems shall be peaked to verify the most hydraulically demanding combination of sprinklers.
- 1.2.3 **Kitchen Hood Extinguishing Systems.** Specification sheets shall provide information on all component operational functions. An equipment list shall include the number of devices, part numbers, and equipment descriptions. A schematic diagram of the appliance layout shall be required.
- 1.2.4 **Standpipes.** Standpipe submittals shall be separate from fire protection



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submittals. Specification sheets shall provide information on all component operational functions. An equipment list shall be provided with the number of devices, part numbers, and equipment descriptions. The maximum design distance from any hose connection shall not be more than 140 feet.

- 1.2.5 **Other Detection and/or Protection Systems.** Specification sheets shall provide information on all component operational functions. An equipment list shall be provided with the number of devices, part numbers, and equipment descriptions.

**Manuals.** Operation and maintenance manuals shall be provided to the customer.

**Approval Process.** Following the fire department’s review, a letter may be sent to the applicant indicating items that require correction. The approved plans and permit card shall be available during inspections. The applicant shall be responsible for corrections prior to receiving final approval for the system.

- 1.4.1 **Alternative Materials and Methods.** Alternative materials and methods may be substituted for those outlined in this policy. However, **PRIOR** approval from the AHJ shall be required. Proposed changes shall meet the intent of this policy. The burden of proof lies with the person requesting approval of alternate materials and methods of construction.

- 1.4.2 **Rejection Process.** The AHJ may reject the submitted plans if they do not meet the requirements of the application process and/or review process. A re-submittal fee shall be required. See Fee Schedule for more information.

**Components.** All fire protection and life safety system components shall be UL listed or FM approved for their intended use, and approved by the AHJ. Components shall be installed per the manufacturer’s instructions and in locations approved by the AHJ.

**Table of Contents and Equipment List.** A quick reference list shall be provided for the plan review.

**Required Fire Flow.** The required fire flow shown in Appendix B of the International Fire Code shall not be reduced by more than fifty (50) percent for the installation of a fire sprinkler system.

## **SECTION 2:** **DEFINITIONS**

**Clean.** All other trades shall have completed their construction activities, all floor coverings have been installed and the premises is move in ready.



FIRE & EMS

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**Environmental Life Safety Alarm.** For the purposes of this policy, an environmental life safety alarm shall be limited to carbon monoxide, gas, oxygen deficient atmospheric detection, and other detection that ensures the functionality of monitored life safety systems.

**Environmental Supervisory Alarm.** For the purposes of this policy, an environmental supervisory alarm shall be an alarm device used to detect an environmental condition that might threaten the function of the life safety equipment (e.g. low temperature detection that provides notification to prevent a sprinkler system from freezing).

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

**Kitchen Hood Extinguishing System.** A kitchen hood extinguishing system releases wet chemical extinguishing agents designed to put out cooking fires. These chemicals react with grease to create a harmless soapy substance that can't re-ignite. This process, called saponification, protects the hoods, appliances, and plenum areas from the ravages of fire. For added safety, the system also shuts off the electricity and gas to appliances under the commercial hood. The extinguishing system micro-switch is an initiating device.

**Node.** A device with direct communication into a fire alarm control panel (FACP). Any device that detects fire, smoke, or heat, (e.g. smoke detector or sprinkler flow switch).

**Point.** A point can be any device that detects fire, smoke, or heat, (e.g. smoke detector or water flow switch).

**Riser.** The supply pipes from the service provider (curb stop) to the system cross main or branch lines. The riser includes all gauges, valves, backflows, check valves, expansion tanks, and/or reduced pressure devices (RPZ).

**Sprinkler Low Air.** The loss of air pressure in a dry pipe sprinkler system. A sprinkler low air switch is an initiating device.

**Sprinkler Water Flow.** The discharge of water from a sprinkler system that activates a water flow switch. A water flow switch is an initiating device.

**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 signal for each individual system component.

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



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**Valve Tamper.** A signal that indicates the closing of any sprinkler and/or standpipe control valve. A valve tamper switch initiates a supervisory signal.

**Voluntary Systems.** Voluntary systems are systems that are installed at the option of the owner and are not required by the Fire Code or the AHJ. For the purposes of this policy, voluntary systems shall meet the same requirements as set forth in this policy.

**SECTION 3:**  
**GENERAL COMMERCIAL/MULTI-FAMILY REQUIREMENTS**  
**FOR FIRE DETECTION SYSTEMS**

**General.** Fire detection and life safety systems shall comply with, be designed, installed, and maintained in accordance with this policy, the most current adopted edition of the International Codes, as amended; the most current edition of NFPA Standards; and all other nationally recognized standards. The system installer shall be a NICET Level II or equivalent certification.

3.1.1 **Re-inspections.** Any inspection or test that fails may be subject to a re-inspection fee per the District’s Fee Schedule. Additional inspections or tests cannot be scheduled until the re-inspection fee is paid. See the AHJ for details.

**Primary Fire Alarm Panel.** All fire alarm panels shall be installed in an environment consistent with manufacturer requirements and as approved by the AHJ.

3.2.1 **System Silence.** A silence command input, at the primary or annunciator panel(s), shall silence the audible alarms inside the building while interior strobes remain activated. The outside horn/strobe shall remain active at all times when the system is in alarm.

3.2.2 **Alarm Verification.** Alarm verification shall be required as a feature of the primary fire alarm panel and annunciator panel(s), if installed. The AHJ shall approve the method of alarm verification.

**Alarm Panel Instructions.** A written narrative detailing the operation of the alarm panel shall be attached to the alarm panel prior to the final acceptance test.

**Remote Annunciators.** Complexes with multiple buildings, remote access points, large areas, 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. All remote annunciators shall be equipped with a passcode or key lockout that prevents use of the annunciator by unauthorized personnel.



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**Fire Alarm Panels.** All fire alarm systems shall be addressable unless approved otherwise by the AHJ. If a zoned panel is allowed, then the zones shall be approved by the AHJ.

3.5.1 **Graphic Map.** All fire alarm systems shall have an approved graphic map installed in a location approved by the AHJ. The map shall identify all points (nodes) and/or zones on the fire alarm system. The map shall be sized as required by the AHJ.

**Transmission of Alarm Signals.** The fire alarm panel shall transmit all signals separately and distinctly.

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

**Labels.** 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. The use of temporary or non-factory labels is prohibited.

**System Information Identification Label.** A label identifying the contracted service, monitoring company, account number, business telephone number, 24-hour telephone number, and emergency telephone number shall be placed on the inside front cover of the primary fire alarm panel.

3.8.1 **Power Identification.** A permanent label shall be affixed to the inside door of the fire alarm panel indicating the breaker box location (room), box name or number, and breaker number.

**Alarm Visual Signals.** All interior strobes shall remain flashing during a silence function. All exterior horns and strobes shall remain active until the system is reset. See Section 3.2.1 for additional information

**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.

3.10.1 **Exempt Locations.** 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 firefighter voice communication system.



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**EXCEPTION:** Emergency voice communication system speakers shall be required in stair towers.

- 3.10.2 **Alarm Tempo.** Evacuation signal characteristics shall be in accordance with the fire alarm systems output section, as outlined in the most current edition of NFPA 72.

**Ambient Noise.** The fire alarm system shall automatically disconnect power to the sound system of any occupancy with amplified sound. (2019 NFPA 72 Section 18.4.3.5)

**Audible and Visible Signals.** All general alarms shall activate a clear or white outside flashing light (110 candela minimum) and an outside audible alarm (85 dBA minimum). The AHJ shall approve the location of the outside horn(s) and strobe(s). Additional strobes may be required. All strobes shall remain flashing during a silence function.

**Key Box.** Structures with a life safety system or elevator shall be accessible. A Knox™ key box shall be installed in an **approved location** and sized appropriately for the maximum number of keys required or as determined by the AHJ. A Knox™ vault or multiple key boxes may be required. The Knox™ Home Box shall not be allowed.

**Smoke Detection.** All system smoke detectors shall have an indicating light when in an alarm condition. They shall reset from the fire alarm panel.

**EXCEPTION:** Wireless detectors (that automatically reset and are installed in accordance with their listing and NFPA 72) shall transmit a distinct signal with location information sent to the Fire Alarm Control Panel.

- 3.14.1 **Detector installation during construction.** The building shall be clean, and construction shall be finished and ready for a Certificate of Occupancy, before installing smoke detectors on the mounting plate. If smoke detectors are installed before the building is clean, then the AHJ may require replacement of all smoke detectors.

- 3.14.2 **Adverse Environmental Conditions.** An alternative means of protection may be required in areas susceptible to adverse environmental conditions.

**Ionization Detectors.** The plan review package shall include factory certification of the altitude range for ionization smoke detectors. Ionization smoke detectors shall be certified for this elevation.



**Thermal Detection.** Heat detectors shall be required in areas that are not suitable for smoke detectors. These detectors shall be addressable or on a separate zone from the smoke loop. **Rate of rise detectors shall not be allowed.**

**Duct Detection.** Where required by the most current adopted edition of the International Mechanical Code (IMC), duct detectors meeting the requirements of UL 268A shall be provided in all return air handling systems exceeding 2,000 cubic feet per minute (CFM). All duct detectors shall be labeled appropriately, installed in an approved location, have a red remote indicating light, and have a reset/test switch. All duct detectors shall sound a trouble signal at the panel only. The monitoring company shall notify the building owner or the building manager when they receive a trouble signal.

3.17.1 **Access.** Opening access shall comply with the IMC and provide a minimum opening area of ten inches by ten inches (10" X 10") to allow for inspection and maintenance on the detector, sampling tube, or sampling port. The detector, sampling tube, and/or sampling port shall be within 3 feet of the opening.

**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. Fire alarm manual pull stations shall be separated from other fire protection pull stations by a distance as required by the AHJ.

**Communication.** Listed communicators shall be required. Two separate and distinct communication pathways shall be required. Different technologies shall be used for the primary and secondary communication pathways. If a POTS (Plain Old Telephone Service) line is used for primary communication, then it shall be on a dedicated line. If a POTS line is used for secondary communication, then line seizure shall be required.

**EXCEPTION:** When approved by the AHJ, single path or sole path communicators that meet the requirements of the most current edition of NFPA 72 may be used.

**Special Tools.** Any keys, tools, and/or key pad codes required for resetting or opening any life safety system or elevator shall be provided by the system contractor and placed in an approved location.

3.20.1 **Elevator Key Boxes.** A Knox™ Elevator Key Box shall be required at each elevator bank at the lobby nearest to the lowest level of fire department access or other approved location. The key box shall contain the elevator fire service key and door drop key. If there are multiple elevator banks, then each elevator bank may require an elevator key box.

**Wire.** Fire alarm wire shall be red in color, and shall not be painted. When fire alarm wire is installed in conduit, then the conduit shall be red in color. All





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junction box covers shall be painted red and labeled “Fire Alarm System”. Romex® wire is allowed if the requirements of 3.21.1 are met.

3.21.1 **Labels.** Wire shall be labeled “Fire Wire” on a red background with minimum one inch (1”) white letters. The spacing of labels shall be every ten feet (10’) for Romex® wire and twenty feet (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.

**Primary Power.** Fire alarm systems shall be on a dedicated electrical circuit. The breaker shall be red in color and have a breaker lock installed. (2019 NFPA 72 Sections 10.6.5.2.3 and 10.6.5.4)

**DIY or Owner Installed Systems.** Fire alarm systems that do not meet the requirements of this policy and the current edition of NFPA 72 shall not be allowed. This includes but is not limited to Comcast, IFTTT, SimpliSafe, Smartthings, Ring, Nest, etc.

**Tests and Inspections.** See Section 13 for details on tests and inspections.

**SECTION 4:**  
**GENERAL COMMERCIAL/MULTI-FAMILY REQUIREMENTS**  
**FOR FIRE PROTECTION SYSTEMS**

4.1 **General.** Fire protection and life safety systems shall comply with, be designed, installed, and maintained in accordance with this policy, the most current adopted edition of the International Codes, as amended; the most current edition of NFPA Standards; and all other nationally recognized standards.

4.1.1 **Flush Test.** The installer shall flush the underground piping for the underground main prior to connecting the sprinkler system riser to the water service line. The installer shall be certified to perform this test, as required by the State of Colorado and NFPA. The AHJ, or a designee approved by the AHJ, shall witness the flush of the underground piping. A State licensed contractor shall fill out a “Contractor’s Material and Test Certificate for Underground Piping.”

4.1.2 **Freeze Protection.** 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. Concealed areas of these buildings shall be tempered to prevent freezing of sprinkler lines.

4.1.3 **Combustible decks, patios, and balconies.** Combustible decks, patios, or balconies with open-flame cooking devices or open-flame decorative devices shall be provided with sprinkler protection.



4.1.4 **Re-inspections.** Any inspection or test that fails may be subject to a re-inspection fee per the District's Fee Schedule. Additional inspections or tests cannot be scheduled until the re-inspection fee is paid. See the AHJ for details.

4.2 **Fire Alarm Requirements.** The system designer shall work with the AHJ to establish nodes as described below. The following nodes 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 (must be AHJ approved).
3. Sprinkler Low Air.
4. Valve Tamper.

**EXCEPTION:** The zones for kitchen hood extinguishing systems and sprinkler low air alarms may not be required to sound an evacuation alarm.

4.3 **Transmission of Alarm Signals.** The fire alarm panel shall transmit the following signals separately and distinctly. 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.

4.4 **Supervision.** 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.

4.5 **Labels.** 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 in NFPA 13 and NFPA 13R. All lettering and/or numbers shall be a minimum of one inch (1") in height on a contrasting background.

4.6 **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 water flow and general alarm activation. The location of the outside alarm horn and strobe shall be approved by the AHJ.



- 4.7 **Key Box.** Structures with a life safety system or elevator (as required by the most current adopted edition of the International Fire Code (IFC), as amended) shall be accessible. A Knox™ key box shall be installed in an **approved location** and sized appropriately for the maximum number of keys required or as determined by the AHJ. A Knox™ vault or multiple key boxes may be required. The Knox™ Home Box shall not be allowed.
- 4.8 **Special Tools.** Any keys or tools required for resetting or opening any life safety system or elevator shall be provided by the system contractor and placed in an approved location.
- 4.8.1 **Elevator Key Boxes.** A Knox™ Elevator Key Box shall be required at each elevator bank at the lobby nearest to the lowest level of fire department access or other approved location. The key box shall contain the elevator fire service key and door drop key. If there are multiple elevator banks, then each elevator bank may require an elevator key box.
- 4.8.2 **Sprinkler Wrenches.** If a socket is provided for the installation of sprinklers, then an approved handle is also required. Sprinkler tools shall be maintained in an approved location.
- 4.9 **Cross Contamination.** The sprinkler contractor shall be responsible for contacting the local water department for approval of the type of cross contamination device for the sprinkler system. Buildings undergoing remodels or system changes shall limit the potential for cross contamination by isolating the riser by distance or other means as approved by the AHJ.
- 4.9.1 **Reduced Pressure Zone (RPZ).** 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 specifications.
- 4.9.2 **Backflow Changes.** Installers shall submit a Scope of Work document, equipment specifications, and system calculations to the AHJ and the water department for changes and/or replacements of backflow prevention devices and RPZs.
- 4.10 **Control Valves.** All indicating control valves shall be supervised. A length of chain, approved by the AHJ, and an approved fire department lock may be required. If required, then the system installer or building owner shall provide the chain and lock. The size of the chain and the control valve shall be compatible.



- 4.10.1 **Types.** Indicating control valves shall be provided for each zone as required by the AHJ.
- 4.11 **Fire Department Connection (FDC).** All NFPA 13 and NFPA 13R systems and standpipes shall have an AHJ approved FDC with 2½” hose connections. The hose connections shall be the National Hose Thread type. FDC’s shall be installed 36” to 48” above grade and shall be accessible.
- 4.11.1 **Accessibility.** The FDC shall be accessible. The FDC shall be protected in an approved manner. A concrete pad and pathway (minimum three foot (3’) wide) shall be required. The AHJ may approve alternative materials. The pathway shall be maintained. Snow and ice build-up shall not be allowed.
- 4.11.2 **Caps.** Caps shall be provided by the installer or building owner to protect the FDC as required by the AHJ. Knox™ Locking FDC Caps may be required by the AHJ to prevent tampering.
- 4.12 **Main Drains.** Main drains from all risers shall be piped to the exterior of the building or to an approved drain capable of handling the flow rate of the main drain test.
- 4.13 **Water Flow Alarm Switch.** The water flow alarm switch shall be equipped with delay capabilities. The delay setting shall be set between 30 and 45 seconds.
- 4.14 **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.
- 4.15 **Sprinkler Riser Locations.** Sprinkler risers shall be in accessible locations. Sprinkler risers shall not be located in crawl spaces, closets, or other inaccessible location as determined by the AHJ. Sprinkler risers shall have a minimum of a three (3) foot clear working area around the riser. This includes areas around tanks, pumps, and other special equipment associated with the sprinkler system.
- 4.15.1 **Clear working area.** Striping may be required on the floor to indicate the proper distance for firefighter access.
- 4.16 **Underground Entry.** Piping entering the building through concrete or masonry material shall have a minimum of a one inch (1”) gap around the pipe that is protected to ensure the pipe does not rub on the concrete or masonry material.
- 4.17 **Sprig-ups.** Hydraulic design calculations shall include elevation gain for sprig-ups located within the design area.
- 4.18 **Sprinkler Riser Rooms.** Sprinkler riser rooms shall not be in the same room or



interconnected to the Fire Command Room, or the room that contains the fire alarm control panel or power supplies.

- 4.19 **Hydrostatic Tests for Existing Buildings.** The AHJ reserves the right to require a hydrostatic test for systems undergoing repairs or upgrades when less than 20 sprinkler heads are affected. This includes systems that add or replace pipe. If the FDC is located in the affected area, then it may also be required to be tested.
- 4.20 **Multiple Anti-Freeze Systems.** Unless otherwise approved by the AHJ, sprinkler systems shall be limited to one type of anti-freeze system (glycerin or glycol) per building.
- 4.21 **Antifreeze Systems.** Antifreeze systems shall follow the AHJ's most current antifreeze usage policy.
- 4.22 **Vaults and Limited Access Areas.** Areas with limited access or confined space access, as determined by the AHJ, shall be equipped with a separate flow switch and valve(s) that are accessible from outside of the limited access or confined space area. Sprinkler coverage requirements may be evaluated on a case-by-case basis.
- 4.23 **Insulation.** The insulation installer or builder shall follow the AHJ's most current insulation installation policy.
- 4.24 **HVLS Fans.** The fire alarm system shall automatically turn off all High Volume Low Speed (HVLS) fans upon activation of the water flow switch serving the fan area. (2019 NFPA 13 Section 11.1.7)
- 4.25 **Tests and Inspections.** See Section 14 for details on tests and inspections.

**SECTION 5:**  
**GENERAL REQUIREMENTS FOR KITCHEN HOOD**  
**EXTINGUISHING SYSTEMS**

- 5.1 **General.** 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.
  - 5.1.1 **Re-inspections.** Any inspection or test that fails may be subject to a re-inspection fee per the District's Fee Schedule. Additional inspections or tests cannot be scheduled until the re-inspection fee is paid. See the AHJ for details.
- 5.2 **Appliances.** Appliances with built-in fire suppression systems shall be installed



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and maintained per manufacturers' specifications. Appliances shall be reviewed on a case-by-case basis.

5.3 **Kitchen Hood Connection.** The kitchen hood shall interconnect with the building fire alarm system. If the building does not have a fire alarm system, then the kitchen hood system may be required to sound an evacuation alarm as approved by the AHJ.

5.3.1 **Notification.** Appliances, with a built-in fire suppression system, shall be required to have audible and visual notification. The notification device can be mounted on the appliance.

5.4 **Certification.** Only technicians or companies registered or licensed by the manufacturer shall perform installations, maintenance, and/or service on the hood fire suppression systems.

5.5 **Mobile Food Trucks.** Mobile food trucks and/or trailers shall comply with the most current adopted version of the International Fire Code, NFPA 17A, NFPA 58, NFPA 70, NFPA 96, and other codes or policies adopted by the AHJ pertaining to food trucks operating under 6-CCR-1010-2.

5.5.1 **Exterior Notification.** Mobile Food Trucks may be required to install an exterior horn and strobe. If there is an exterior horn and strobe, then it shall activate if the kitchen hood fire suppression system activates.

**SECTION 6:**  
**GENERAL REQUIREMENTS FOR SPECIAL DETECTION OR**  
**EXTINGUISHING SYSTEMS**

6.1 **General.** Special detection or extinguishing systems shall be designed and installed in accordance with this policy, applicable NFPA standards, manufacturer's recommendations, and other nationally recognized standards.

6.1.1 **Re-inspections.** Any inspection or test that fails may be subject to a re-inspection fee per the District's Fee Schedule. Additional inspections or tests cannot be scheduled until the re-inspection fee is paid. See the AHJ for details.

6.2 **Signal.** All signals shall be addressable. Special extinguishing systems shall sound an evacuation alarm and send a distinct signal to the monitoring company. See Section 5 for Kitchen Hood Extinguishing Systems.

6.3 **Environmental Alarms Other than Carbon Monoxide.** Audible and visual signals from environmental alarms shall be latching and only resettable by authorized personnel. These alarms shall also initiate a visual signal at the Knox



Box with an amber light or other AHJ approved location. A sign shall be installed under the light, with a minimum of 1 inch (1”) letters on a contrasting background to read, “Hazardous, low oxygen conditions exist inside structure, DO NOT ENTER WITHOUT APPROPRIATE EQUIPMENT.”

- 6.4 **Monitoring.** Special extinguishing systems shall be monitored.

**SECTION 7:**

**SPECIAL REQUIREMENTS FOR FIRE ALARM SYSTEMS**

- 7.1 **General.** Special provisions for technologies (e.g. elevators, phone, and radio systems) shall comply with the most current adopted edition of the International Codes, as amended, the most current edition of NFPA standards, ASME standards, and other local regulations.

**SECTION 8:**

**EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS**

- 8.1 **General.** Emergency Voice/Alarm Communication Systems (EVCS) shall be installed in buildings that are four stories or more in height and/or larger than 50,000 square feet. The design of the system shall be approved by the AHJ.
- 8.1.1 **Re-inspections.** Any inspection or test that fails may be subject to a re-inspection fee per the District’s Fee Schedule. Additional inspections or tests cannot be scheduled until the re-inspection fee is paid. See the AHJ for details.
- 8.2 **Audibility.** The EVCS shall provide audibility in accordance with Section 3.10
- 8.3 **Mass Notification.** Mass notification systems shall comply with this section of the policy.

**SECTION 9:**

**EMERGENCY RESPONDER RADIO COVERAGE SYSTEMS**

- 9.1 **Firefighter Communications.** Firefighter telephones shall not be installed in any building.

**EXCEPTION: Buildings with Fire Pumps.** In buildings with a fire pump, a permanently installed fire department telephone handset shall be provided in the main sprinkler control valve room and in the fire pump room. Fire pump room handsets shall connect to the permanently installed phone in the Fire Command room.

- 9.2 **Emergency Responder Radio Coverage.** A radio system shall be installed in



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all buildings in compliance with the most current Summit County Emergency Responder Radio Coverage Policy and the most current edition of the IFC, as amended.

**EXCEPTION:** 1 and 2 family dwellings built under the IRC and buildings exempted through testing in accordance with the most current Summit County Emergency Responder Radio Coverage Policy.

- 9.3 **Test and Inspection.** The owner of the building or owner’s authorized agent shall have the emergency responder radio coverage system shall be inspected and tested annually or where structural changes occur including additions or remodels that could materially change the original field performance tests.

**SECTION 10:**  
**MONITORING**

- 10.1 **Fire Alarm Monitoring.** Fire detection systems required by the International Codes, as amended, County Mitigation Codes, and/or the AHJ, shall be monitored at an approved location. Fire suppression systems shall be monitored.
- 10.2 **Transmission of Alarm Codes.** Alarm signals shall send a distinct and separate code for each type of 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.

**SECTION 11:**  
**RESIDENTIAL FIRE ALARM SYSTEM REQUIREMENTS**

- 11.1 **General.** 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 comply with the most current 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. The system installer shall be a NICET Level II or equivalent certification.
- 11.1.1 **Re-inspections.** Any inspection or test that fails may be subject to a re-inspection fee per the District’s Fee Schedule. Additional inspections or tests cannot be scheduled until the re-inspection fee is paid. See the AHJ for details.
- 11.2 **Required Systems.** Required fire protection and life safety systems are systems that meet requirements imposed by the adopted International Codes, as amended, County Mitigation Codes, and/or the AHJ.
- 11.3 **Verification.** Alarm monitoring companies shall attempt to voice verify an





alarm at the residence ONCE prior to dispatching the fire department. If the alarm is verified as false, then the fire department shall not be notified. The method of verification shall be approved by the AHJ.

- 11.4 **Key Box.** Structures with a life safety system or elevator (as required by the most current adopted edition of the International Fire Code (IFC), as amended) shall be accessible. A Knox™ key box shall be installed in an **approved location** and sized appropriately for the maximum number of keys required or as determined by the AHJ. A Knox™ vault or multiple key boxes may be required. The Knox™ Home Box shall not be allowed.
- 11.5 **Components.** All fire protection and life safety system components shall be UL or FM listed for their intended use. Components shall be installed per the manufacturer's instructions, in locations approved by the AHJ.
- 11.6 **Smoke Detector Locations.** Smoke detectors shall be located in accordance with the most current adopted editions of the International Codes, as amended, and the most current edition of NFPA 72.
  - 11.6.1 **Reset.** All system smoke detectors shall reset from the fire alarm keypad.
  - 11.6.2 **Detector installation during construction.** 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 Certificate of Occupancy. If detectors are installed prior to the above conditions, then the AHJ may require all devices to be replaced.
- 11.7 **Ionization Detectors.** The plan review package shall include factory certification of the altitude range for ionization smoke detectors. Ionization smoke detectors shall be certified for this elevation.
- 11.8 **Thermal Detection.** Heat detectors shall be required in areas that are not suitable for smoke detectors. These detectors shall be addressable or on a separate zone from the smoke loop. **Rate of rise detectors shall not be allowed.**
  - 11.8.1 **Garage Spaces.** Heat detection shall be required in garages with living area above.
  - 11.8.2 **Panel Protection.** The fire alarm system control panel, not the keypad(s), shall be protected. A smoke detector is preferred; however, a heat detector can be used, when approved by the AHJ, if the environment is not suitable for a smoke detector.
- 11.9 **Alarm Audibility.** Fire alarm systems shall provide a minimum sound level of



75 dBA in all areas of a sleeping room with all intervening doors closed. All other areas of the home shall have a minimum sound level of 70 dBA. A single audible appliance shall not exceed 120 dBA.

- 11.9.1 **Interior Sounders.** Interior sounders connected to the fire alarm system shall be labeled “Fire”. Temporary or non-factory labels shall be prohibited. Sounder devices shall be white or red in color.
- 11.9.2 **Interior Sounder Location.** Interior sounders shall be installed in the ceiling or above the entry door to the room, unless otherwise approved by the AHJ.
- 11.10 **Exterior Audible and Visual Signals.** Devices used on the exterior of a home shall be weatherproof and listed for an outdoor environment. A clear or white flashing light (75 candela minimum) and an audible alarm (85 dBA minimum) shall be activated upon a general alarm. Additional strobes may be required. The AHJ shall approve the location for the outside horn and strobe(s).
- 11.11 **Transmission Alarm Codes.** Alarm signals shall send a separate and distinct 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 when only one phone line is utilized.
  - 11.11.1 **Timer Test.** Monitored fire alarm systems shall have an automatic test signal sent to the monitoring company at least once every 24 hours.
  - 11.11.2 **Alternative Communication.** When an approved alternative communication system is used, it shall meet the requirements of NFPA 72.
- 11.12 **Wire.** Fire alarm wire shall be red in color, and shall not be painted. When fire alarm wire is installed in conduit, then the conduit shall be red in color. All junction box covers shall be painted red and labeled “Fire Alarm System”. Romex® wire is allowed if the requirements of 11.12.1 are met.
  - 11.12.1 **Labels.** Wire shall be labeled “Fire Wire” on a red background with minimum one inch (1”) white letters. The spacing of labels shall be every ten feet (10’) for Romex® wire and twenty feet (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.
- 11.13 **Retrofitted Fire Alarm Systems.** A monitored retrofitted fire alarm system shall provide, as a minimum, an approved detection device on each floor and in



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the basement of the dwelling unit. An approved smoke alarm shall be located in every sleeping room and in the egress from the sleeping room. See Section 11.9 for audibility requirements.

- 11.14 **DIY or Owner Installed Systems.** Fire alarm systems that do not meet the requirements of this policy and the current edition of NFPA 72 shall not be allowed. This includes but are not limited to Comcast, IFTTT, SimpliSafe, Smartthings, Ring, Nest, etc.
- 11.15 **Tests and Inspections.** See Section 13 for details on tests and inspections.

**SECTION 12:**  
**RESIDENTIAL SPRINKLER REQUIREMENTS**

- 12.1 **General.** 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 comply with the most current 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.
- 12.1.1 **Re-inspections.** Any inspection or test that fails may be subject to a re-inspection fee per the District’s Fee Schedule. Additional inspections or tests cannot be scheduled until the re-inspection fee is paid. See the AHJ for details.
- 12.2 **Submittals.** See Section 1 for submittal requirements for Residential Sprinkler Systems.
- 12.3 **Required Systems.** Required fire protection and life safety systems are systems that meet requirements imposed by the adopted edition of the International Codes as amended or AHJ.
- 12.3.1 **Water Supply.** The quantity of water required for NFPA 13D systems that use stored water as the sole source of supply shall be based on the following:
- Water demand for the system plus drive time for the fire department to reach the home;
  - The water supply shall not be less than 10 minutes; and
  - The design area shall be a minimum of three (3) heads or as required by the AHJ.
- 12.3.2 **Garages.** Sprinkler protection shall be required within all attached garages.
- 12.3.3 **Design Area.** The hydraulic design criteria for a NFPA 13D system



shall be a minimum of three (3) flowing sprinkler heads. The system shall provide a minimum of 13 gallons per minute (gpm) per sprinkler head. The discharge shall not be less than the listing for the sprinkler head.

- 12.3.4 **Design Safety Factor.** The hydraulic calculation method shall be used to provide at least a 10 percent or 10 psi safety factor (whichever is greater) between the system demand curve and the water supply curve. The hydrant data source shall not be a static flow reading; rather a residual flow reading shall be used.
- 12.3.5 **System Components.** Sprinkler system components with an expectation of maintenance including but not limited to the riser, tanks, and pumps shall not be located in areas with limited access. This includes crawl spaces and other areas as determined by the AHJ.
- 12.3.6 **Pumps.** Sprinkler system pumps and compressors shall be located at least four inches (4”) above the floor. All materials, used to construct the mounting platform, shall be waterproofed materials or pressure treated wood. The pump and compressor shall be securely mounted to the platform. The platform shall be securely mounted to the floor.
- 12.3.7 **Antifreeze Systems.** Antifreeze systems shall follow the AHJ’s most current antifreeze usage policy.
- 12.3.8 **Roof Pitches.** The system design for ceiling slopes greater than 8:12 shall follow the sprinkler head manufacturer’s design criteria.
- 12.4 **Key Box.** Structures with a life safety system or elevator (as required by the most current adopted edition of the International Fire Code (IFC), as amended) shall be accessible. A Knox™ key box shall be installed in an **approved location** and sized appropriately for the maximum number of keys required or as determined by the AHJ. A Knox™ vault or multiple key boxes may be required. The Knox™ Home Box shall not be allowed.
- 12.5 **Alarm Audibility.** All fire extinguishing systems shall meet the audibility requirements in Section 11.9.
- 12.6 **Fire Department Connection (FDC).** NFPA 13D systems may require an approved single 2½” hose connection. The hose connection shall be the National Hose Thread type. The FDC shall be located between 36” and 48” above finished grade. FDCs shall be accessible as required in Section 4.11. See AHJ for specific exceptions.



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- 12.7 **Flush Tests.** The installer shall flush the underground piping for the underground main prior to connecting the sprinkler system riser to the water service line. The installer shall be registered to perform this test, as required by the State of Colorado and NFPA. The AHJ, or a designee approved by the AHJ, shall witness the flushing of the underground piping. A State licensed contractor shall fill out a “Contractor’s Material and Test Certificate for Underground Piping.”
- 12.8 **Hydrostatic Tests.** Hydrostatic testing shall comply with the most current edition of NFPA 13D.
- 12.9 **Premix antifreeze.** Antifreeze systems shall follow the AHJ’s most current antifreeze usage policy.
- 12.10 **Insulation.** The insulation installer or builder shall follow the AHJ’s most current insulation installation policy.
- 12.11 **Antifreeze Test Ports.** A test port (auxiliary drain) shall be installed in an accessible location for NFPA 13D systems. A placard noting the location of the drain shall be attached to the sprinkler riser.
- 12.12 **Tests and Inspections.** See Section 14 for details on tests and inspections.

**SECTION 13:**  
**INSPECTIONS, TESTS, AND SYSTEM CERTIFICATION FOR**  
**ALL FIRE DETECTION SYSTEMS**

- 13.1 **Rough-in Inspections.** A rough-in inspection shall be required for all system components **PRIOR** to the installation of insulation and/or wall coverings.
- 13.2 **Final Acceptance Test.** All fire alarm system components shall be pre-tested by the installer **PRIOR** to the final acceptance test.
  - 13.2.1 **Procedure.** The AHJ shall witness a test of the fire alarm system as designed and approved. The installer shall provide all needed test equipment. The installer shall test all initiating devices, audible appliances, visual appliances, and reset devices prior to the final acceptance test by the AHJ.
  - 14.3.2 **Documentation.** The fire alarm contractor shall provide the AHJ with a copy of the “System Record of Inspection and Testing” at the time of the final acceptance test. This document is required before the AHJ will sign the Building Department form for the Issuance of a Certificate of Occupancy. A sample form is in the most current edition of NFPA 72.



- 13.2.2 **Post-Test.** The fire alarm panel shall be clear of all alarm and trouble conditions prior to AHJ approval for the Certificate of Occupancy.
- 13.3 **Inspection Scheduling.** All rough-in inspections and final acceptance tests shall be requested at least 48 hours **PRIOR** to the inspection. Seven (7) days advance notice is recommended for commercial system inspections. The system installer shall request and be present for all inspections.
- 13.4 **As-built Drawings.** The installer shall submit as-built drawings and/or calculations for commercial fire alarm systems in an electronic format acceptable to the AHJ.
- 13.5 **Tests and Inspections.** Certified fire alarm contractors shall perform tests and inspections for fire alarm systems. The test and inspection shall comply with the most current edition of NFPA 72. The contractor shall submit the test and inspection report electronically to the AHJ within 30 days of completion of the test.

**SECTION 14:**  
**INSPECTIONS, TESTS, AND SYSTEM CERTIFICATION FOR**  
**ALL FIRE PROTECTION SYSTEMS**

- 14.1 **Rough-in Inspections.** A rough-in inspection shall be required for all system components **PRIOR** to the installation of insulation and/or wall coverings.
- 14.2 **Hydrostatic Test Inspections.** Hydrostatic tests for sprinkler systems shall include all portions of the system, including the FDC(s).
- 14.3 **Pump and Tank Systems.** The sprinkler contractor shall conduct a functional flow test for all NFPA 13,13D, and 13R systems when the sprinkler system water is supplied by an individual pump and tank or pump-assist system. Contact the AHJ for details on the functional flow test procedures.
- 14.4 **Final Acceptance Tests.** All fire suppression systems shall be **pre-tested** by the installer **PRIOR** to the final acceptance test.
- 14.4.1 **Procedure.** The AHJ shall witness a test of the fire suppression system as designed and approved. The installer shall provide all needed test equipment. The installer shall test all initiating devices, audible appliances, visual appliances and reset devices prior to the final acceptance test by the AHJ.
- 14.4.2 **Documentation.** 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. This document is required before the AHJ will sign the Building Department form for the Issuance of a Certificate of Occupancy. A sample form is in the most current edition of NFPA 13.

14.4.3 **Additional Documents for NFPA 13 and/or NFPA 13R systems:**  
The sprinkler contractor shall prove that they provided the most current edition of NFPA 25 to the owner or their representative.

14.5 **Inspection Scheduling.** All rough-in inspections and final acceptance tests shall be requested at least 48 hours **PRIOR** to the inspection. Seven (7) days advance notice is recommended for commercial system inspections. The system installer shall request and be present for all inspections.

14.6 **As-built Drawings.** The installer shall submit as-built drawings for commercial fire suppression systems in an electronic format acceptable to the AHJ. The AHJ may also require additional hydraulic calculations.

14.7 **Cross Contamination Devices.** Sprinkler systems that utilize pressurized water supplies shall have the cross contamination devices tested and certified in accordance with local water department requirements and State requirements.

14.8 **Tests and Inspections.** Certified fire suppression system contractors shall perform tests and inspections for fire suppression systems. The test and inspection shall comply with the most current edition of applicable NFPA standards. The contractor shall submit the test and inspection report electronically to the AHJ within 30 days of completion of the test.

**SECTION 15:**  
**INSPECTIONS, TESTS, AND SYSTEM CERTIFICATION FOR**  
**SPECIAL EXTINGUISHING SYSTEMS**

15.1 **Final Acceptance Test.** All fire extinguishing systems shall be **pre-tested** by the installer **PRIOR** to the final acceptance test.

15.1.1 **Procedure.** The AHJ shall witness a test of the fire extinguishing system as designed and approved. The installer shall provide all needed test equipment. The installer shall test all initiating devices, audible appliances, visual appliances and reset devices prior to the final acceptance test by the AHJ.

15.1.2 **Documentation.** The contractor shall provide the AHJ with a copy of the Test Certificate at the time of the final acceptance test. This document is required before the AHJ will sign any forms approving the system.

15.2 **Tests and Inspections.** Certified contractors shall perform annual tests and



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inspections for special extinguishing systems. The test and inspection shall comply with the most current edition of applicable NFPA standards. The contractor shall submit the test and inspection report electronically to the AHJ within 30 days of completion of the test.

**SECTION 16:**  
**INSPECTIONS, TESTS, AND SYSTEM CERTIFICATION FOR**  
**STANDPIPE SYSTEMS**

16.1 **Flow Tests.** Standpipe systems may be required to pass a flow test that complies with the most current editions of NFPA 14 and NFPA 25.

16.1.1 **Procedure.** The AHJ may require a flow test for the standpipe system as designed and approved. The installer shall provide all needed test equipment. The installer shall test for integrity and required flow of the system prior to final acceptance of the system by the AHJ.

16.1.2 **Documentation.** The contractor shall provide the AHJ with a copy of the Test Certificate at the time of the final acceptance test. This document is required before the AHJ will sign any forms approving the system.

16.2 **Tests and Inspections.** Certified system contractors shall perform tests and inspections for standpipe systems. The test and inspection shall comply with the most current edition of applicable NFPA standards. The contractor shall submit the test and inspection report electronically to the AHJ within 30 days of completion of the test.