

**SECTION 284621.25 - FIRE ALARM SYSTEM EXTENSION****PART 1 - GENERAL****1.1 SUBMITTAL REQUIREMENTS****A. Product Data**

1. For each type of devices including catalog numbers, electrical characteristics, ratings, color, temperature limitations, etc.
2. Submit as separate submittal (PD) but at same time as Shop Drawings for this section.

**B. Shop Drawings**

1. Provide a complete set of floor plan drawings showing conduit sizes and number of conductors required to all components plus detailed wiring connections required at each type of device. Clearly show the intended location of all field devices and their connections to the system. Include battery calculations, voltage drop calculations, critical dimensions, ductwork sizes for sampling tubes and associated required dimensions, wiring diagrams, sequence of operation, cable sizes and types, etc.
2. Shop Drawings shall be prepared by persons with the following qualifications: Trained and certified by manufacturer in fire-alarm system design, and licensed and certified by authorities having jurisdiction.
3. Submit as separate submittal (SD) but at same time as Product Data for this section.

**1.2 GENERAL REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, and Division 01 Specification Sections, apply to this Section. Refer to Division 26 sections for requirements associated with all electrical work not specifically defined in this section, which shall be considered additional and concurrent scope of work that is associated with work of this section.
- B. Apply for and pay all required permits and fees. Submit to AHJ and issue revisions to AHJ as required to keep AHJ documentation current. It shall be the responsibility of the Fire Alarm System Manufacturer to furnish submittals to the authority having jurisdiction for approval. This action shall be taken during the shop drawing procedure. The system must be approved by this authority and a copy submitted to the Engineer for review.
- C. Provide all materials, labor and services to provide fully operational modifications to, and extensions of, existing facility fire alarm system(s). Provide minimum 25% spare capacity for each data loop, each alarm circuit and for each set of power supplies and batteries.

- D. Qualifications of system designers, installers, programming personnel, inspection personnel, testing personnel and maintenance personnel shall be trained and certified by manufacturer for installation of units required for this Project, and shall be qualified in compliance with requirements of NFPA, including Chapter 10.5 of NFPA 72.
- E. Interruption of Existing Fire-Alarm Service: Do not interrupt fire-alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated: Notify Owner's Representative no fewer than two days in advance of proposed interruption of fire-alarm service; Do not proceed with interruption of fire-alarm service without Owner's Representative's written permission.
- F. Sequencing and Scheduling: Maintain existing equipment fully operational until new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service and label existing fire-alarm equipment "NOT IN SERVICE" until removed from the building. After acceptance of new fire-alarm system, remove existing disconnected fire-alarm equipment and wiring.

## PART 2 - PRODUCTS

### 2.1 FIRE ALARM EXTENSION

- A. Connecting to Existing Equipment and System:
  - 1. Verify that existing fire-alarm system is operational before making changes or connections.
  - 2. Connect new equipment to existing control panel in existing part of the building.
  - 3. Connect new equipment to existing monitoring equipment at the supervising station.
  - 4. Expand, modify, and supplement existing control/monitoring equipment as necessary to extend existing control/monitoring functions to the new points. New components shall be capable of merging with existing configuration without degrading the performance of either system.
  - 5. Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.
  - 6. Initiating Device, Notification Appliance and Signaling Line Circuits: Class A or Class A and B (provide Class A for circuits that provide isolation module protection for zones).
  - 7. Provide Initiating Device, Notification Appliance, and Signaling Line Circuits that are NFPA 72, Class B, to match existing system.
- B. General Requirements:
  - 1. Provide materials and labor as required to result in a fully operational extension and modification to the existing fire alarm system.
  - 2. Where indicated on drawings, remove existing fire alarm devices in affected areas and protect during demolition and construction phases. Clean and reinstall these

- existing devices as indicated on drawings. Relocate devices as indicated on drawings and extend conduit and wiring as required. Modify and/or extend related existing wiring in conduit as required.
3. Fire alarm system devices (smoke detectors, pull stations, A/V alarm indicating devices, etc.) shall be of the same manufacturer as, compatible with, and UL Listed and labeled for use on, the existing building fire alarm system.
  4. Provide auxiliary contacts if required for special applications. All strobe alarms shall be ADA compliant, minimum 75cd per ADA unless specifically indicated on drawings with lower candela rating.
  5. Install wall-mounted devices at the following heights above finished floor:
    - 1) Fire Alarm Manual Pull Stations: 46" to top of operating handle.
    - 2) Fire Alarm Visual & A/V Annunciators: 80" to bottom of outlet box.
  6. All new wiring shall be installed in strict accordance with manufacturer's requirements and installed in minimum 3/4" EMT conduit.
  7. Fire alarm system wiring shall be installed in a raceway system separate from all other wiring, including security sub-system wiring where/if applicable.
  8. Program detailed device and room descriptions so that any trouble, supervisory or alarm condition clearly annunciates floor level, room number, room name, device, and indication of normal, alarm, trouble and supervisory status at fire alarm control panel(s), at fire alarm annunciator panel(s) and at the supervising central station.
  9. The installation shall include a complete system test of the equipment by the local representative of the system installed. This test shall be performed in the presence of representatives of the Owner, Engineer, and local fire department.
  10. Provide all required modifications (cards, power supplies, hardware, firmware, software, etc.) to the existing Fire Alarm system as required to render the entire extension fully operable.
  11. Provide ceiling mounted smoke detector located above each control/power units (all types, including those for associated systems), if not already existing, and above all remote annunciators.
  12. Provide all required 120VAC power as required to energize all new fire alarm related components. This requirement applies whether or not such power work is shown on the drawings. Branch circuits serving fire alarm related equipment shall be dedicated to fire alarm related equipment only.
  13. Provide documentation (hard-copy and digital) of fire alarm system documentation, and provide a single documentation cabinet at the main fire alarm control unit, all in compliance with NFPA 72, including Chapter 7.
  14. Connect all new 120VAC power for fire alarm related equipment to emergency panels.
  - 15.
  16. Provide photoelectric type smoke detectors. Provide contact bases for all applications where auxiliary contacts are required. Smoke detector locations shall not exceed the rated coverage of the detector and, in general, shall be no more than 15 feet from a wall or 30 feet apart. Placement Restrictions:
    - a. Locate detectors no closer than 3 feet horizontally from air-supply diffuser or return-air opening.
    - b. Locate detectors no closer than 12 inches from any part of a lighting fixture.

- c. Locate detectors no closer than 3 feet horizontally from the tip of a ceiling fan blade.
  - d. Locate detectors no closer than 3 feet horizontally from the door or opening of a bathroom that contains a bathtub or shower, unless this would prevent placement of a detector that is required by prevailing codes.
  - e. Locate detectors closer than 6 feet horizontally from a permanently installed cooking appliance, unless this would prevent placement of a detector that is required by prevailing codes.
17. The audio/visual and visual-only alarm indicating devices shall be ADA-compliant units, color to match existing conditions. Strobe units shall be synchronized wherever required by any authority having jurisdiction, including ADAAG. Additionally, where required by local authority, the strobes must meet ANSI S3.41 temporal code.
  18. Provide power-limited cables that have a temperature rating of at least 60 degrees C; provide additional marking for conductor size and temperature ratings for cables rated in excess of 60°C (140°F).
  19. Provide isolation modules as required to isolate wire to wire shorts on a data loop to limit the number of other modules or detectors that are incapacitated by the short circuit fault and/or grounds. Isolation modules shall be part of the smoke detector base. The isolation modules shall permit the entire system to operate independently of the area disconnected by the isolation module due to wiring faults. Provide isolation modules and wiring configurations (using Class A, or Class A and B, pathways) for fault isolation so that any one fault will not cause any part of the system to go down other than the zone of the fault; provide zoning compliant with prevailing codes, including NFPA 72, with at least one zone per floor (more if areas are subdivided into multiple zones by fire and/or smoke barriers).
  20. Provide monitor modules in quantities as required to interface all "non-intelligent" devices into the system. Application examples include fire alarm system remotes panels, remote power supplies, etc. as applicable. Refer to documents of all trades since some such devices may not be specifically shown on electrical drawings. Review fire suppression system submittals and installation drawings to determine exact quantities and locations for devices that require monitor modules, as project drawings may not include all devices that require monitoring; provide monitor modules, wiring, connections, programming, etc. accordingly.
  21. Provide control modules for all auxiliary devices.

## PART 3 - EXECUTION

### 3.1 EXECUTION

- A. Refer to "PRODUCTS" sub-section above.
- B. Properly identify system components, wiring, cabling, and terminals. Install framed instructions in a location visible from fire-alarm control unit. Provide red color on jacket of all fire alarm cables associated with the fire alarm system. Provide red-colored breaker

handle and red-colored lock-on device at source circuit breakers that feed fire alarm related equipment. Provide red coloring for all fire alarm system junction boxes, along with system identification.

- C. Provide ceiling mounted smoke detector located above each control/power unit (all types, including those for associated systems), and above all remote annunciators. Provide weatherproof audible alarm notification device on the exterior wall at the location where the fire suppression sprinkler system water service enters the building.

End of Section 284621.25