

## **SECTION 16723 - FIRE ALARM SYSTEMS**

### **PART 1 - GENERAL**

#### **1.1 SCOPE OF SECTION:**

This section contains the requirements for equipment and installation relating to fire alarm systems.

#### **1.2 GENERAL:**

- A. **BASIC REQUIREMENT FOR INSTALLATION:** All new buildings, and buildings undergoing major renovations, shall be equipped with a complete fire alarm system which meets Florida Building Code, Chapter 11 Accessibility Code for Building Construction (Section 11-4.28) and current code requirements. Provide all hardware necessary to tie-in with the existing campus monitoring system. Matching the existing addressable digital fire system in use in a facility is preferred.
- B. **COORDINATION:**
1. Coordinate all installations with PPD Systems Department.
  2. To insure compatibility, the PPD Systems Electronics Shop supervisor (or supervisor's designated representative) shall be informed of the proposed type of fire alarm control panel.
- C. **LICENSING:** All work on fire alarm systems shall be performed by an individual, or firm, licensed as an "Alarm System Contractor I" as required by Florida Statute 489.505(a), other parts of said Statute, and complies with all other licensing requirements of relevant codes and laws. Further, this individual or firm shall be either the prime constructor on such work or a subcontractor to the prime constructor.

#### **1.3 EQUIPMENT:**

- A. **PANELS:**
1. **Central Fire Control Panel:** Provide programmable central fire control panel with programmable field devices. Fire control panel shall meet NFPA 72 detector sensitivity readout/printout requirements. A history of a minimum of 200 events shall be readable on the fire alarm control panel display (200 events for alarm and 200 events for trouble).
  2. **Annunciator Panel:** Annunciator panel shall be located where the fire department will enter building. Annunciation panel shall duplicate all functions of the fire control panel.
  3. **Renovations:** When the existing fire alarm control panel does not support the type of renovation being performed in a building, a second (or third) fire alarm control panel shall be installed. The fire alarm control panels installed for the renovation shall be of sufficient capacity to handle the entire building when the existing fire system(s) is (are) changed.
  4. **Acceptable manufacturers:** Existing equipment requiring interface may be Simplex 4010 or 4100U; Pyrotronic; Notifier, AFP or Edwards Systems Technologies. New equipment shall be Simplex 4020 or 4100; Pyrotronics MXL or MXLSS; Notifier 1010 or 2020; AFP 200 or 400; or Edwards Systems Technologies EST2.

- B. PULL STATIONS: Pull stations shall be single action type. Glass rods for pull stations are discouraged. All pull stations shall be equipped with a protective shield. The protective shield shall be a clear Lexan cover that emits a loud piercing noise when disturbed. The cover shall be battery powered and shall silence itself by lowering and realigning the shield. Stopper II as manufactured by Safety Technology International, Inc. (STI), are acceptable covers. Protective shields shall only be used to protect pull stations from the elements, or in locations where vandalism is likely (such as next to exterior exits). They are not required throughout the interior of a building.
- C. ALARM UNITS: Alarm units shall be combination audible alarm and strobe light. The audible alarm shall be a horn, not a bell, as a bell could be confused with a class bell. Provide separate power for horns and lights, so that lights can be checked without sounding horn.
- D. AIR HANDLING UNIT SHUTDOWN RELAY: The Air Handling Unit shutdown relay shall be supervised.
- E. JUNCTION BOXES AND CONDUIT: All junction boxes on the fire alarm system shall be painted fire-truck red and all conduit shall be spot painted red.
- F. CAMPUS MONITORING SYSTEM INTERFACE RELAYS: Trouble contacts shall be Normally Closed; Alarm contacts shall be Normally Open. Provide a Digital Alarm Communicator Transmitter (DACT) for digital, secondary reporting to the University Police. Consult PPD Systems Electronics regarding the manufacturer and model required. The project shall provide and program the communicator as directed by PPD Systems Electronics.
- G. DUCT-MOUNTED SMOKE DETECTORS: If duct-mounted smoke detectors are not immediately visible from inside the mechanical room, then provide a remote, labeled L.E.D indicator for each detector, mounted in a convenient, visible location. Non-radioactive smoke detectors and duct detectors are preferred (i.e. photoelectric). Provide stand-alone, duct mounted smoke detectors where no fire alarm system is present. The operation shall be to shut down the unit, and provide notification.
- H. MAINTENANCE ITEMS:
  - 1. Provide a spare parts kit that shall include one of every type of field device (one pull station, one horn, one strobe).
  - 2. Any special tools, equipment, programming devices and cables needed to maintain or repair the system shall be provided.
  - 3. All keys or tools provided with any devices from the manufacturer shall be given to the University.

## **PART 2 - EXECUTION**

### **2.1 EXECUTION:**

- A. All equipment shall be installed as to provide adequate access for service and repair.
- B. On retrofit projects that involve adding to existing wiring, the Constructor shall exactly match the colors of the new wiring with the existing.
- C. The Constructor shall certify and tag the system after all modifications are made and prior to Substantial Completion.

- D. The Constructor and the PPD Systems Electronics Shop shall test the fire alarm system before any renovation or modification is made. Any part of the system not working properly shall be noted or repaired before any construction begins.
- E. Fire alarm conductors shall be color coded as follows:

Horns:	Red	+
	Black	-
Strobes: (if separate)	White	+
	Purple	-
Alarms:	Blue	+
	Yellow	-
A/C Ventilation: Shut Down	Brown	+
	Orange	-
Magnetic Doors:	Pink	+
	Grey	-
Misc. Circuits:	Violet	+
	Tan	-

Data line wiring shall be twisted shielded 18 gauge FPLP wire in a red jacket. All data wire shall meet current code requirements and manufacturer's specifications.

Speaker wiring shall meet current code requirements and manufacturer's specifications, and have a different color jacket than the data wiring (minimum 18 gauge twisted shielded).

- F. On renovations always remove existing wiring and install new, properly color coded wiring.
- G. On renovations, in addition to the renovation prints and/or drawings, the existing prints are to be up-dated to include any changes.
- H. Horns and lights shall be provided in machine rooms and loft/attic areas that have mechanical equipment or work areas.
- I. All connections shall be made on terminal strips. No more than two conductors under one connection. Wires on these terminals shall be labeled.
- J. Programming of the fire alarm shall be as specified by the University. Consult with PPD Systems Electronics (or other appropriate University maintenance department, if directed by the UF Project Manager) concerning the requirements. Programming includes, but is not limited to: function keys, FAAP, software zones, etc.
- K. All fire and smoke alarm sensors shall be re-settable.
- L. Provide protection from damage caused by lightning and electrical surges.

## 2.2 **OPERATION:**

- A. **AIR HANDLING UNITS:** Actuation of any fire alarm initiating device shall cause all air handlers in the building area affected to shut down. Air handling units shall shut down only in the area where the fire is detected or the area actually alarmed (floor above and below). Other air handling equipment shall remain on line. This shall not supersede any code requirement.
- B. **ELEVATORS:** A reset procedure for resetting the elevators after an alarm shall be submitted.

- C. TROUBLE SIGNAL: Trouble signal shall sound piezoelectric alarm on the fire alarm control panel.
- D. STAND ALONE DUCT DETECTORS: Provide an annunciator panel to provide notification of trouble alarm and reset feature. Panel to be 120 Volts.

### **2.3 WARRANTY:**

The warranty period shall commence at Substantial Completion and be for a minimum of one year.

### **2.4 CLOSE-OUT SUBMITTALS:**

#### **A. OPERATION AND MAINTENANCE MANUALS:**

1. General: The manuals shall include installation, operation, and service manuals.
2. Programmable Systems: If the system is programmable, a copy of the operating program on diskette, the appropriate cable to load the program from a laptop computer, and a programming manual shall be provided. A port and method for downloading detector sensitivity shall be provided.

#### **B. AS-BUILT DRAWINGS:**

1. Point-to-point Wiring Diagram: A point-to-point wiring diagram shall be included with the "as-built" drawings.
2. CAD Format As-Built Drawings: All as-built drawings shall be submitted on 3 inch high density, computer diskette(s) or CD-ROM disk in AutoCAD format (check for latest acceptable release).
3. Field Devices: All field devices installed in the fire alarm control panel shall be included in all diagrams. These devices include, but are not limited to, air handler shut down relays and remote reporting relays.
4. Zone Map: A zone map of the building showing the physical location of the devices and the layout of the fire alarm zones shall be provided.
5. Function Diagram: A one-line function diagram of the fire alarm control panel shall be provided.

#### **C. MAINTENANCE ITEMS:**

1. Keys to the system and associated equipment shall be given to the PPD Systems Electronics Shop when the system is accepted.
2. All spare parts, special tools, equipment, keys, etc. required for maintenance or operation shall be turned over to the PPD Systems Electronics Shop when the system is accepted.
3. A copy of the field prints, drawings, etc. shall be given to the PPD Systems Electronics Shop when the system is accepted.

END OF SECTION