**SECTION 283111 - FIRE ALARM SYSTEM**

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| **This section is a partial spec noting a Special Product Requirement for MAA. Designer shall complete the specification with information applicable to the project.** |

**PART 2 – PRODUCTS**

2.1 MANUFACTURERS

Manufacturers: The existing Fire Alarm System is manufactured and certified by Honeywell; therefore, Fire Alarm panel, initiating, monitoring and controlling devices shall be exclusively by Honeywell only. Substituted Booster Panels and notification devices shall be submitted and approved by Honeywell. There will be "No Exceptions Allowed".

2.2 FIRE ALARM CONTROL PANEL (FACP)

A. General: Comply with UL 864, "Control Units for Fire-Protective Signaling Systems."

B. Cabinet: Lockable steel enclosure. Arrange panel so all operations required for testing or for normal care and maintenance of the system are performed from the front of the enclosure. If more than a single unit is required to form a complete control panel, provide exactly matching modular unit enclosures. Accommodate all components and allow ample gutter space for interconnection of panels as well as field wiring. Identify each enclosure by an engraved, red-laminated, phenolic resin nameplate. Lettering on the enclosure nameplate shall not be less than l-inch high. Identify individual components and modules within the cabinets with permanent labels.

C. Systems: Alarm and supervisory systems are separate and independent in the FACP. The alarm-initiating addressable interface circuit boards in the FACP consist of plug-in cards. Installation requiring interconnection of field wiring for module replacement is not acceptable.

D. Zones: Provide for all alarm and supervisory zones indicated.

E. The fire alarm panel shall tie into the existing Honeywell Graphic Central P.C.s, such that every addressable initiating device will be displayed on its appropriate color graphic floor plan on the Graphic Central P.C. The device symbol, on the color graphic floor plan, shall display a change of state (color of the symbol shall change) wherever the initiating device is in "normal", "alarm", or "trouble", condition. The fire alarm panel shall tie into the existing Honeywell Graphic Central P.C.s. Furnish the required programming to monitor the fire alarm panel providing trouble and alarm relay contacts and display in the appropriate location on the Honeywell P.C.s.

F. Alphanumeric Display and System Controls: Provide the basic interface between human operator at FACP and addressable system components, including annunciation, supervision, and control. A display with a minimum of 32 characters displays alarm, supervisory, and component status messages and indicates control commands to be entered into the system for control of smoke detector sensitivity and other parameters. Provide keypad for use in entering and executing control commands.

G. Instructions: Printed or typewritten instruction card mounted behind a Lexan plastic or glass cover in a stainless steel or aluminum frame. Install the frame in a location observable from the FACP. Include interpretation and appropriate response for displays and signals, and briefly describe the functional operation of the system under normal, alarm, and trouble conditions. ·

H. Acceptable Products:

 Honeywell FS 90 Plus FACP.

 Honeywell 4005680 Series F.O. Interface Board.

2.3 UPGRADING EXISTING FIRE ALARM CONTROL PANEL (FACP)

A. Provide hardware, programming and testing for existing fire alarm panels to interface with new fire alarm panels for fire alarm notification zones for the terminal building.

2.4 DATA GATHERING PANELS (DGP)

Honeywell FS 90 Plus FACP.

2.5 GATEWAYS

A. Provide color graphic PC/gateway at CDC, Aircraft Rescue, and Fire Facility for two communication buses to expand Fire Alarm monitoring system's point capacity at existing Honeywell Graphic Central PC at CDC, Aircraft Rescue and Fire Facility.

Acceptable Products:

Honeywell W 7053 B.

2.6 BOOSTER PANELS

A. Booster panel shall meet UL 864 and ADA requirements. Booster panel shall include 8 Amp, 24 DC volt power supply, battery charger, batteries, synchronizing module, dry contacts for monitoring and interface with Honeywell Fire Alarm Control Panel in red color NEMA 1 enclosure.

Acceptable Products:

Wheel Lock PS-12/24-8 Booster Panel.

Wheel Lock DSM-12/24-R Synchronizing Module.

2.7 INITIATING DEVICES

A. General

1. Each device shall be assigned a unique address via easily understood decade (01 to 99) switch. Address selection via binary switches or by jumpers is not acceptable. Devices which take their address from their position in the circuit are unacceptable because if devices are later added, existing addresses, descriptors and commands must be reprogrammed.

2. Devices shall receive communication signals from the same pair of wires. For fault-tolerant circuits, any separate power wiring shall also be made fault-tolerant.

3. Additional devices shall be capable of being added to the circuit from any point in the circuit and without affecting any existing device address or function.

4. Each device shall contain screw terminals with rising plates for positive termination of up to 12 AWG wire.

B*.* Manual Pull Stations

1. Fabricated of metal or plastic, and finished in red with molded, raised-letter operating instructions of contrasting color.

2. Single-action mechanism initiates an alarm.

3. Double-action mechanism requires two actions, such as a push and a pull, to initiate an alarm.

4. Station Reset: Key or wrench operated; double pole, double throw; switch rated for the voltage and current at which it operates.

5. Indoor Protective Shield: Factory-fabricated clear plastic enclosure, hinged at the top to permit lifting for access to initiate an alarm. Lifting the cover actuates an integral battery-powered audible horn intended to discourage false alarm operation.

6. Weatherproof Protective Shield: Factory-fabricated clear plastic enclosure, hinged at the top to permit lifting for access to initiate an alarm.

7. Integral Addressable Module: Arranged to communicate manual-station status (normal, alarm, or trouble) to the FACP.

Acceptable Product:

Honeywell S 64Gl007.

C. Sensors

1. All sensors shall mount on a common base to facilitate the changing of sensor type if building conditions change. The base shall be incompatible with conventional detectors to preclude the mounting on a non-intelligent device.

2. Each sensor shall contain a LED which blinks each time it is scanned by the FACP. If the FACP determines that the sensor is in alarm, the FACP shall command the sensor LED to remain on to indicate alarm.

3. Each sensor shall contain a magnetically-actuated test switch such that it can be tested for alarm from the sensor location.

4. Each sensor shall be capable of being tested for alarm via command from the FACP.

5. Each sensor shall respond to FACP scan for information with its type identification to preclude inadvertent substitution of another sensor type. The FACP shall operate with the installed type but shall initiate a mismatch (trouble) condition until the proper type is installed or the programmed sensor type changed.

6. Each sensor shall respond to FACP scan for information with an analog representation of measured fire-related phenomena (smoke density, particles of combustion, temperature). Systems which only monitor the presence of a conventional detector in an addressable base shall not be acceptable.

7. Photoelectric Smoke Sensors shall contain an optical sensing chamber with nominal sensitivity of 2.3% per foot obscuration.

Acceptable Product:

Honeywell TC 806 B.

8. Duct Ionization Smoke Sensors shall operate over an air velocity range from 300 to 4,000 fpm. Each shall be equipped with an air inlet sampling tube which completely traverses to duct width.

Acceptable Product:

Honeywell TC 807 A.

Honeywell 14506873, smoke sensor duct housings.

9. Thermal Sensors shall provide temperature measurement when scanned by the FACP for information.

Acceptable Product:

TC 808 B Thermal Sensors

10. Flow Switch: Provide monitoring module for each flow switch. Flow switch shall be provided as part of Fire Protection System.

11. Tamper Switch: Provide monitoring module for each tamper switch. Tamper switch shall be provided as part of Fire Protection System.

D. Monitor Modules:

1. The Monitor Module shall provide an addressable input for N.O. or N.C. contact devices such as manual pull stations, duct smoke detectors, water flow switches, sprinkler supervisory devices, door contacts, intrusion detectors, etc.

2. The Monitor Module shall provide a supervised initiating circuit. An open-circuit fault shall be annunciated at the FACP. Subsequent alarms shall be reported. (Style D Operation)

3. The module shall contain an LED which blinks upon being scanned by the FACP. Upon determination of an alarm condition, the LED shall be latched on.

4. The module shall mount in a standard electrical box.

Acceptable Product:

Honeywell TC 809 A.

E. Control Modules:

1. The Control Module shall provide an addressable output for a separately powered alarm indicating circuit or for a control relay.

2. The Control Module shall provide a supervised indicating circuit where indicated on the plans. An open-circuit fault shall be annunciated at the FACP. Subsequent alarm signaling shall occur in spite of the fault condition.

3. The Control Module shall provide a control relay. The relay contacts shall be SPDT (Form "C") rated at 2 amps at 28 V dc.

4. The module shall contain an LED which blinks upon being scanned by the FACP. Upon activation of the module, the LED shall be latched on.

5. The module shall mount in a standard electrical box.

Acceptable Product:

Honeywell TC 810 A.

2.8 FIRE ALARM NOTIFICATION DEVICES

1. Alarm Horn/Strobe Units

1. Alarm horns shall be UL 1971 listed and suitable for indoor, or outdoor, application with the appropriate electrical box. All horns shall be 24 VDC polarized. The minimum sound level shall be 75-130 dB at 10 feet. Horns shall be semi-flush mounted. Single and dual projectors are to be supplied.

2. The visual signal shall flash on alarm occurrence. The bezel shall extend 1-1/2 inches minimum from the finished wall, and be approximately 3-1/2 x 5 inches engraved "FIRE".

3. All Multi candela strobes shall be field selectable to 15, 30, 75 or 110 candelas. Multi candela Strobe shall be Wheel Lock NS4-24-MCW-FR.

4. All strobes in unisex and· public restrooms shall be ADA compliant and shall be 15/75 candela. ADA strobe shall be Wheel Lock NS4-241575W-FR.

B. Visual Alarm Unit

1. Visual Alarm unit shall be UL 1971 listed. Electronic light source shall be sealed in silicone and protected by a Lexan lens. The word "FIRE" shall appear on the lens. The light shall flash at a rate of 1 to 3 flashed per second, maximum. Lamp shall be powered by a supervised 24 VDC polarized source

2. Multi candela strobes shall be field selectable to 15, 30, 75 or 110 candelas. Multi candela Strobe shall be Wheel Lock RSS-24-MCW-FR.

3. Strobes in unisex and public restrooms shall be ADA compliant and shall be 15/75 candela. ADA strobe shall be Wheel Lock RSS-24-241575W-FR.

4. High Intensity Strobes shall be 185 candelas. Strobe shall be Wheel Lock RSS-24-24185W-FR.

2.9 REMOTE INDICATING LIGHTS AND IDENTIFICATION PLATES

A. Description: LED indicating light near each smoke detector that may not be readily visible, and each sprinkler water-flow switch and valve-tamper switch. Light is connected to flash when the associated device is in an alarm or trouble mode. Lamp is flush mounted in a single gang wall plate. A red, laminated, phenolic-resin identification plate at the indicating light identifies, in engraved white letters, device initiating the signal and room where the smoke detector or valve is located. For water­ flow switches, the identification plate also designates protected spaces downstream from the water-flow switch.

2.10 MAGNETIC DOOR HOLDERS

A. Description: Units are equipped for wall or floor mounting as indicated 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: 120-V ac.

B. Material and Finish:

1. Match door hardware.

2.11 EMERGENCY POWER SUPPLY

A. General: Components include nickel-cadmium battery, charger, and an automatic transfer switch.

1. Battery Nominal Life Expectancy: 20 years, minimum.

B. Battery Capacity: 24-Hours stand-by and 15-minutes in alarm back-up. Comply with NFPA 72.

C Battery Charger: Solid-state, fully automatic, variable-charging-rate type. Provide capacity for 150 percent of the connected system load while maintaining batteries at full charge. If batteries are fully discharged, the charger recharges them completely within four hours. Charger output is supervised as part of system power supply supervision.

D. Integral Automatic Transfer Switch: Transfers the load to the battery without loss of signals or status indications when normal power fails.

2.12 ADDRESSABLE INTERFACE DEVICE

A. Description: Microelectronic monitor module listed for use in providing a multiplex system address for listed fire and sprinkler alarm-initiating devices 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.

2.13 GUARDS FOR PHYSICAL PROTECTION

A. Description: Welded wire mesh of size and shape for the manual station, smoke detector, gong, or other device requiring protection.

1. Factory fabricated and furnished by the manufacturer of the device.

2. Finish: Paint of color to match the protected device.

2.14 WIRE

1. Notification Circuits: Shall be in compliance with NFPA 70, Class A, Style Z, Type FPLR-CI, minimum 12 AWG solid copper conductors, shielded twisted pair rated at 600-volts, 90-degrees Celsius with color coded insulation.
2. Initiating Line Circuits: Shall be in compliance with NFPA 70, Class A, Style D, Type FPLR-CI, minimum 14 AWG solid copper conductors, shielded twisted pair rated at 600-volts, 90-degrees Celsius with color coded insulation.
3. Signaling Line Circuits: Shall be in compliance with NFPA 70, Class A, Style 5 Alpha, Type FPLR-CI, minimum 14 AWG solid copper conductors, shielded twisted pair rated at 600-volts, 90-degrees Celsius with color coded insulation.