

SECTION 16720 - FIRE ALARM

PART 1 - GENERAL

1.1 PERFORMANCE REQUIREMENTS

- A. Comply with NFPA 72.
- B. Fire alarm signal initiation shall be by one or more of the following devices:
 - 1. Manual Pull stations
 - 2. Heat detectors.
 - 3. Smoke detectors.
 - 4. Activation of sprinkler system.
- C. Fire alarm signal shall initiate the following actions:
 - 1. Alarm notification appliances shall operate continuously.
 - 2. Transmission of signal to central station.
 - 3. Release magnetic door holders.
 - 4. Initiate elevator recall sequence.

1.2 SUBMITTALS

- A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 FIRE ALARM CONTROL PANEL

- A. Notifier AFP-400 or approved equal by Gamewell or Siemens
- B. Circuits:
 - 1. Actuation of alarm notification appliances and actuation of suppression systems shall occur within 10 seconds after the activation of an initiating device.
- C. Notification-Appliance Circuit: Operation shall sound in a temporal pattern, complying with ANSI S3.41. Units in the same room or area shall be synchronized.
 - 1. the shunt trip circuit and operates building notification appliances and annunciator.
- D. Power Supply for Supervision Equipment: Supply for audible and visual equipment for supervision of the ac power shall be from a dedicated dc power supply, and power for the dc component shall be from the ac supply.
- E. Include digital alarm communicator transmitter that is capable of transmitting individual device information device initiating alarm or supervisory condition to central station.

2.2 FIRE ALARM ANNUNCIATOR

- A. Notifier LCD-80 or equal by Gamewell or Siemens

2.3 SMOKE DETECTORS

- A. General Description:
1. Addressable
 2. UL 268 listed.
 3. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
- B. Ionization Smoke Detector:
1. Sensor: Responsive to both visible and invisible products of combustion. Self-compensating for changes in environmental conditions.
 2. Detector Sensitivity: Between 0.5 and 1.7 percent/foot (0.0016 and 0.0056 percent/mm) smoke obscuration when tested according to UL 268A.
- C. Provide duct smoke detectors and remote test stations as shown on drawings. Duct smoke detectors shall be installed under Division 15 and wired under Division 16.
1. Duct smoke detectors shall be UL listed, photoelectric type. Manufacturer and model shall be as recommended by the manufacturer of the existing fire alarm system.
 2. Duct smoke detectors shall be furnished complete with all detector heads, sampling tubes, end-of-line devices, control relays, power supplies, etc. required to for proper operation according to the system manufacturer's recommendations and these specifications.
 3. Duct smoke detectors shall be wired to shut down associated air handling equipment.
- D. Nonsystem Smoke Detectors
1. Single-Station Smoke Detectors:
 2. UL 217 listed for wall mount, suitable for NFPA 101, Section 9.6.2.10 occupancies, operating at 120-V ac.
 3. Audible Notification Appliance: Piezoelectric sounder rated at 90 dBA at 10 feet (3 m) according to UL 464.
 4. Visible Notification Appliance: 177 candela strobe. Provide in Accessible apartments.
 - a. Visual notification appliance shall be connected to the fire alarm system such that the appliance is activated by either the single station smoke detector or the fire alarm system. Provide relays as required.
 5. Heat sensor, 135 deg F (57 deg C) combination rate-of-rise and fixed temperature.
 6. Test Switch: Push-to-test, simulates smoke at rated obscuration.
 7. Plug-in Arrangement: Detector and associated electronic components shall be mounted in a plug-in module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
 8. Self-Restoring: Detectors shall not require resetting or readjustment after actuation to restore them to normal operation.
 9. Integral Visual-Indicating Light: LED type. Indicating detector has operated and power-on status.

2.4 HEAT DETECTORS

- A. General: UL 521 listed.
- B. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135 deg F or rate-of-rise of temperature that exceeds 15 deg F per minute, unless otherwise indicated.
1. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to the FACP.

2.5 NOTIFICATION APPLIANCES

- A. Description: Equipped for mounting as indicated and with screw terminals for system connections.
 - 1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly.
- B. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet from the horn.
- C. Visible Alarm Devices: Xenon strobe lights listed under UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in on the lens.
 - 1. Rated Light Output: as noted
 - 2. Strobe Leads: Factory connected to screw terminals.Initiation devices in the handicap unit and in the community center shall initiate all respective devices in the unit or building

2.6 WIRE AND CABLE

- A. Wire and cable for fire alarm systems shall be UL listed and labeled as complying with NFPA 70, Article 760.
- B. Signaling Line Circuits: Twisted, shielded pair, not less than No. 18 AWG
- C. Non-Power-Limited Circuits: Solid-copper conductors with 600-V rated, 75 deg C, color-coded insulation.

2.7 MAGNETIC DOOR HOLDERS

- A. Description: Units are equipped for wall or floor mounting as required and are complete with matching door plate.
 - 1. Electromagnet: Requires no more than 3 W to develop 25-lbf (111-N) holding force.
 - 2. Wall-Mounted Units: Flush mounted, unless otherwise indicated.
 - 3. Rating: 24-V ac or dc.
 - 4. Material and Finish: Match door hardware.

2.8 ADDRESSABLE INTERFACE DEVICE

- A. Description: Microelectronic monitor module listed for use in providing a system address for listed alarm-initiating devices for wired applications with normally open contacts.
- B. Integral Relay: Capable of providing a direct signal to the elevator controller to initiate elevator recall or to a circuit-breaker shunt trip for power shutdown.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

- A. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Or 7' 6" aff whichever is lower. Install horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille.
- B. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn 7' 6" and at least 6 inches below the ceiling whichever is lower .
- C. Device Location-Indicating Lights: Locate in public space near the device they monitor.
- D. Install wiring according to the following:
 - 1. NECA 1.
 - 2. TIA/EIA 568-A.
- E. Wiring Method:
 - 1. Cables and raceways used for fire alarm circuits, and equipment control wiring associated with the fire alarm system, may not contain any other wire or cable.
 - 2. Signaling Line Circuits: Power-limited fire alarm cables may be installed in the same cable or raceway as signaling line circuits.
- F. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by manufacturer. Install conductors parallel with or at right angles to sides and back of the enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal according to the system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.
- G. Cable Taps: Use numbered terminal strips in junction, pull, and outlet boxes, cabinets, or equipment enclosures where circuit connections are made.
- H. Color-Coding: Color-code fire alarm conductors differently from the normal building power wiring. Use one color-code for alarm circuit wiring and a different color-code for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visible alarm-indicating devices. Paint fire alarm system junction boxes and covers red.

3.2 GROUNDING

- A. Ground the FACP and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to the FACP.

END OF SECTION 16720