

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

- 3.1 **General.** Fire detection and life safety systems shall comply with and be designed, installed, and maintained in accordance with this guide, 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. Occupant notification shall be required for buildings containing fire sprinkler systems.
- 3.1.1 **Re-inspections.** Any failed inspection or test 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.
- 3.2 **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 **Alarm Verification.** If installed, alarm verification shall be required as a feature of the primary fire alarm panel and annunciator panel(s). The AHJ shall approve the method of alarm verification.
- 3.2.2 **Wet Locations.** A fire alarm panel in a potentially wet environment shall be listed for a waterproof or water-resistant environment.
- 3.3 **Alarm Panel Instructions.** Prior to the final acceptance test, a written narrative detailing the alarm panel's operation shall be attached to it.
- 3.4 **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 have a passcode or key lockout that prevents unauthorized personnel from using the annunciator.
- 3.5 **Fire Alarm Panels.** All fire alarm systems shall be addressable unless the AHJ approves otherwise. If a zoned panel is allowed, 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. The map shall be legible with a minimum font size 10 in Calibri font.
- 3.5.2 **Electronic Copies.** Approved plans and as-built drawings shall be stored in an approved plans box with USB access.

- 3.6 **Transmission of Alarm Signals.** The fire alarm panel shall transmit all signals separately and distinctly.
- 3.6.1 **Dispatch to Fire Department.** Automatic fire alarm activations, sprinkler water flow activations, environmental life safety alarm activations, kitchen hood system activations, and fire pump activations shall be transmitted to the fire department.
- 3.6.2 **Dispatch to Owner.** Trouble signals, supervisory signals, sprinkler low air alarms, automatic fire alarm system activations, sprinkler flow alarm activations, environmental supervisory alarm activations, environmental life safety alarm activations, kitchen hood suppression system activations, and fire pump activations.
- 3.7 **Labels.** The fire alarm, remote annunciator, remote indicating lights, mini-horns, and firefighter telephones shall have labels that are word graphic, of durable material, and permanently attached. The use of temporary or non-factory labels is prohibited.
- 3.8 **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 indicating the breaker box location (room), box name or number, and breaker number shall be affixed to the inside cover of the fire alarm panel.
- 3.8.2 **Breaker.** The breaker inside the electrical panel shall be red and locked to prevent tampering.
- 3.9 **Alarm Visual Signals.** All interior and exterior horns and strobes shall remain active until the system is reset unless the AHJ requires otherwise.
- 3.10 **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 or approved Application 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.

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

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

- 3.11 **Ambient Noise.** The fire alarm system shall automatically disconnect power to the sound system of any occupancy with amplified sound.
- 3.12 **Audible and Visible Signals.** All general alarms shall activate a clear or white outside flashing strobe (110-candela minimum) unless otherwise approved by the AHJ and an outside audible alarm (85 dBA minimum). The AHJ shall approve the location of the outside horn(s) and strobe(s). Additional horns or strobes may be required.
- 3.13 **Key Box.** Structures with a life safety system or elevator (as required by the most current adopted edition of the IFC, as amended) shall be accessible. A Knox™ key box shall be installed in an **approved location**. It shall be a Knox™ Vault or other approved size determined by the AHJ. The Knox™ Home Box shall not be allowed.
- 3.14 **Smoke and/or Combination Detection.** All system smoke detectors shall have an indicating light when in an alarm condition. They shall be reset from the fire alarm panel.
- Exception:** Wireless detectors (that automatically reset and are installed per 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.** Smoke detectors shall not be installed on the mounting plate until the building is CLEAN and construction is finished and ready for a Certificate of Occupancy.
- 3.14.2 **Adverse Environmental Conditions.** In areas susceptible to adverse environmental conditions, an alternative means of protection may be required.
- 3.15 **Ionization Detectors.** The plan review package shall include factory certification of the altitude range for ionization smoke detectors, which shall be certified for elevations above 8,000 feet above sea level.
- 3.16 **Thermal Detection.** Heat detectors may be required in areas unsuitable for smoke detectors. They shall be addressable or installed in a separate zone from the smoke loop. *Rate-of-rise detectors shall not be allowed in areas with known temperature fluctuations that fall within the time/temperature thresholds.*
- 3.17 **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 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 of the detector, sampling tube, or sampling port. The detector, sampling tube, and/or sampling port shall be within three (3) feet of the opening. The reset switch for duct detectors shall be accessible without the use of special tools or equipment (e.g., a ladder).
- 3.18 **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. Fire alarm manual pull stations shall be separated from other fire protection pull stations by a distance as required by the AHJ or other codes or standards.
- 3.19 **Communication.** Listed communicators 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, it shall be on a dedicated line. If a POTS line is used for secondary communication, then line seizure shall be required. 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.
- 3.20 **Special Tools.** The system contractor shall provide any keys, tools, and/or keypad codes required for resetting or opening any life safety system or elevator and place them 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 and door drop keys. If there are multiple elevator banks, each may require an elevator key box.
- 3.21 **Wire.** The fire alarm wire shall be red or red-striped unless approved otherwise by the AHJ. The wire shall not be painted. When the fire alarm wire is installed in a conduit, then the conduit shall be red. All junction box covers shall be painted red and labeled "Fire Alarm System" with a minimum of one-half inch (1/2") white letters. Romex® wire is allowed if the requirements of 3.21.1 are met.
- 3.21.1 **Labels.** When the wire does not meet the requirement of 3.21, the wire shall be labeled "Fire Wire" on a red background with a minimum of one-half inch (1/2") 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.
- 3.22 **Primary Power.** Fire alarm systems shall be on a dedicated electrical circuit. The breaker inside the electrical panel shall be red and locked to prevent tampering.

- 3.23 **Secondary Power.** The AHJ can require an additional safety factor of 1 amp hour above the minimum calculated battery size. (e.g., a 7 amp/hour system may require an 8 amp/hour battery).
- 3.24 **DIY, MIY, or Owner Installed Systems.** Fire alarm systems that do not meet the listing requirements of this guide and/or the current edition of NFPA 72 shall not be allowed. This includes but is not limited to Comcast, IFTTT, SimpliSafe, Smartthings, Ring, Nest, or the like.
- 3.25 **Tests and Inspections.** See Section 13 for details on tests and inspections.