Addendum



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PROJECT: Office Renovation and Addition for

City of Huber Heights Tax, Finance & Water Departments

PROJECT ADDRESS: 6131 Taylorsville Road, Huber Heights, OH 45424

ADDENDUM NO. 2

RECEIPT OF THIS ADDENDUM MUST BE NOTED ON THE FORM OF PROPOSAL

TO ALL BIDDERS:

This addendum supplements and amends the original Plans and Specifications and shall be taken into account in preparing proposals and shall become part of the Contract Documents.

CLARIFICATIONS:

ITEM 1: Div 27 & 28 specification scope is by the Owner. Contractor shall provide pathways only for data cabling.

SPECIFICATIONS:

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ITEM AS2: 08 5653 SECURITY WINDOWS

1. Section 2.01.A – Add Insulgard Security Products - Bulletblock to list of approved manufacturers.

ITEM ES1: 26 6101 DIGITAL, ADDRESSABLE FIRE ALARM SYSTEM

1. Add attached specification section 26 6101 to the project.

ELECTRICAL DRAWINGS:

ITEM E1 DRAWING, E1.1, E1.2

- 1. Modify notes to reflect changes to fire alarm system.
- 2. Remove existing smoke alarms.

ITEM E2 DRAWING, E4.1

- 1. New smoke detectors, and annunciator panel
- 2. Modify note to reflect changes to fire alarm system.

ITEM E3 DRAWING, E4.2

1. New smoke detector for elevator.

END OF ADDENDUM NO. 2

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SECTION 26 6101 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. This section covers fire alarm systems, including initiating devices, notification appliances, controls and supervisory devices.
- B. Work covered by this section includes the furnishing of labor, equipment and materials for installation of the fire alarm system as indicated on the drawings and specifications.
- C. The Fire Alarm System shall consist of all necessary hardware equipment and software programming to perform the following functions:
 - 1. Fire alarm and detection operations.
 - 2. Control and monitoring of elevators, smoke control equipment, door hold-open devices, fire suppression systems, emergency power systems and other equipment as indicated in the drawings and specifications.

1.2 Acceptable Manufacturer

- A. Manufacturer: The equipment and service described in this specification are those supplied and supported by Notifier, whose catalog numbers are used herein for establishing equipment criteria. Other acceptable manufacturers are Silent Knight (Honeywell), Edwards or Simplex (Johnson Controls).
- B. Equipment manufacturer shall have a service organization within 60 miles of the project site and be a U.L. certified company. All equipment and materials necessary for proper operation of the system shall be deemed part of these specifications even if not specifically listed or described in this document.

1.3 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 1 and 26 Specification Sections, apply to this section.
- B. The work covered in this section is to be coordinated with related work as specified elsewhere in the specifications. Requirements of the following sections apply:
 - 1. Division 26: "Common Work Results for Electrical."
 - 2. Division 26: "Control Voltage Electrical Power Cables."
- C. The system and all associated operations shall be in accordance with the following:
 - 1. Guidelines of the following Building Code: BOCA

- 2. NFPA 72, National Fire Alarm Code
- 3. NFPA 70, National Electrical Code
- 4. NFPA 101, Life Safety Code
- 5. NFPA 90A, Standard for the Installation of Air Conditioning and Ventilating Systems
- 6. Other applicable NFPA standards
- 7. Local Jurisdictional Adopted Codes and Standards
- 8. ADA Accessibility Guidelines

1.4 System Description

- A. System shall be a microprocessor based, double supervised, closed circuit fire alarm system of modular design utilizing addressable technology for remote devices. Wiring shall be Class "B" for signaling and notification circuits. Smoke detectors shall be analog, addressable units with control panel adjustable sensitivity. All equipment shall be labeled by U.L. for fire alarm signaling use.
- B. Operation of any addressable manual or automatic fire alarm initiating device shall initiate the following:
 - 1. Sound a Code-3 temporal pattern audible alarm signal (pattern programmable at the main panel) and illuminate fire signal lights (strobes) in a synchronous mode until alarms have been silenced. Alarm may be silenced at the main fire alarm system control panel or at a remote annunciator panel by means of an "alarm silence" switch or if the initiating device returns to normal and a system "reset" switch is manually actuated.
 - 2. Display the alarm condition on integral LCD display in the main control panel and remote annunciator(s). Display shall indicate the alarming device and its location. All alarm initiating devices shall be individually addressed.
 - 3. Print the assigned message with time and date at the control panel (or remote printer, if specified). Activate control-by-event functions listed in these specifications.
 - 4. Initiate a separate trouble and alarm signal for connection to remote monitoring service organization via dedicated telephone line(s) or as directed by Owner.
 - 5. Release all electromagnetic door holders.

C. Elevator Fire Service Mode Controls

- 1. Alarm condition from any associated elevator machine room smoke detector(s) shall initiate control signals for primary and alternate elevator recall. Provide programmable relays located in the elevator machine room to perform these functions. Alarm condition from any non-primary egress level elevator lobby (or top or bottom of elevator shaft) smoke detector, shall initiate the primary recall function. Alarm condition from the primary egress level elevator lobby (or elevator machine room) smoke detector shall initiate the alternate recall function. The smoke detectors for elevator recall service shall conform to NFPA 72 and ANSI A17.1.
- 2. Alarm condition from smoke detector(s) in the elevator machine room, bottom of elevator shaft or at the top of the elevator shaft shall initiate a control signal for fireman's

- elevator alert operation. Provide programmable relay in elevator machine room to perform this function.
- 3. Alarm condition from heat detector(s) (located adjacent to fire suppression sprinkler head(s)) in elevator machine room, bottom of elevator shaft or at the top of the elevator shaft (if applicable) shall initiate a control signal to activate the elevator power shunt-trip. Provide programmable relay adjacent to elevator power module in machine room to perform this function.
- 4. Upon loss of voltage to the control circuit for the elevator shunt-trip device, initiate a supervisory trouble signal to the main control panel and remote annunciator(s). Provide a programmable monitoring module adjacent to elevator power module in machine room to perform this function.
- 5. For each elevator (or elevator group), provide required interface modules in NEMA 1 enclosure within 3 feet of the elevator controller for connections for fire emergency service mode operations. Extend control wiring from relays to each controller for final connection to controller by the Elevator Contractor. Extend #12 AWG wiring to the shunt-trip breaker and control voltage sensing in the elevator machine room. Coordinate all control wiring requirements with the Elevator Contractor prior to rough-in.
- D. In the event of an operating power failure or an open or a grounded circuit in the system, a trouble signal and a trouble light shall be activated until the problem is corrected and the system is restored to normal. The trouble event shall be recorded in the system history log and printed on the system printer (when applicable). The trouble may be silenced by means of a button on the main control panel. Upon restoration of the system to a normal condition, the trouble light shall extinguish.

1.5 Submittals

- A. General: Submit two (2) sets of the following to the Architect/Engineer for review for conformance with the Bid Documents prior to submission to the AHJ for permit:
 - 1. Product data sheets for system components highlighted or marked to indicate the specific products, features or functions required to meet this specification. Alternate or as-equal products submitted under this contract must provide a detailed line-by-line comparison of how the submitted product meets, exceeds or does not comply with this specification.
 - 2. Wiring diagrams from Manufacturer's Vendor.
 - 3. Shop drawings showing system details including location of FACP, all devices, circuiting and details.
 - 4. System power and battery charts with performance graphs and voltage drop calculations to assure that the system will operate per the prescribed backup time periods and under all voltage conditions per UL and NFPA standards.
 - 5. System operation description including method of operation and supervision of each type of circuit and sequence of operations for all manually and automatically initiated system inputs and outputs. A list of all input and output points in the system shall be provided with a label indicating location or use of IDC, NAC, relay, sensor and auxiliary control circuits.
 - 6. Operating instructions for FACP.

- 7. Operation and maintenance data for inclusion in Operating and Maintenance Manual. Include data for each type of product, including all features and operating sequences, both automatic and manual. Provide the names, addresses and telephone numbers of service organizations.
- 8. Product certification signed by the manufacturer of the fire alarm system components certifying that their products comply with specified requirements.
- B. Submission to Authority Having Jurisdiction: After Architect/Engineer review of routine submission of the above material, make an identical submission to the authority having jurisdiction. Include copies of shop drawings as required to depict component locations to facilitate review. Upon receipt of comments from the Authority, make re-submissions if required to make clarifications or revisions to obtain approval.

1.6 Quality Assurance

- A. Installer Qualifications: Installer(s) shall meet State of Ohio and local Municipality requirements for certification and as a minimum, have one installer certified as a NICET Level 2. In addition, the fire alarm system supplier shall have on staff, one NICET Level 3 certified individual and be an UL certified company.
- B. Each and all items of the Fire Alarm System shall be listed as a product of a single fire alarm system manufacturer under the appropriate category by UL Inc. and shall bear the UL label.

1.7 Extra Materials

- A. General: Furnish extra materials, packaged with protective covering for storage and identified with labels clearly describing contents as follows:
 - 1. Strobe units: Furnish two (2) units, plus 50 ft. of wire for each device, installed at the Engineer's direction.
 - 2. Horn/Strobe units: Furnish two (2) units, plus 50 ft. of wire for each device, installed at the Engineer's direction.
 - 3. Smoke Detectors or Sensors: Furnish one (1) unit.
 - 4. Detector or Sensor Base(s): Furnish one (1) unit of each type installed, plus 50 ft. of wire for each, installed at the Engineer's direction.
 - 5. Pull station(s): Furnish one (1) unit, plus 50 ft. of wire for each device, installed at the Engineer's direction.
 - 6. Addressable Circuit Interface Modules: Furnish two (2) units, plus 50 ft. of wire for each, installed at the Engineer's direction.

PART 2 - PRODUCTS

2.1 Control Unit

A. Control unit shall contain all necessary components to provide complete control, testing and indicating facilities for the entire fire alarm system. Relays, where utilized, shall be pluggable type, sealed in dustproof containers to prevent failure from dust, dirt, tampering and accidental

contact. Unit shall facilitate silencing of alarm from one addressable device and shall resound on subsequent alarm from another addressable device. Unit shall be double supervised, individually annunciated by addressable point with the following features: test switch, silencing switch(es), reset switch(es), control switch(es), power "on" lamp, minimum of 80 character LCD display, "Alarm" lamp and a means to simultaneously test all indicator lamps (LED's). "Trouble" signal shall be in integrally mounted alert signal with a SPL of 80 db at 4 ft. Trouble alarm silence switch (button) shall have ring back feature.

- B. An alarm shall be displayed on a two line, minimum 80 character LCD display. Display shall indicate alarms, supervisory service conditions and any trouble conditions. The top line of characters shall be the address/point label and the second line shall be the device type identifier. The system ALARM red LED shall flash on the main control panel and remote annunciator panels until the alarm has been acknowledged at any of the panels. Once acknowledged, this same LED shall latch on. A subsequent alarm received from another point, after acknowledged, shall flash the system ALARM red LED on the control panels. The LCD display shall show the new alarm information. A pulsing alarm tone shall occur within the control panel and the remote annunciator panels until the alarm is acknowledged.
- C. The control panel shall be sized to accommodate 250 addressable devices, expandable to 2000 addresses thru the addition of Idnet card(s) within this control panel. Power supplies shall be supplied with 100% capacity including provisions for 20% additional strobe lights and 20% additional audible devices. Provisions for spare capacity shall include additional data loop cards or signaling cards to support the specified capacity. Audible signals shall be master controlled from the fire alarm panel o permit master coded signaling in a Code-3 temporal pattern, panel selectable without making any modifications to remote devices. All visual alarm signals (strobe lights) shall be synchronized at the fire alarm panel. Notifier NFS2-3030 series with all necessary accessories.
- D. Cabinet shall be modular construction, shall be semi-flush mounted and shall accommodate all modules, cards, relays, terminal connections, batteries, etc., necessary for system operation. The outer door and frame assembly shall be equipped with a keyed lock and shall have a transparent door panel to enable viewing all alarm and trouble lights, as well as LCD display, without opening door. Provide manufacturer's standard enamel finish.
- E. The control panel shall communicate individually with addressable initiating and control devices. Each device shall be individually annunciated at control panel.
 - 1. Annunciation shall include the following:
 - a. Alarm
 - b. Trouble
 - c. Open
 - d. Short
 - e. Device missing/failed
 - 2. All addressable devices shall be capable of being disabled or enabled individually.
 - 3. Smoke detectors shall utilize "Alarm Verification" operation.
 - 4. Smoke sensor sensitivity shall be field-adjustable from the control panel for the analog style detectors. Control panel shall have a self-test function such that each sensor is automatically tested once every 24 hours. Sensor shall notify control panel when maintenance is required. System shall automatically compensate for variations in environmental conditions.

- F. The control panel shall have a "Walk Test" feature.
- G. Operating power shall be supplied from a 120 volt, 60 Hz circuit while the supervisory power shall be supplied from an integral DC power supply. The low voltage DC power shall consist of power limited, filtered and regulated power supplies with maintenance-free, lead-calcium battery back-up with automatic recharger. Indication for normal power supply and power supply trouble shall be provided. Provide remote cabinet for batteries where size dictates need. Batteries shall be sized to maintain system operation, including trouble alarm, for 24 hours with sufficient reserve capacity to power all alarm sounding devices for 5 minutes. Battery capacities shall be sized to include provisions for the spare strobe light and audible devices in Para. 1.7. Door holders are not required to be maintained by the standby batteries. All batteries shall be supervised.
- H. Provide surge suppressors ahead of all 120 volt power connections to the fire alarm equipment. Locate suppressors within equipment enclosure or in a junction box directly above/adjacent to the unit. Suppressors shall be Leviton #51020-WM or equal. These suppressors are in addition to internal protection provided with the fire alarm system's internal electronics.
- I. Provide surge suppressors on all initiating and notification circuits that enter or leave the building to/from remote locations.

2.2 Remote System Components

- A. Miniplex transponders will communicate with the Main Fire Alarm Control Unit to provide for centralized control of alarm and trouble signaling as well as output signaling. The transponder shall be capable of limited stand-alone operation in the even the communication link to the central system is lost. Each transponder shall be furnished with all necessary controls, power supplies and battery back-up.
- B. Manual stations shall be addressable communicating devices, shall be non-coded, single action with break rod operation (glass rod not required to reset station), red finish semi-flush mounted with keyed reset switch. Notifier #NBG-12LX.
- C. Fire signal lights (strobe lights) for synchronized operation shall provide visual indication of all alarms and shall illuminate in a flashing mode whenever system is in alarm state. Fire signal lights shall be labeled in accordance with UL 1971 Standards and shall be 15 candela in corridors and 110 candela in all other areas unless specifically designated otherwise. Semi-flush mount signal lights on walls where shown on the drawings. Lens shall be installed in a horizontal alignment on a red back plate labeled "FIRE" and shall produce one flash per second. Strobes shall be System Sensor L Series. Exterior units shall be gasketed and labeled for exterior use, System Sensor SpectrAlert series UL 1638 compliant).
- D. Horns shall be semi-flush mounted, with red grille and field selectable output levels of 85 or 91 dB at 10 ft. (based on UL 464 reverberant test requirements). Horn operating power levels shall be set initially at 85 dB and adjusted upward as required for proper sound coverage during the final check-out. Power calculations shall be made using the current draw for all units operating at 91 dB. Outside assemblies shall be weatherproof. Combination (audible/visible) horn and fire signal lights shall utilize a compact, combination mounting base assembly. Horns shall be labeled "FIRE". System Sensor L Series (utilize the continuous horn signal setting) with

- mounting accessories. Exterior units shall be gasketed for weatherproof rating. Combination strobe/horn signal units shall be factory assembled, System Sensor L Series.
- E. Combo horns with fire signal lights (strobe lights) for synchronized operation shall provide both audible and visual indication of all alarms and shall illuminate in a flashing mode whenever system is in alarm state. Fire signal lights shall be labeled in accordance with UL 1971 Standards and shall be 15 candela in corridors and 110 candela in all other areas unless specifically designated otherwise. Semi-flush mount horn/signal lights on walls where shown on the drawings. Lens shall be installed in a horizontal alignment on a red back plate labeled "FIRE" and shall produce one flash per second. Horns shall have a red grille with field selectable output levels of 85 or 91 dB at 10 ft. (based on UL 464 reverberant test requirements). Horn operating power levels shall be set initially at 85 dB and adjusted upward as required for proper sound coverage during the final check-out. Power calculations shall be made using the current draw for all units operating at 91 dB. All strobes shall be synchronized throughout the entire building utilizing control circuitry within the main fire alarm panel (and extender panels, if used). Exterior units shall be gasketed and labeled for exterior use, System Sensor L Series.
- F. Surface mounted fire alarm devices mounted on walls-such as manual stations, horns, strobes, etc. shall utilize finished backboxes. These backboxes shall be red metal and shall be field punched for conduit entrance (boxes shall not be stamped KO construction). In lieu of wall mounted devices, ceiling mounted annunciating devices may be utilized if approved by the AHJ.
- G. Individual addressable monitor module shall be an addressable module used for monitoring N.O. contact devices such as water flow, tamper switches, kitchen hood ansul system, elevator shunt-trip power monitor, etc. Notifier #FMM-101.
- H. Programmable relay control module shall be an individual addressable module used for control of auxiliary functions such as elevator control, door release, smoke damper shutdown, air handling unit shutdown, etc. Notifier #FRM-1.
- I. Photo-electric type, addressable, ceiling mounted smoke detectors, shall utilize all solid state components operating on the light scatter principle and shall have adjustable sensitivity set at the transponder to detect smoke at 0.5% to 3.7% light obscuration per foot. The sensors shall communicate actual smoke chamber sensitivity to the system control where it is constantly monitored. Each addressable detector is individual adjustable thru the control panel and environmentally adjusted. The system will indicate when individual sensors need cleaning. Detector head shall have a white finish and contain an integrally mounted LED pilot lamp that indicates detector status. Notifier #FSP-951 with B300 base. Provide remote LED alarm indicators when indicated on plans.
- J. Photo-electric type, addressable, duct mounted smoke detectors, shall utilize all solid state components operating on the light scatter principle and shall have adjustable sensitivity set at the transponder to detect smoke at 0.5% to 3.7% light obscuration per foot. The sensors shall communicate actual smoke chamber sensitivity to the system control where it is constantly monitored. Each addressable detector is individual adjustable thru the control panel and environmentally adjusted. The system will indicate when individual sensors need cleaning. Detector head shall have a white finish and contain an integrally mounted LED pilot lamp that indicates detector status. Notifier #DNR/FSP-951/DST/FRM-1. A remote LED "status" light

- shall be flush mounted at 54" mounting height in a convenient location within sight of air handling unit, Notifier #RA-400Z.
- K. Smoke detectors for elevator lobbies, elevator shafts and elevator machine rooms shall be **addressable**, 2-wire photo-electric smoke detectors suitable for ceiling or wall mounting. Detectors shall utilize all solid state components operating on the light scatter principle and shall be factory set to detect smoke at a 2% light obscuration per foot. Detector shall have a 30-mesh insert screen, completely closed backs and shielded electronics to minimize false alarms from dust, insects, EMI or RFI. Detectors at the top of elevator shafts shall be installed with a remote test switch at an accessible location.
- L. Ceiling mounted heat detectors shall be addressable, combination rate-of-rise and fixed temperature type set to alarm at 135 degrees F. or on a temperature rise of 15 degrees F. per minute. Unit shall be capable of low temperature monitoring. Detector shall be white and low profile style, Notifier #FST-951 with #B300 base.
- M. Waterflow switches shall indicate the continuous flow of water in sprinkler pipes where indicated on drawings. Unit shall be equipped with retard mechanism, adjustable up to two minutes, to minimize false alarms due to pressure changes. Retard mechanism and allowable time delay shall be subject to local AHJ requirements. Unit shall be supplied and installed by the Fire Suppression Contractor and wired to the fire alarm system by the E.C. via a monitor module with a dedicated address.
- N. Gate valve switches (OS&Y) shall monitor the status of sprinkler valves where indicated on drawings and shall signal a trouble alarm when respective valve is closed. Unit shall be supplied and installed by the Fire Suppression Contractor. Each gate valve switch shall be wired to the fire alarm system by the E.C. via a monitor module with a dedicated address.
- O. Magnetic door holders shall be multi-voltage selectable for 24 VDC or 24/120VAC operation. Flush wall mounted, Notifier #FM-998; semi-flush mounted, Notifier #FM-997 for new construction or surface wall mounted, Notifier #FM-996 for remodel applications on existing walls. Floor mount models for single door, Notifier #FM-980 or double door, two Notifier #FM-980, where shown on plans or application requires such use.
- P. Remote Annunciator and Operator Control Panels shall be flush wall mounted where shown on plans. Each shall consist of an 80 character LCD display with control features similar in appearance and orientation as the main fire alarm control panel. Control buttons shall be locked behind a window (keyed the same as the main fire alarm control panel) to prevent unauthorized operation.
- Q. Notification appliance power extender control panels shall be provided where shown on the drawings. These panels shall communicate with and be completely supervised from the main fire alarm control panel. They shall be capable of powering additional synchronized visual alarm signals (strobes) and/or audible alarm signal circuits. Each panel shall include supervisory modules, power supplies, batteries and chargers. At the Contractor's option, additional extender panels may be utilized if deemed acceptable by and locations are coordinated with the Architect/Engineer during the bidding phase. Notifier #FCPS-24 Series panel with accessories.
- R. A digital communicator shall be located within the main fire alarm control panel to automatically transmit designated alarms, supervisory and trouble signals to a central station monitoring service via dedicated telephone lines. The digital communicator shall be compatible

with the communications protocol of all major Central Station receivers, including: ADCOR, ADEMCO, FBI, Franklin, Osborne Hoffman, Radionics, SESCOA, Silent Knight, Varitech, DCI, Vertex, etc. The digital communicator shall be connected to one telephone line and a cellular dialer, shall supervise both means of communication and shall be capable of sending alarm signals on both means of communications to the Central Monitoring Service. The fire alarm panel shall indicate a trouble alarm on any digital communicator equipment failure (including loss of telephone line connection for longer than 45 seconds). The digital and cellular dialer shall be powered and maintained by the main fire alarm control panel standby battery power supply. Provide surge suppression on the 120 volt power supply and on telephone lines. Provide both digital and cellular dialers and one year of UL monitoring.

The digital communicator shall transmit the following event level information:

- 1. Fire Alarm Condition
- 2. Supervisory Condition
- 3. Trouble Condition
- 4. Daily Test Signal
- S. Provide a recessed Knox-Box rapid entry system where indicated on drawings. Extend wiring from the Knox-Box tamper switch to a monitor module to signal a trouble to the building fire alarm system.

PART 3 - EXECUTION

3.1 Installation, General

A. Install system components and all associated devices in accordance with applicable NFPA Standards and manufacturer's recommendations.

3.2 Equipment Installation

- A. Furnish and install a complete Fire Alarm System as described herein and as shown on the plans. Include sufficient control unit(s), annunciator(s), manual stations, automatic fire detectors, smoke detectors, audible and visible notification appliances, wiring, terminations, electrical boxes and all other necessary material for a complete operating system. Wall mounted devices shall utilize manufacturer recommended rough-in boxes with bushed conduit stubbed above accessible ceiling (as a minimum).
- B. If the building has a legally required standby power generator or power system, the E.C. shall provide a 20 Amp-120 Volt emergency circuit from the nearest Life-Safety emergency panel to the main fire alarm panel and any additional Notification Appliance (Power Extender) Panels required by the system.
- C. Coordinate door holder equipment connections and installation with door hardware supplier.
- D. Locate duct mounted smoke detectors per UL and manufacturer's guidelines for accurate air sampling and to permit easy access for maintenance and testing. Coordinate installation with the

- H.C. Where required, provide access panels. The E.C. shall ensure accessibility to the entire assembly.
- E. Provide a system smoke detector at the location of each fire alarm control unit (this includes the main panel and extender panels/auxiliary control panels where initiation/notification circuits originate).

3.3 Wiring Installation

- A. System Wiring: Wire and cable shall be a type listed for its intended use by an approval agency acceptable to the Authority Having Jurisdiction (AHJ) and shall be installed in accordance with the appropriate articles from the current approved edition of NFPA 70: National Electrical Code (NEC).
- B. Contractor shall obtain from the Fire Alarm System Manufacturer written instruction regarding the appropriate wire/cable to be used for this installation. No deviation from the written instruction shall be made by the Contractor without the prior written approval of the Fire Alarm System Manufacturer.
- C. Color Coding: Color code fire alarm conductors differently from the normal building power wiring. Use one color code for alarm initiating device circuit wiring and a different color code for supervisory circuits. Color code notification appliance circuits differently from alarm initiating circuits. Paint fire alarm system junction boxes, conduit fittings and box covers red.
- D. The following wiring and conduit shall also be included in the fire alarm system work:
 - 1. Empty conduit with pull wire from the digital communicator to the main telephone backboard. Telephone wiring from the telephone backboard to the digital communicator is the Owner's responsibility (or provided under a separate contract). The E.C. shall assist in making the final connections at the digital communicator and verify transmission and receipt by the Central Station prior to final testing.
 - 2. From duct mounted smoke detector, control relay module or fire alarm panel to each air handling unit and exhaust fan for shutdown where required by OBC (606).
 - 3. For each elevator or elevator group:
 - a. Provide 2-#12 from the shunt-trip control relay module to the elevator shunt-trip breaker.
 - b. Provide 2-#12 from the elevator shunt-trip control voltage sensing to a monitoring module.
 - c. Provide 2-#14 from the fireman's hat indicator control relay module to the elevator controller for activation of the fireman's alert signal within the elevator cab.
 - d. Provide 2-#14 from the primary recall control relay module to the elevator controller (or group of controllers) for elevator "primary egress level" emergency service mode signaling.
 - e. Provide 2-#14 from the alternate recall control relay module to the elevator controller (or group of controllers) for elevator "alternate egress level" emergency service mode signaling.
 - f. Elevator emergency service mode signal wiring shall be from Form C dry contacts in each control relay in accordance with the elevator supplier's direction.

- 4. From electro-mechanical door holders to associated smoke detectors and/or fire alarm panel or control relay.
- 5. Wiring to supervisory monitor and control points.
- E. Wire shall be plenum rated, install cabling in a separate J-hook system where accessible. Install conduit in areas that are inaccessible when construction is complete.

3.4 Field Quality Control

- A. Manufacturer's Field Services: Provide services of a factory-authorized service representative to supervise the field assembly and connection of components and the pre-testing, testing and adjustment of the system.
- B. Final Test Notice: Provide a 10-day minimum notice in writing when the system is ready for final acceptance testing. Test the system according to the procedures outlined in NFPA 72.
- C. Report of Tests and Inspections: Provide a written record of inspections, tests and detailed test results in the form of a test log.
- D. Final Test, Certificate of Completion and Certificate of Occupancy:
 - 1. Test the system as required by the Authority Having Jurisdiction (AHJ) in order to obtain a certificate of occupancy.
- E. Revise all wiring diagrams and floor plans to reflect final accepted "As-built" conditions for the project and include in the O&M Manuals for the owner's use. In addition, the supplier shall include an electronic copy of the system's operating program on a CD.

3.5 Cleaning and Adjusting

- A. Cleaning: Remove paint splatters and other spots, dirt and debris. Clean unit internally using methods and materials recommended by manufacturer.
- B. Occupancy Adjustments: When requested within one year of date of Substantial Completion, provide on-site assistance in adjusting sound levels and adjusting controls and sensitivities to suit actual occupied conditions, in compliance with NFPA 72. Provide up to three (3) visits to the site for this purpose.

3.6 Training

A. Provide the services of a factory-authorized service representative to demonstrate the system and train Owner's designated personnel for a minimum of 4 hours training on-site.

END OF SECTION 26 6101

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