SECTION 284600 – FIRE DETECTION AND ALARM

PART 1 - GENERAL

1.1 RELATED SECTIONS:

Refer to Section 15300 for requirements regarding fire protection systems.

1.2 SCOPE OF SECTION:

This section contains the requirements for equipment and installation relating to fire alarm systems. The Designer is required to utilize the latest revision of Requirements for Fire Detection & Alarm Systems, as published by the North Carolina Department of Insurance. Exceptions, additions and modifications of the above referenced document are as noted within this section.

1.3 GENERAL:

A. BASIC REQUIREMENT FOR INSTALLATION:

1. All new buildings, and buildings undergoing major renovations, shall be equipped with a complete fire alarm system which meets ADA Guidelines and current code requirements.

2. If a building has an existing system, it shall be upgraded to an addressable system that meets requirements of this section.

3. Provide all hardware and software upgrades necessary to tie-in with the existing campus monitoring system and be responsible for programming the receiver.

4. Fire alarm installation shall be capable of receiving alarms from fire pump controller, if installed.

B. COORDINATION:

1. Coordinate all installations with Facilities Services.

2. To insure compatibility, the Facilities Maintenance - Electric Shop supervisor (or supervisor's designated representative) will be informed of which type of fire alarm control panel is proposed to be installed.

C. LICENSING:

All work on fire alarm systems must be performed by an individual, or firm, who complies with all licensing requirements of relevant codes. Further, this individual or firm shall be either the prime contractor on such work or a subcontractor to the prime contractor.

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1.4   EQUIPMENT:

A.   PANELS:

    1.   Fire Alarm Control Panel: Provide programmable, addressable, fire alarm control panel with programmable field devices.

    2.   Acceptable manufacturers: Simplex 4020 or 4100 for Health Sciences Campus, and Notifier AFP 1010 or AM 2020, or Simplex 4020 or 4100 for Main Campus. Other manufacturers are not acceptable at this time.

    3.   Annunciator Panel: Provide a graphic type annunciator panel located where the fire department will enter building. Annunciation panel shall duplicate all functions of the fire control panel, including keyed reset.

    4.   Renovations: When the existing fire alarm control panel cannot support the type of renovation being done in a building, a second fire alarm control panel shall be installed. The new fire alarm control panel shall be of sufficient capacity to handle the entire building when the existing fire alarm control panel is changed. The existing and new FACP must interface together so that all existing and new device circuits show trouble and alarm conditions at the new panel and can be reset from the new panel.

    5.   Location: FACP's shall be installed in semi-conditioned spaces where environment does not exceed 85 ° F and 50% RH, such as interior mechanical or electrical rooms. Panel shall not be installed where it would be susceptible to other utility system leaks (steam, domestic water, chilled water, etc.)

B.   PULL STATIONS:

Pull stations shall be single action type.

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.

D.   AIR HANDLING UNIT SHUTDOWN RELAY:

The Air Handling Unit shutdown relay shall be supervised. This relay shall be installed in a fire alarm junction box adjacent to the AHU control panel where interfacing between the two systems occurs. Labeling of junction boxes shall clearly indicate what relays are within and what they function they serve.

E.   <u>JUNCTION BOXES</u>:

All junction boxes on the fire alarm system, that are installed in either concealed or exposed in non-finished spaces, shall be painted fire-truck red.

F.   <u>CAMPUS MONITORING SYSTEM INTERFACE</u>:

All panels on Health Sciences Campus will report to the panel located in Brody public safety as an addressable digitally networked signal. All panels on Main Campus will report to ECU Police Department via dial-up modems.

G.   <u>DUCT-MOUNTED SMOKE DETECTORS</u>:

Duct-mounted smoke detectors shall be provided with a remote, labeled L.E.D indicator for each detector, mounted in a convenient, publicly visible location, such as an adjacent corridor. They can be wall or ceiling mounted. Non-radioactive smoke detectors and duct detectors are preferred (i.e. photoelectric).

H.   <u>MAINTENANCE ITEMS</u>:

1.   Where DOI specifications do not indicate a required number, for a particular device/component, provide 2%, with a minimum of one, of each spare part including, but not limited to, pull stations, horns, strobe lights, isolating modules, monitoring modules, relays, etc.

2.   Any special tools, equipment, programming devices (hardware and software) 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 Owner.

<u>PART 2 - EXECUTION</u>

2.1   <u>EXECUTION</u>:

A.   All equipment shall be installed so as to provide adequate access for service and repair.

B.   On renovations, always pull out old wiring and pull in new, properly color coded wiring. Never abandon raceways and/or wiring in place.

C.   The Contractor shall certify and label the system at the completion of the installation project, and after any modifications are made to an existing system. All labeling shall be plastic or metal tags that will withstand fading and/or corrosion. Labels shall be white, ¾" high by length suitable to have address printed with ½" black lettering. All labels shall be mechanically fastened to

surface adjacent to device with stainless steel screws or pop rivets. No glue or plastic strip labels shall be used. Where a monitoring module is used, the module shall be labeled and the device(s) it monitors shall be labeled with the same address.

D.   The Designer and Facilities Maintenance - Electric 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.   On renovations, in addition to the renovation prints and/or drawings, the existing prints are to be up-dated to include any changes.

F.   Horns and lights shall be provided in machine rooms and loft/attic areas that have mechanical equipment or work areas.

G.   Mechanical rooms, and other heat sensitive areas, shall have heat detectors, not smoke detectors.

H.   Programming of the fire alarm shall be as specified by the University. Consult with Facilities Services Electric Shop (or other appropriate University maintenance department, as directed by the Project Manager) concerning the requirements. Programming includes, but is not limited to: function keys, FAAP, software zones, etc.

2.2   <u>OPERATION</u>:

<u>ELEVATORS</u>:

A reset procedure for resetting the elevators after an alarm shall be submitted.

2.3   <u>WARRANTY</u>:

The warranty period shall not begin until Project Completion. Damage from lightning and electrical surges shall be covered during the warranty period.

2.4   <u>CLOSE-OUT SUBMITTALS</u>:

A.   <u>OPERATION AND MAINTENANCE MANUALS</u>:

1.   <u>General</u>: The manuals to be provided shall include approved submittals, shop drawings, installation, operation, and maintenance manuals, and spare parts information.

2.   <u>Programmable Systems</u>: If the system is programmable, the project must provide two copies of the operating program on CD-ROM and two appropriate cables to load the program from a laptop computer, in addition to the DOI requirements.

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B.   AS-BUILT DRAWINGS:

1.   Point-to-point Wiring Diagram: A point-to-point wiring diagram shall be included with the Record Drawings.

2.   CAD Format Record Drawings: All record drawings shall also be submitted on computer disk(s) in AutoCAD 2000 format.

3.   Field Devices: Any field devices installed in, or connected to, 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.   Address Map: An address map of the building showing the physical location of the devices and how the fire alarm addresses are laid out 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 Owner when the system is put "On Line".

2.   All spare parts, special tools, equipment, keys, etc. required for maintenance or operation shall be turned over to the Owner when the system is put on line.

3.   A copy of the field prints, drawings, etc. will be given to the Owner when the system is put on line.

END OF SECTION