

SECTION 13850
EXISTING FIRE ALARM SYSTEM MODIFICATIONS

PART 1 – GENERAL

1.01 PROVISIONS INCLUDED

- A. The general provisions of the Contract, including General and Supplementary General Conditions, and Division 1 General Requirements, apply to work specified in this Section.
- B. Requirements of Section 16050, "Basic Electrical Materials and Methods," apply to this Section.

1.02 SUMMARY

- A. Work includes: Modify existing building fire-alarm system, including power supply, modules, control equipment, alarm initiating devices, audible and visual alarm indicating appliances as appropriate, conduit, wiring, fittings, and all other accessories necessary to provide a complete and operable system to comply with Local Fire Department Ordinance.
 - 1. Furnishing, installation and wiring of new addressable alarm initiating devices such as manual stations, heat and smoke detectors.
 - 2. Furnishing and wiring of new addressable duct type smoke detectors with remote test control stations
 - 3. Furnishing, installation and wiring of new alarm audible/visual devices.
 - 4. Relocation and re-wiring of the existing audible/visual alarm devices.
 - 5. System control panel modification and programming to accommodate system expansion.
 - 7. Complete systems acceptance testing to the satisfaction of the Local Fire Department.
- B. Work also includes wiring for the following devices which are furnished and installed under other sections:
 - 1. Elevator recall control circuits. Provide wiring from the fire alarm control panel to elevator control panels to activate elevator recall. Coordinate wiring requirements and location of the elevator control panels with Elevator Contractor.
 - 2. Water-flow, pressure and tamper switches under " Fire Suppression Sprinkler System Section 13935". Provide wiring to the building fire alarm system under this Section.
- C. Related Work Specified in Other Sections:
 - 1. Boxes (pull, junction and outlet), Section 16135.
 - 2. Raceways, Section 16130.
 - 3. Conductors, Section 16120.
 - 4. Hangers and supports, Section 16070.

5. Electrical identification, Section 16075.

1.03 REFERENCED STANDARDS

- A. National Fire Protection Association (NFPA).
 1. NFPA No. 70.
 2. NFPA No. 72.
 3. NFPA No. 90A.
 4. NFPA No. 101.

1.04 SUBMITTALS

- A. A. Product data for system components. Indicate type, size, rating and catalog number. Include dimensional information for system components.
- B. Shop Drawings:
 1. Wiring diagrams from manufacturer differentiating between factory- and field-installed wiring. Include diagrams for equipment and for system with all terminals and interconnections identified. Indicate components for both field and factory wiring.
 2. Addresses for all field devices on the floor plans and key lists.
- C. Calculations: Standby battery calculations.
- D. System operation description covering this specific Project including method of operation and supervision of each type of circuit and sequence of operations for all manually and automatically initiated system inputs and outputs. Manufacturer's standard descriptions for generic systems are not acceptable.
- E. Quality Assurance Submittals: Product certification signed by the manufacturer of the fire alarm system components certifying that their products comply with indicated requirements.
- F. Submission to Authority Having Jurisdiction: In addition to routine submission of the items listed above, make an identical submission to the authority having jurisdiction. Include copies of annotated Contract Drawings as required to depict component locations to facilitate review. Upon receipt of comments from the Authority, submit them for review. Make resubmissions if required to make clarifications or revisions to obtain approval.
- G. Record of field tests of system.
- H. Closeout Submittals:
 1. Operation and maintenance data for inclusion in Operating and Maintenance Manual specified in Division 1. Include data for each type product, including all features and operating sequences, both automatic and manual. Include recommendations for spare parts to be stocked at the site.

1.05 QUALITY ASSURANCE

- A. All equipment shall be UL listed and shall match existing system devices.

1.06 SEQUENCING AND SCHEDULING

- A. Coordinate the work of this section with other work of the Contract. Coordinate the placement of raceways with HVAC and Plumbing equipment prior to installation. Where required, each contractor shall prepare coordination drawings as specified in Section 16050.

1.07 SYSTEM OPERATION

- A. Manual station alarm operation initiates a general alarm.
- B. Water-flow alarm switch operation:
 - 1. Initiates a general alarm.
 - 2. Causes flashing of the device location indicating lamp of the device that has operated.
- C. Smoke detection initiates a general alarm.
- D. Smoke detection with alarm verification causes the following:
 - 1. Audible and visible indication of an "alarm verification" signal at the FACP.
 - 2. Activation of a listed and approved "alarm verification" sequence at the FACP and the detector.
 - 3. General alarm initiation if the alarm is verified.
 - 4. FACP indication cancellation and system reset if the alarm is not verified.
- E. Duct type smoke detection operation:
 - 1. Initiates a general alarm.
 - 2. Indicates alarm at the FACP and annunciator
 - 3. Provides closure of the contact for a fan shutdown.
- F. Sprinkler valve tamper switch operation causes or initiates a supervisory audible and visible "valve tamper" signal indication at FACP and annunciator.
- G. Activation of any smoke detector in the elevator lobbies, machine room or heat detector at the top of hoistway shall:
 - 1. Initiate elevator recall sequence in accordance with the latest edition of ANSI/ASME A17.1, Section 211.
 - 2. Close a "dry contact" of the fire alarm system dedicated for operation of the elevator hoistway motorized damper.
- H. Signal Transmission: Multiplex signal transmission dedicated to fire alarm service only. System connections for alarm-initiation and alarm-indicating circuits: Class A wiring to match existing..

PART 2 - MATERIALS

2.01 MANUFACTURERS

- A. Manufacturers: Components shall match existing system manufacturer.

2.02 MANUAL PULL STATIONS

- A. Description: Double-action type, fabricated of metal or plastic, and finished in red with molded, raised-letter operating instructions of contrasting color.
- B. Station Reset: Key- or wrench-operated, double -pole, double-throw, switch-rated for the voltage and current at which it operates. Stations have screw terminals for connections.

2.03 SMOKE DETECTORS

- A. General: Comply with UL 268, "Smoke Detectors for Fire Protective Signaling Systems." Include the following features:
 - 1. Factory Nameplate: Serial number and type identification.
 - 2. Operating Voltage: 24-V D.C., nominal.
 - 3. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
 - 4. Plug-In Arrangement: Detector and associated encapsulated electronic components are mounted in a module that connects to a fixed base with a twist-locking plug connection. The plug connection requires no springs for secure mounting and contact maintenance. Terminals in the fixed base accept building wiring.
 - 5. Visual Indicator: Connected to indicate detector has operated.
 - 6. Addressability: Detectors include a communication transmitter and receiver having a unique identification and capability for status reporting to the FACP.
 - 7. Remote Controllability: Individually monitor detectors at the FACP for calibration, sensitivity, and alarm condition, and individually adjust for sensitivity from the FACP.
- B. Photoelectric Smoke Detectors: Include the following features and characteristics:
 - 1. Detector Sensitivity: Between 2.5- and 3.5-percent-per-foot smoke obscuration when tested according to UL 268.
- C. Duct Smoke Detector: Photoelectric -type, with sampling tube of design and dimensions as recommended by the manufacturer for the specific duct size and installation conditions where applied. Detector includes relay as required for fan shutdown. Provide auxiliary contacts. Provide remote key-operated test/alarm station for each detector.

2.04 ALARM-INDICATING DEVICES

- A. General: Equip alarm-indicating devices for mounting as indicated. Provide terminal blocks for system connections.
- B. Visual Alarm Devices: 24-V D.C. strobe lights with clear polycarbonate lens and high-intensity xenon flash tube, factory-wired to screw terminals; and as follows.
 - 1. Strobe Lamps: Peak intensity, 75 candela or as shown on the drawings.
 - 2. ADA Compliance: Furnish strobes which comply with requirements of the Americans with Disabilities Act Accessibility Guideline (ADAAG).
- C. Combination Alarm Devices: Audible and visible alarm device in a single mounting assembly, consisting of 24-V DC strobe lights with clear polycarbonate lens and high-intensity xenon flash tube, factory-wired to screw terminals.
 - 1. Strobe Lamp: Peak intensity 75 candela or as shown on the drawings, and complying with ADA requirements.
 - 2. Speaker: 78-96 dBA @ 10 ft..
- D. Synchronization: Provide modules for sound and visual device synchronization in the areas where two or more visual and/or sound devices are installed.
- E. Voice/Tone Speakers: Comply with UL 1480, "Speakers for Fire Protective Signaling."
 - 1. Speakers: Compression-driver type with flared projectors having a frequency response of 400 to 5000 Hz; equipped with an alnico-V magnet and a multiple tap, varnish-impregnated, sealed, matching transformer. Match transformer tap range and speaker power rating to the acoustical environment of the speaker location.
 - 2. High-Range Speaker Units: Rated 2-15 watts for high ambient noise locations such as mechanical rooms and similar locations.
 - 3. Low-Range Speaker Units: Rated 1-2 watts.
 - 4. Speaker Mounting: Flush, semi-recessed, surface, or surface-mounted bi-directional as indicated.

2.05 ACCESSORIES.

- A. Addressable Interface Units: Arrange to monitor one or more system components that are not otherwise equipped for multiplex communication. Units transmit identification and status to the FACP using a communication transmitter and receiver with unique identification and capability for status-reporting to the FACP.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

- A. Install the fire alarm and detection system in conformance with local and NFPA codes and standards and in accordance with these specifications and the drawings.
- B. Erect, align, set and support, and/or grout all equipment in accordance with the contract drawings and specifications.

3.02 TESTING AND INSPECTIONS

- A. Inspection and testing of system shall be done for demolition, new installations, and alterations to existing systems.
- B. Upon request of the Architect/Engineer, the Contractor shall remove random samples of installed work, sufficient to establish the quality of materials and workmanship. If such samples indicate the materials and/or workmanship do not meet the contract specifications, the Contractor will be required to replace and/or clean the installed work as deemed necessary by the Architect/Engineer.
- C. Provide the services of an authorized technical representative of the manufacturer of the equipment to supervise the installation, adjustment and all testing of the system required to assure a complete and fully operative facility in accordance with this Specification and all fire department regulations. A signed test report substantiating this shall be submitted by the manufacturer. Personnel designated by the Owner shall be instructed in the operation, adjustment, testing and maintenance of the system by the manufacturer's representative/.
- D. The system shall be inspected by the electrical inspector for compliance with the referenced Electrical Code.
- E. Testing shall be witnessed, and final acceptance shall be made, by the Architect/Engineer.
- F. Check all systems to ensure compliance with design drawings.
- G. After the system has been inspected and approved, a copy of the form shall be sent to the Architect/Engineer.
- H. Upon completion of any rework necessary to correct deficiencies or problems, the system will be reinspected and approved in accordance with the above test and inspection procedure.

3.03 LABELING

- A. The Contractor shall install and label in accordance with manufacturer's instructions, current editions of applicable NFPA and state codes, Section 16075 of this Specification, similar to existing labeling, and in accordance with the drawings.

3.04 CLEANING

- A. Fire alarm system devices, panels, etc., shall be completely cleaned prior to energizing.

END OF SECTION 13850