SECTION 28 3100

FIRE DETECTION AND ALARM SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Connect generator to existing Fire Alarm Control Panel for monitoring points supervisory.

B. Costs of certification and testing, including tests required by NFPA 72, shall be included in the contract sum.

1.2 DEFINITIONS

A. FACP: Fire alarm control panel.

B. HVAC: Heating, ventilation, and air-conditioning.

C. LED: Light-emitting diode.

D. SPDT: Single pole, double throw.

E. Definitions in NFPA 72 apply to fire alarm terms used in this section.

1.3 SUBMITTALS

A. General:

1. When approved, no variation will be permitted except with the approval of the Engineer.
2. Submit to the authority having jurisdiction and to the Engineer for review and approval.

B. Shop drawings:

1. Floor plans indicating final equipment and device locations and raceway routes.
2. System operation description: Detailed description for this project, including method of operation and supervision of each type of circuit and sequence of operations for manually and automatically initiated system inputs and outputs. Manufacturer's standard descriptions for generic systems are not acceptable.
3. Wiring diagrams and riser diagrams.

C. Product data: Schedule and each type of system component, including dimensioned plans and elevations showing minimum clearances and installed features and devices. Include UL listings.

D. Battery calculations.

E. Certifications:

1. UL Certificate of Compliance of system supplier as specified in "Quality Assurance" below.
2. Fire and smoke detection system inspection and test report, completed by the factory representative, endorsed by the Owner and the factory representative, including test data, detector locations and serial numbers, a summary of maintenance performed, recommendations for relocation or addition of detectors and final action regarding these recommendations, and system certification.

1.4 QUALITY ASSURANCE

A. System and equipment shall be UL listed. Each major component shall bear the manufacturer's name and catalog number.

B. UL labels and local testing (if required).

C. Single-source responsibility: Obtain system components from a single source who assumes responsibility for their compatibility.

D. Qualifications of system supplier and installer:

1. Staff shall consist of at least one NICET Level III Technician or a professional engineer registered in Maryland.
2. Has installed at least ten systems of the type specified which have performed satisfactorily for not less than two years.
3. Maintains a facility with a sufficient stock of spare parts.
4. Shall respond within 24 hours of notification to correct system failure or malfunction. During the project correction period defined in General Conditions, perform such corrections at no addition to the Contract Sum.

E. Factory-authorized service representative: Trained and certified by the manufacturer of the system, and experienced in the installation and operation of the type of system included in the work.

F. Comply with NFPA 72, applicable local codes, and regulations and requirements of the authorities having jurisdiction. Montgomery County is the local code authority.

1.5 SEQUENCING AND SCHEDULING

A. Existing fire alarm equipment: Maintain fully operational until new equipment has been tested and accepted.

1. Field verify existing system is fully operational before beginning work on the existing components. If existing system is not fully operational immediately notify the Owner and Engineer in writing, and do not perform any work on the existing system until directed by the Engineer.
2. As new equipment is installed, label it NOT IN SERVICE until new equipment is accepted. As equipment is put in service, remove label and label existing equipment NOT IN SERVICE until it is physically removed.

B. Disconnected equipment: Remove equipment and restore damaged surfaces.

1. Operational disconnected equipment: Package, label, and deliver to Owner.

1.6 INSPECTIONS AND SERVICE CONTRACT

A. During the general project correction period, every six months starting six months after Substantial Completion, the supplier shall inspect and test the system.

1. Submit written reports to the Owner and Engineer, describing test results, including defects found and how they have been corrected, and listing components replaced.

B. At the end of the correction period, offer the Owner a service contract for the complete system.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Basis-of-design system: Existing system is Silent Knight 5820XL-EVS. New devices shall be compatible with existing system.

2.2 ADDRESSABLE INTERFACE DEVICE

A. Monitor module: Microelectronic monitor module listed for use in providing a system address for external alarm-initiating devices with normally open contacts.

1. Dual circuit, intelligent, signaling circuit interface module.

B. Control module: Microelectronic control relay module listed for use in providing control to external appliances or equipment shutdown.

1. One Form C (SPDT) dry relay contact rated at 2 amps and 24 volts DC.

C. Isolator module: Microelectronic fault isolator module listed for isolating and removing a fault from a data circuit while allowing the remaining data loop to continue operating.

1. Protect loop system against wire-to-wire short circuits by isolating section of loop and permitting other loop sections to continue to operate.

D. Non-addressable control relay: Isolation relay for the control of HVAC unit contactors, UL 864 Listed.

1. Construction: Sealed, non-removable, with terminations to pressure-type screw terminals.
2. Rating: Use with circuits up to 240 volts AC at 7amperes inductive.

2.3 WIRE AND WIRING SYSTEM

A. Non-power-limited circuits: Solid-copper conductors with 600-V rated, 75 deg C, color-coded insulation.

1. Low-voltage circuits: No. 16 AWG, minimum.
2. Line-voltage circuits: No. 12 AWG, minimum.

B. Power-limited circuits: NFPA 70, Types FPL, FPLR, or FPLP, as recommended by manufacturer.

C. Wiring system: Class B in accordance with NFPA 72.

3.1 INSTALLATION, GENERAL

A. Factory-authorized service representative, as required in "Quality Assurance" in Part 1 above, shall supervise installation, software documentation, adjustment, preliminary testing, final testing, and certification of the system, and provide the operating instructions.

B. Provide wiring, conduit, and outlet boxes required for the complete system, in accordance with system manufacturer's instructions and with requirements specified in Division 26 for wiring, conduit, and boxes. Provide 12 inches of slack at each outlet.

1. Install all wiring in conduit.
2. Identification: Paint fire alarm junction box covers red.

C. Wires, cables, conduits, and wiring connections are specified in Division 26, Electrical. Include in the work of this section, wiring, conduits, and equipment connections complying with the requirements of Division 26, so that the fire alarm system will function as specified and indicated on the drawings.

D. Wiring: Free from grounds or crosses between conductors.

1. Identification: Color code wiring, not duplicating building wiring colors. Tag each wire at each junction point.

E. Final connections between equipment and the wiring system shall be made under the direction and supervision of the qualified supplier.

F. Provide 20 percent spare capacity for each notification appliance circuit.

3.2 INTERFACE WITH OTHER WORK

A. Coordinate with installation of Emergency Generator.

3.3 INSPECTION, TEST, ADJUSTMENT AND REPORT

A. Furnish equipment and appliances for testing the complete system during progress of the work and after completion of the installation, including a megger test of wiring. The tests generally shall demonstrate the following:

1. Circuits are continuous and free from short circuits.
2. Circuits are free from unspecified grounds.
3. Resistance to ground of non-grounded circuits is not less than one megohm.
4. Circuits are properly connected in accordance with the applicable wiring diagrams.

B. Defects or omissions observed during general and system tests shall be repaired as quickly as possible and the tests reconducted.

C. Submit report as required in Part 1 above.

3.4 OPERATING INSTRUCTIONS

A. As specified in Section 26 0500, provide operating instructions.

B. Provide at least 8 hours of additional instruction time for the systems and equipment specified in this section, consisting of 2 periods of 4 consecutive hours, during a period of not more than 60 days.

END OF SECTION