

panel and at annunciator panel.

- H. A connection to the chemical fire extinguisher system of the kitchen so that the auxiliary alarm contacts of the extinguisher control initiates the fire alarm system.
- I. Future circuit wiring a compliment of all the conductors needed for all types of initiation, signal and auxiliary functions from the control panel to designated future portable locations. Terminated in the closest building terminal boxes to the future site.
 - 1. Provide one extra initiation point or address for future feeds in the program.
 - 2. Provide one extra notification circuit for future feeds in the program.

1.7 QUALIFICATIONS

- A. Manufacturer: Allowable fire alarm systems are: "Simplex Model 4100U", "Notifier Models: AFP-200, AFP-300, AFP-400, AFP-1010, AM2020, and Onyx 3030", "Edwards Systems Technology EST3" or "Cerberus Pyrotronics Model MXL". Vendor must be capable of providing local training and service support to University fire alarm personnel. The fire alarm control panel shall be of a type previously installed at the University and operating satisfactorily for at least three-years, unless F.I.T grants in writing an exception.
- B. Installer: Company specializing in smoke detection and fire alarm systems with five years experience, certified by the State of Florida's Licensing Board as fire alarm installing contractor in Brevard County. Proof of appropriate certification and registration is required.

1.8 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section 01300.
- B. Provide wiring diagrams, data sheets, and equipment ratings, layout, dimensions, and finishes.
- C. Submit manufacturer's installation instructions under provisions of Section 01300.
- D. Submit manufacturer's certificate under provisions of Section 01400 that system meets or exceeds specified requirements.

1.9 PROJECT RECORD DRAWINGS

- A. Submit documents under the provisions of Section 01730.
- B. Provide accurately indicated locations of terminal boxes, junction boxes and all peripheral devices as well as the conduit run and point to point c60948()10ti cndtaograms6(i)-4.60948(s)-2.3034k(y)10.8696(i)-4.on

2.1 ADDITIONS TO EXISTING SYSTEMS NOT REQUIRING A NEW CONTROL PANEL

statistics. Terminal shall provide system control of the panel switches.

C. Power Supply: Adequate to serve control panel modules, remote detectors, remote annunciator(s), door holders, smoke dampers, relays, and alarm signaling devices and 20% spare capacity.

D. The system shall be connected to the life safety branch of emergency generator. The system shall

smoke detectors.

- F. Duct Mounted Smoke Detector: NFPA 72; Photoelectric type with auxiliary SPDT relay contact, duct sampling tubes extending width of duct, and visual indication of detector actuation, in duct-mounted housing.
 - 1. Provide remote test station with key switch and red LED status indicator.
 - a. Wire the remote test station to the duct smoke detector via remote relay.
 - b. Mount remote test stations 48" AFF.
 - c. Group all remote test stations at one place inside the mechanical room.
- G. The sensitivity controlled by and reading received by the system control panel upon request.
- H. In Additions to Existing Systems where the control panel is a non-addressable type the duct detector must be compatible with the existing system and the housing shall be molded plastic.
 - 1. An integral filter system shall be included to reduce dust and residue effects on the detector and housing.
 - 2. Sampling tubes shall be easily installed after the housing is mounted to the duct by passing through the duct housing.
 - 3. The smoke detector shall be removable from the base and the base shall accommodate either ionization or photoelectric smoke detectors.
 - 4. The unit shall also accommodate a remote key operated test switch with visual remote indicator.

2.4 NOTIFICATION DEVICES

- A. Alarm Lights: NFPA 72; strobe lamp and flasher with red lettered FIRE on white lens.
- B. Alarm Horn: NFPA 72; flush type with wall trim plate (interior), surface type (exterior), fire alarm horn. Provide additional integral strobe lamp and flasher with red lettered FIRE on white lens.
- C. Remote Annunciator: Provide supervised remote annunciator including visual indication of fire alarm by device type (Manual pull stations - Green), (Heat, Smoke and Duct detectors - Red), (Sprinkler Flow - Yellow), (Sprinkler Tamper - Orange). Provide visual indication of common system trouble. Install in flush wall-mounted weatherproof enclosure a 24" x 30" graphic depiction of buildings with LED drivers. The graphic layout shall depict the building layout orientation exactly as viewed in the location where it is mounted. Map shall be capable of being read from a distance of 10' Include an arrow on map to indicate north. Install a light, approved by architect, over the exterior annunciator. Remote annunciator should be located under a covered area.
 - 1. When additions are done to existing systems, the annunciator zone maps shall be updated to include the new or remodeled buildings.
 - 2. Location of facility's main electrical service disconnect switches, normal and emergency, shall be indicated on the annunciator panel.
- D. Remote smoke detector alarm lamp assembly: flush mounted with red LED. to indicate remote (above ceiling or obscured from normal view) detectors alarm status.

2.5 AUXILIARY DEVICES

- A. Door Release: Door closer as specified in Section 08721. Magnetic door holder with integral diodes to reduce buzzing, 24 VAC coil voltage. Armature shall be mounted with bolts extending through the entire depth of the door, (through bolted).

2.6 SYSTEM RACEWAY

- A. Install all raceway necessary to provide specified equipment function and per print sheets as under the provisions of Sections 16111, 16130, 16160 and 16195.
- B. Install flexible weather tight conduit to duct detectors.
- C. Install an 24" x 24" x 6" minimum size cabinet with hinged and lockable cover and with internal wood backboard and screw type terminals in point of entry room to each building. All wiring shall terminate through the terminal strips, one wire per connector screw. All ends of line devices (resistors)

shall be mounted in these cabinets.

- D. Install a 36" x 36" x 6" minimum size cabinet with hinged, lockable cover, wood backboard and terminal strips located on the same or adjacent wall as the main fire alarm control. All system field wiring shall terminate through terminal connections in this cabinet. Use one wire per connector screw.
- E. Conduit at each terminal cabinet shall be labeled as to its destination. (Building number), (Direction), (Interior or Exterior).
- F. Install a 10-foot driven ground rod at each building entry terminal box location. Provide grounding bar in every box and bond to the ground rod with solid #8 minimum wire. Grounding bar buss is to be used as earth potential for the installed transient protection devices.
- G. All fire alarm terminal boxes, panels and relay enclosures shall be permanently labeled (Fire Alarm).

- AFF or 6" below ceiling, whichever is lower.
- C. All terminal connections in terminal cabinets and in equipment shall be made using solder less block spade connectors suitable for use with the wire gauge and screw terminal applied to. Soldered when used with solid wire.
 - D. Mount end-of-line devices (resistors) in the building terminal cabinet nearest the circuit.
 - E. Mount outlet box for electric door holder to withstand 80 pounds (36.3 kg) pulling force. Wall magnet mounting boxes shall have solid backing support behind.
 - F. Make conduit and wiring connections to door release devices, sprinkler flow switches, sprinkler valve tamper switches, fire suppression system control panels, duct smoke detectors and all other specified peripherals.
 - G. Automatic detector installation shall comply with NFPA 72.
 - H. Duct access panels shall be installed at all locations where sampling tubes are installed.
 - I. Fire Alarm equipment mounting boxes shall house only the wiring pertinent to the equipment mounted on the box and are not to be used as junction points or run through pathways.
 - J. All exterior equipment, mounting boxes and junction boxes shall be installed with all precautions necessary to insure the wiring and equipment being "weatherproof".
 - K. In additions to existing systems, the contractor shall phase the contract with the concurrence of the Owner; to assure that the minimum amount of manipulation events occur to the existing fire alarm system. All modifications and additions to the existing fire alarm panel or circuits shall be scheduled in advance with the concurrence of the Owner, in order to allow them to observe the code required re-acceptance inspection.
 - L. Duct smoke detectors shall be installed within mechanical rooms at heights that are accessible for service, usually no more than 20' AFF.
 - M. Rigid steel conduit shall be used for underground fire alarm wiring in new construction and renovations. Portable classrooms are excluded from this requirement.
 - N. Clean the inside of the terminal cabinets and other enclosures from wire cuts and other installation debris.

3.2 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of S-2.30408(e)-1.65193(d wo6(r)-3.95667(m)17

device layout, fire alarm riser diagrams depicting point to point conduit runs with wiring counts, wire gauge, wire color, and function noted on each conduit run, second copy of “as-builts (fire alarm) to the Fire Alarm shop.

3.4 FIRE ALARM WIRE AND CABLE COLOR CODE

A. Provide fire alarm circuit conductors with color-coded insulation as follows:

1. Additions to Existing Systems.
 - a. Match existing gauges and color code, except for signal circuits. Signal circuits shall be specified as for new systems.
 - b. If non-addressable devices are utilized, use Purple and Blue for initiation devices and Pink (positive) and Grey (negative) for A/C shut down and gas shut down.
2. New Systems.
 - a. Initiating Device Circuit and field relay controls: 1 pair #18 gauge shielded Cable, Red casing. F.I.T. requires the initiating device circuits for underground installations to be twisted/shielded cable. Initiating device circuits for the above ground installations shall be twisted/shielded, if required by the equipment manufacturer.
 - b. Horn Circuit: #12 AWG Orange (positive), #12 AWG Brown (negative). For longer than 200' wire run increase wire gauge to #10 for both conductors.
 - c. Strobe Circuit: #12 AWG Yellow (positive), #12 AWG Gray (negative). For longer than 200' wire run increase wire gauge to #10 for both conductors.
 - d. Door Release: #12 AWG Yellow (positive), #12 AWG blue (negative).
 - e. Annunciator Point Wiring: Power (#14 AWG Orange, positive. #14 AWG brown, negative). Processor connection #18 AWG shielded pair.
 - f. Equipment Grounding Conductor: #12 AWG Green.
 - g. Spares: Provide 4 #10 AWG, White spare wires in each fire alarm system terminal cabinet.

END OF SECTION