

SECTION 13850 (28 31 00)

FIRE DETECTION AND ALARM SYSTEM

ENGINEERING SPECIFICATION INTELLIGENT REPORTING FIRE DETECTION SYSTEM

PART 1 GENERAL

1.1 DESCRIPTION

- A. This specification includes the furnishing, installation, connection, and testing of an interactive firefighters' display; including Underwriters Laboratories (UL) listed application software and hardware complete and ready for operation.
- B. The basic system shall be Underwriters Laboratories (UL) listed for the following:
 - 1. No. 864 Control Units for Fire Protective Signaling Systems (Ancillary listing)
- C. The system and associated equipment as specified herein shall be manufactured 100% by a single U.S. manufacturer (or division thereof).
 - 1. The manufacturer shall be of the highest caliber and quality.
 - 2. An ISO 9001 certified company shall manufacture the system.

1.2 SCOPE

- A. An interactive firefighters' display shall be installed in accordance to the project specifications and drawings.
- B. The interactive firefighters' display system shall include, but not be limited to, a touch screen interface, network communications media, power supplies, and wire / fiber optic media as shown on the drawings and specified herein.
- C. The interactive firefighters' display shall support fire alarm, supervisory, and security events from the fire alarm control panel(s).
- D. The interface shall display building floor plans with respective active fire alarm devices, water supplies, evacuation routes, access routes, gas, power and HVAC shutoffs, chemical hazards, and structural hazards in the building.
- E. The system shall include an easy one-touch method of viewing building, emergency contacts, the facility site plan, and active event information.
- F. A supervised interface to NOTIFIER fire alarm control panels and NOTI-FIRE-NET shall be made available.
- G. The system shall be electrically supervised and monitor the integrity of all conductors.

1.3 SUBMITTALS

A. General

1. Ten copies of all submittals shall be submitted to the architect, engineer, and owner for review.
2. All references to manufacturer's model numbers and other pertinent information herein are intended to establish minimum standards of performance, function and quality.
3. Equivalent compatible equipment (UL listed) from other manufacturers may be considered as a substitution for the specified equipment as long as the minimum standards are met.
4. Substitute equipment proposed as equal to the equipment specified herein shall meet or exceed the minimum specified standard. For equipment other than that specified, the contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, performance, and quality of the specified equipment.

B. Shop Drawings

1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
2. Wiring diagrams shall indicate all wiring for each item of equipment and the interconnections between the items of equipment.
3. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.

C. Manuals

1. Submit simultaneously with the shop drawings & submittals; complete operating manuals and technical data sheets.
2. Provide a clear and concise description of operation that gives, in detail, the information required to properly operate the equipment and system.
3. Approvals shall be based on complete submissions of manuals together with shop drawings.

D. Certifications

1. Together with the shop drawing submittal, submit a certification from the major equipment manufacturer indicating that the proposed supervisor of installation and the proposed performer of contract maintenance is an authorized representative of the major equipment manufacturer and factory trained on all equipment contained in the submittal. Include names and addresses in the certification.
2. Provide NICET Certification documentation for factory authorized field technicians performing field final connections and system programming.

E. Applicable Publications

1. The publications listed below form a part of this specification. The

publications are referenced in text by the basic designation only.

2. NFPA No. 70 – National Electric Code (NEC).
3. NFPA No. 72-2002 – National Fire Alarm Code.
4. UL No. 50 – Cabinets and Boxes.
5. UL No. 864 – Control Units for Fire Protective Signaling Systems.
6. UL No. 1481 – Power Supplies for Fire Protective Signaling Systems.
7. Local and State Building Codes.
8. All requirements of the Authority Having Jurisdiction (AHJ).

F. Approvals. The system shall have the following UL listings:

1. No. 864 Control Units for Fire Protective Signaling Systems (9th edition / Ancillary listing)

1.4 GUARANTY

- A. All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least one (1) year from the date of acceptance. The full cost of maintenance, labor and materials required to correct any defect during this one-year period shall be included in the submittal bid.

1.5 INTERACTIVE FIREFIGHTERS' DISPLAY PERFORMANCE

- A. The network will interface and report the individually monitored system's alarm status via a user-friendly Graphical User Interface (GUI) based software.
- B. The software shall operate under Microsoft® Windows® XP Embedded platform as manufactured by Microsoft Corporation.
- C. The GUI based software must be capable of graphically representing the facility being monitored with floor plans and icons depicting the actual locations of the fire alarm device locations.
- D. The software shall use a 1280 pixel x 1024 pixel GUI display capable of showing a large primary floor plan display, a site plan representative of an aerial view of the facility, the first active fire alarm on the system.
- E. The software shall permit automatic navigation to the screen containing an icon that represents the first fire alarm device in alarm in the event of an off-normal condition.
- F. The fire alarm device icon shall be visible only when it is in an alarm (or active) condition.
- G. The software shall display the activated smoke detectors in a time sequence to track smoke progression.
- H. The software shall allow the importation of externally developed floor plans in Windows Metafile (WMF), JPEG (JPG), Graphics Interchange Format (GIF) and Bitmap (BMP) format.

- I. The software shall provide a intuitive and easy way to navigate to different screens representing floors and areas within a facility.
- J. The system shall provide for continuous monitoring of all fire alarm conditions regardless of the current activity displayed on the screen.
- K. The software shall display "YOU ARE HERE" along with icons representing standard building objects (stairs, elevators, etc) to be shown on the floor plan.
- L. The software shall allow icons that represent hazardous materials stored in a facility.
- M. The software shall provide a screen that displays preprogrammed building contact information.
- N. The software shall provide a screen the displays building occupancy and other general building information.
- O. The software shall allow a site plan to be imported that shows an aerial view of the facility.
- P. The software shall display all active fire, supervisory, and security events within an event list.

PART 2 PRODUCTS

2.1 GENERAL

- A. The product(s) shall be manufactured by NOTIFIER®. Model numbers specified are those of NOTIFIER® and are to establish the minimum standard of operating characteristics and quality.
- B. Substitute equipment proposed as equal to the equipment specified herein shall meet or exceed the minimum specified standard. For equipment other than that specified, the contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, performance, and quality of the specified equipment.
- C. All equipment and components shall be new, and the manufacturer's current model. The materials, equipment and devices shall be tested and listed by a nationally recognized approval agency.

2.2 INTERACTIVE DISPLAY

- A. The system shall be an ONYX FirstVision™.
- B. The system shall operate on an UL listed Embedded platform operating at no less than 700 MHz on the Microsoft® Windows® XP Embedded platform.
- C. The Embedded platform shall have: no less than 256 megabytes of RAM, a flash

drive with no less than 1 Gigabytes of storage space, 100 Base-T Ethernet NIC card, and USB ports.

- D. The Embedded platform shall have a minimum 17" touchscreen display.
- E. The Embedded platform shall come equipped with all necessary gateway modules to allow connection to the network it monitors as standard equipment.
 - 1. A UL listed Ethernet Hub shall be provided for connection of multiple interactive displays and/or gateways.

2.3 NOTIFIER® MONITORING NETWORK

- A. The NOTIFIER® monitoring network shall consist of a network based on proven ARCNET® technology.
- B. The network shall have the ability to use fiber optic cable (single-mode and multi-mode), wire (twisted pair copper media in a style 4 or style 7 configuration), or combination wire/fiber communications with support of up to 103 nodes.
 - 1. Wire networks shall support 12 AWG, 1 Pair Shielded to 24 AWG, 4 Pair Unshielded following the manufacturer's guidelines.
 - 2. Fiber optic networks shall support 62.5/125µm cable 8dB limit (50/125µm cable 4.2dB limit)
 - 3. Wire to fiber conversions using repeaters
- C. High-speed data communications (312,500 BPS).
- D. True peer-to-peer communications between fire alarm control panels.

PART 3 EXECUTION

3.1 GENERAL

- A. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring & fiber optic diagrams, schematics, physical equipment sizes, etc., before beginning system installation. Refer to the riser/connection diagram for all specific system installation / termination / wiring data.

3.2 CONDUIT AND WIRE

- A. Conduit shall be in accordance with the National Electrical Code (NEC), local and state requirements.
- B. Where possible, all wiring & fiber optics shall be installed in conduit or raceway.
- C. Cable must be separated from any open conductors of power, or class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, as per NEC Article 760-55.

- D. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.
- E. Conduit shall not enter the control equipment, or any other remotely mounted control panel equipment or back-boxes, except where conduit entry is specified by the FACP manufacturer.
- F. All system wiring shall be new except as allowed herein and approved by the manufacturer for intended communications using NOTI-FIRE-NET.
- G. Wiring & fiber optics shall be in accordance with local, state and national codes (e.g., NEC Article 760) and as recommended by the manufacturer of the fire alarm system. Number and size of conductors & fiber optics shall be as recommended by the fire alarm system manufacturer.
- H. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system except as specified herein.
- I. All communication wire to nodes or to computers shall consist of minimum manufacturer's recommendations and approved wire specification supporting 312,500bps communications.

3.3 TERMINAL BOXES, JUNCTION BOXES, AND CABINETS

- A. The interactive firefighters' display shall be housed in a UL-listed cabinet suitable for surface or semi-flush mounting. The cabinet and front shall be corrosion protected, given a rust-resistant prime coat, and manufacturer's standard finish.
- B. The back box and door shall be constructed of 0.060 steel with provisions for electrical conduit connections into the sides and top.
- C. The door shall provide a key lock and shall include a glass or other transparent opening for viewing of all indicators.
 - 1. The key lock shall be a magnetic latch with a key override.
- D. All boxes and cabinets shall be UL listed for their use and purpose.
- E. The Embedded platform shall be powered by a UL-listed power supply with battery backup.
 - 1. The UL-listed power supply shall be connected to a separate dedicated branch circuit, maximum 20 amperes. This circuit shall be labeled at the main power distribution panel as FACILITIES MONITORING SYSTEM. Power wiring shall be 12 AWG and grounded securely to either a cold water pipe or grounding rod.

3.4 SYSTEM SETUP & CONFIGURATION

- A. Provide the services of a factory trained and authorized technician to perform all

system software modifications, upgrades or changes. Field technicians shall be NICET Level 1 (minimum) certified.

- B. The factory trained technician shall install initial data and artwork at each interactive firefighters' display.
- C. The factory trained technician shall design the graphic layout based on area diagrams and floor plans.

3.5 FINAL INSPECTION

- A. At the final inspection a factory trained representative of the manufacturer of the major equipment shall demonstrate that the system function properly in every respect.

3.6 INSTRUCTION/TRAINING

- A. Provide instruction as required for operating the system. Hands on demonstrations of the operation of all system components and the entire system including user-level program changes and functions shall be provided. A factory trained and certified representative shall provide instruction.

END OF SECTION