

ADDENDUM NO. 1
August 27, 2024

Re: EISENHOWER ES PHASE 2 HVAC REPLACEMENT
Anoka-Hennepin School District 11, Anoka, MN
ATS&R Project Number: 22032.1
Anoka Bid No. 25012B

TO ALL CONTRACTORS

The following are clarifications and/or changes to the Plans and Specifications dated August 21, 2024 for the above-named Project, to be Bid on September 17, 2024 @ 2:00 PM.

ENCLOSURE: **Certification Page(s).**

Electrical: **New Sections 27 53 14 and 28 31 10.**

INTRODUCTORY INFORMATION

1. Document 00 01 05 of the Project Manual:
 - a. Refer to Certification Page, included as an enclosure with this Addendum.

ELECTRICAL SPECIFICATIONS

2. ***Add New*** Section 27 53 14, included as an enclosure with this Addendum.
3. ***Add New*** Section 28 31 10, included as an enclosure with this Addendum.

END OF ADDENDUM

CERTIFICATION PAGE

PROJECT:

EISENHOWER ELEMENTARY SCHOOL
PHASE 2 - HVAC REPLACEMENT
151 Northdale Boulevard Northwest
Coon Rapids, Minnesota 55448

ARCHITECT'S CERTIFICATION:

I hereby certify that this Plan, Specification, or Report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the laws of the State of Minnesota.

Name David M. Maroney, AIA

Signature 

Date August 21, 2024 License No. 20992

STRUCTURAL ENGINEER'S CERTIFICATION:

I hereby certify that this Plan, Specification, or Report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Name Timothy G. LaBissoniere, PE

Signature 

Date August 21, 2024 License No. 21387

MECHANICAL ENGINEER'S CERTIFICATION:

I hereby certify that this Plan, Specification, or Report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Name Blayne J. Parkos, PE

Signature 

Date August 21, 2024 License No. 46630

ELECTRICAL ENGINEER'S CERTIFICATION:

I hereby certify that this Plan, Specification, or Report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Name Nicholas Achina, PE

Signature 

Date August 21, 2024 License No. 40408

END OF DOCUMENT

SECTION 27 53 14
MASTER CLOCK SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

- A. Work includes replacing existing clocks with new clocks as shown on the Drawings.

1.02 SHOP DRAWINGS

- A. Project Shop Drawings shall be submitted for review by the Architect's Technology Designer in PDF format.
- B. The shop drawing shall be prepared specifically for this project and shall include the following:
 - 1. Title sheet clearly defining the project name, address and telephone number of Contractor, date of submittal and subcontractors. The title sheet shall have blank space for Architect's review stamp.
 - 2. Complete material list listing manufacturer, model number and description of all materials.
 - 3. Manufacturer's specification sheets for all equipment.
- C. Poorly made reproductions will be rejected.
- D. **Approval Stamp:** General design and layout is the only approval implied by the approval stamp. Anything called for in Specifications and not noted on Shop Drawings is to be complied with and the approval stamp on Shop Drawings does not relieve Contractor of responsibility for errors or omissions in Shop Drawings.

1.03 SYSTEM DESCRIPTION

- A. The master clock/transmitter is existing, manufactured by American Time. All new clocks shall be compatible with that transmitter.
- B. Provide new 120 volt operated secondary clocks in the remodeled rooms as shown on the Drawings. 120 volt power shall be provided by Division 26.
- C. Clocks shall synchronize to ± 1 second of the time displayed on the system controller.
- D. The system shall include an internal real time clock reference so that failure of the Ethernet signal does not cause the clocks to fail to indicate the correct time.
- E. **Secondary Clocks shall be traditional analog type and include the following minimum features:**
 - 1. Clocks shall be surface wall mounted and operate on 120 volt AC power.
 - 2. Clocks shall have polycarbonate frame and polycarbonate lens. Face shall be white. Hour and minute hands shall be black. Clocks shall be provided with red sweep second hand. Clock shall include the Anoka-Hennepin School District logo printed on the face. American Time has this logo on file.

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3. If transmitter stops transmitting valid time signals due to power failure, the clocks will continue to function as accurate quartz clocks until a valid time signal is decoded.
4. Time shall be automatically updated from the transmitter 6 times per day.
5. Clocks shall have a tamper proof/theft resistant clock lock mounting slots.
6. Clock receivers sensitivity: >-110 dBm, Antenna type: Internal.
7. Clocks shall include the security mounting bracket.

PART 2 - PRODUCTS

2.01 EQUIPMENT

- A. Products manufactured by American Time are approved only to meet District standard.
- B. Equipment and components furnished shall be of manufacturer's latest model.
- C. **Wall Mount Clocks:**

1. Manufacturer: American Time
2. Model Number: SQ56BAAD304BPL with Anoka-Hennepin School District logo
3. Quantity: As shown on the Drawings

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Provide hanging hardware with fastening system appropriate for the wall material that the clock will be mounted to.
- B. Clocks shall not be installed until painting and other finish work in each room is complete, if applicable.
- C. All equipment shall be installed in a neat and professional manner.

3.02 SYSTEM TESTS AND PROGRAMMING

- A. All system functions shall be tested for proper performance.
- B. At completion of installation and prior to final acceptance, turn on the equipment; ensure that all equipment is operating properly, and that all clocks are functioning.

END OF SECTION

FIRE ALARM SYSTEM (EXISTING)

PART 1 - GENERAL

1.01 SUMMARY

- A. **Existing System:** The existing fire alarm system is a NOTIFIER system. Entire system shall be thoroughly inspected, tested, and updated as required for the addition of all new devices, and for replacement of existing devices, as indicated below and as shown on Drawings. System shall operate as one complete system. System shall consist of the following and all other necessary auxiliary items, including wiring, to complete the system in satisfactory operating condition. Integrity of the existing system must be maintained.

- B. **Work Scope:** Work in this section shall include the following:
 - 1. Existing fire alarm devices mounted on ceiling shown to be demolished shall be removed or tied up for construction. Reinstall on new ceiling is same location.

 - 2. Once ceilings are removed, provide proper support for all cables not properly supported.
 - a. Provide cable hooks 5' O.C..

 - 3. Provide new devices as shown on the Drawings.

- C. **Related Sections:**
 - 1. Section 26 00 00: Electrical
 - 2. Section 26 00 10: Shop Drawings
 - 3. Section 26 05 33: Raceways and Boxes
 - 4. Section 26 29 13: Motor Controls

1.02 PERMITS AND FEES

- A. **General Requirements:** All permits, fees, bonds, and Drawings required by local and state Fire Marshal shall be responsibility of this Contractor and included as a part of this Contract.

1.03 REFERENCES

- A. **General Requirements:**
 - 1. Fire alarm systems shall meet requirements of applicable sections of NFPA 72; ADA (Americans with Disabilities Act); local code requirements; and National Electrical Code, Article 760. System shall have electrically supervised circuits.

 - 2. All items of fire alarm system shall be listed as a product of a SINGLE fire alarm system manufacturer under appropriate category by Underwriters Laboratories (UL) and shall bear the UL label. Control equipment shall be listed under UL Category UOJZ as a single control unit. Partial listing shall **NOT** be acceptable.

 - 3. Control equipment to have transient protection devices in accordance with the UL 864 requirements.

1.04 VENDOR QUALIFICATIONS

A. General Requirements:

1. Installation Contractor to have a minimum of 5 years experience in installation and service of fire alarm systems.
2. The installing company shall employ NICET (minimum Level II Fire Alarm Technology) technicians on site to guide the final check-out and ensure the integrity of the system.
3. Provide three (3) references of Projects of comparable size and scope that have been completed within last two (2) years. References shall include Project name, address, date of Substantial Completion, and name and telephone number of manager of system.
4. Provide letters on manufacturer's or factory representative's letterhead verifying that installation Contractor is an approved installation vendor of specified products. Letters shall be on manufacturer's letterhead or letterhead of approved factory representatives.
5. Information shall be included in Shop Drawings.

1.05 COMPATIBILITY OF EQUIPMENT

- A. General Requirements:** Contractor shall have full responsibility of component parts of fire alarm system to ensure that equipment will perform and operate in accordance with requirements of Specifications without excessive or unusual service or maintenance requirements.

1.06 FUNCTIONS OF SYSTEM

- A. General Alarm:** Initiated by actuation of any manual station, heat detector, smoke detector, more than one duct smoke detector, sprinkler flow switch, or kitchen hood panel. General alarm condition shall:
1. Cause all fire alarm signal devices to be energized with audio sounding synchronized temporal code, and with continuously energized visual synchronized strobe lights, and shall meet requirements of ADA. Temporal code shall be a repeatable sequence of 0.5 sec ON, 0.5 sec OFF, 0.5 sec ON, 0.5 sec OFF, 0.5 sec ON, 2.5 sec OFF, and repeat.
 2. Cause proper fire indication to be visually and audibly indicated on both fire alarm control panel and remote annunciator(s).
 3. Cause auxiliary relay in fire alarm control panel to de-energize magnetic door holders with resultant closing of associated smoke doors.
 4. Cause fire alarm control panel to transmit alarm signal to Owner's central reporting station.
 5. Cause auxiliary relays at each air handler to shut down unit motors and signal fire/smoke dampers to close.
 6. Cause all electrically and magnetically locked doors to release.

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7. Preceding Items 1 through 6 shall occur simultaneously and shall be continuous until alarm initiating device in alarm condition is restored to normal and system is reset at fire alarm control panel door or at remote annunciators. It shall be possible to de-energize general alarm horns, while system is being restored to normal, by operation of "Silence" push button on fire alarm control panel door without loss of zone alarm annunciation and without loss of subsequent alarm in another zone or zones.

B. Motor Shutdown:

1. In addition to initiating a trouble alarm, actuation of any duct smoke detector shall cause all motors and fire/smoke dampers associated with the air handling system to shut down.

C. Smoke/Fire Damper Closing: In addition to initiation of general alarm as described above, actuation of certain duct detectors and or ceiling smoke detectors not associated with an AHU, shall cause smoke/fire dampers associated with that detector to close. All other smoke/fire dampers shall remain open until activated by their associated smoke or duct smoke detectors.

D. General Supervision: Meet the following requirements:

1. There shall be independently fused indicating appliance circuits as required to operate all alarm horn/strobes simultaneously. Circuit horns and strobes, and supply adequate quantity of circuits for indicating appliances to meet ADA requirements.
2. Auxiliary manual controls shall be supervised so that all switches must be returned to normal automatic position to clear system trouble.
3. Incoming power to fire alarm system shall be supervised so that any power failure shall be audibly and visually indicated at fire alarm control panel and remote annunciator(s). A green "power on" indicator shall be displayed continuously while incoming power is present.
4. System batteries shall be supervised so that disconnection of battery shall be audibly and visually indicated at fire alarm control panel, and remote annunciator(s).
5. System expansion modules connected by cables shall be supervised for module placement. If a module becomes disconnected, system trouble indicator shall illuminate and audible trouble signal shall sound.

E. Trouble Condition in Signal Initiating Device:

1. Condition shall cause associated device and/or sprinkler zone trouble indication on fire alarm control panel door and on remote annunciators, and shall be energized continuously.
2. Condition shall cause "Operating Power" trouble lamp indication and audible trouble signal at fire alarm control panel to be energized continuously until audible trouble signal is silenced with associated trouble signal silencing switch. When trouble signal is silenced, trouble lamp indication shall remain energized until trouble is corrected. After trouble is corrected, fire alarm control panel shall restore normal operating condition and log event describing trouble and that it has been corrected.
3. Condition shall not cause any of the alarm condition operations described herein to occur.

F. Trouble Condition in Audible Fire Alarm Signal Circuits and Loss of Operating Power; Opens and Grounds in Audible Fire Alarm Signal Circuits or Loss or Systems Operating Power:

1. Condition shall cause "Operating Power" trouble lamp indication and audible trouble signal at fire alarm control panel to be energized continuously until audible trouble signal is silenced with associated trouble signal silencing switch. When trouble signal is silenced, trouble lamp indication shall remain energized until trouble is corrected. After trouble is corrected, fire alarm control panel shall restore normal operating conditions and log event describing trouble and that it has been corrected.
2. Condition shall not cause any of the alarm condition operations described herein to occur.

G. Trouble Condition in Supervisory Power, Loss of Supervisory Power:

1. Condition shall cause system "Supervisory Power" trouble lamp indication and audible trouble signal at fire alarm control panel to be energized continuously until audible trouble signal is silenced with associated trouble signal silencing switch. When trouble signal is silenced, trouble lamp indication shall remain energized until trouble is corrected. After trouble is corrected, fire alarm control panel shall restore normal operating condition and log event describing trouble and that it has been corrected.
2. Condition shall not cause any of the alarm condition operations described herein to occur.

H. System Power:

1. System shall operate from a single phase, 120 volt, 60 Hertz power source and shall automatically transfer to a standby source of 24 volt DC during periods of 120 volt, 60 Hertz power failure. Standby power supply shall consist of lead acid batteries and automatic charger with capacity to operate system during 24-hour minimum outage of normal power. Standby power capacity shall be such that any alarm initiated during or immediately after this 24-hour period shall result in continuous sounding of all alarm horns for a minimum of 5 minutes. Green power "On" lamp indication on fire alarm control panel door shall indicate when system is energized. Fire alarm control panel to be located as shown on Drawings and remote power supplies (not shown on Drawings) to be located by equipment supplier and Architect as required.
2. Battery charging and recharging operations shall be automatic. Batteries, once discharged, shall recharge at rate to provide a minimum of 80 percent capacity in 12 hours.
3. Circuits requiring system operating power shall be 24 VDC and shall be individually fused at fire alarm control panel.

1.07 WIRING REQUIREMENTS

A. General Requirements:

1. Drawings indicate fire alarm devices required. Number and size of conductors shall be installed as recommended by fire alarm system manufacturer. All wires (not shown on Drawings) shall be color coded and installed in metal conduit, 3/4-inch minimum. Contractor to provide conduit system based on fire alarm system manufacturer's wiring requirements. Routing of conduit and cabling shall be coordinated with the manufacturer's representative to ensure proper operation.

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2. Notification appliance circuit shall be wired as NFPA Style Y (Class B) wiring with minimum wire size 14 AWG for horn/strobes and strobes, door holder circuits to be minimum 14 AWG. Wiring for addressable loop to initiating devices, including smoke detectors, duct smoke detectors, pull stations, and addressable modules, shall be Style 6 (Class A) and minimum No. 18 wire as required by manufacturer. The Contractor shall provide quantity of alarm indication circuits and initiating device circuits as recommended by manufacturer, including spare capacity as called out in this Specification.
3. Wires in junction boxes and cabinets shall be neatly trained, tagged, and identified. Junction boxes shall have red painted covers and markings as "FIRE ALARM SYSTEM".

1.08 SUBMITTALS

A. Shop Drawings:

1. Shop Drawings shall be submitted as soon as possible after award of Contract and system shall be both installed and connected in accordance with Shop Drawings.
2. Shop Drawings shall contain vendor qualifications, point map Drawings, load calculations and wiring diagrams that include scaled floor Plans with point-to-point wiring and connections shown. Diagram shall also include details of interface wiring to dampers, starters, and related appurtenances. Indicate as-built conditions on these Drawings and include in Owner's operation and maintenance manuals.

1.09 MAINTENANCE

- A. **Maintenance Manual:** Maintenance manuals shall be turned over to Owner, including certification letter, printout to show status of system at time of acceptance, operating and maintenance instructions, replacement parts lists, and wiring diagrams. Manuals shall define testing procedures to meet the NFPA and local authority requirements, including testing schedule of each detector, circuit, alarm module, and alarm. Contractor shall provide an inspection form tailored for this installation to ensure proper testing of the entire installation. Such manuals shall be submitted in 2 copies and bound into ring binders specified in Section 26 00 00.
- B. **Certification Letter:** Letter from fire alarm system equipment supplier or installer shall be furnished stating that system has been installed correctly, is working correctly, operating in acceptable range for all detectors, and that system has been thoroughly checked out. Copies of such letter shall be included in maintenance manuals. Signed affidavit from Owner shall be included stating that Owner's personnel have been trained in system operation and maintenance, to the Owner's satisfaction.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. **Acceptable Manufacturers:** All equipment shall match existing system.

2.02 SYSTEM REQUIREMENTS

- A. **Fire Alarm System:** Addressable closed circuit, low voltage type electrically supervised, fire alarm system with individual intelligent devices that include, but are not limited to, alarm initiating devices, alarm notification appliances, control panels, auxiliary control devices (including sprinkler monitor modules), annunciators, and power supplies, all devices shown on Drawings and wiring, conduit, and equipment specified herein.

2.03 CONTROL EQUIPMENT

A. **General Requirements:**

1. Provide all upgrades as required to connect all devices as shown on the Drawings, plus 20 percent future capacity.
2. Replace existing fire alarm control panel batteries sized by the manufacturer as required for existing and new devices. Provide battery calculations to the "Authority Having Jurisdiction" and include them in the O&M manuals.

2.04 AUTOMATIC DETECTION

- A. **Smoke Detectors:** Furnish and install where indicated on Drawings, analogue addressable photoelectric smoke detector with automatic environmental compensation that performs a self-test daily. Detectors shall have a minimum of 3 sensitivity levels.

1. Detectors shall be UL listed, Standard 268, and shall be documented compatible with control equipment to which it is connected. Detectors shall be listed for this purpose by Underwriters Laboratories. Detectors shall obtain their operating power from fire alarm panel supervised detection loop. Operating voltage shall be 24 VDC (nominal).
2. Detector base shall be interchangeable and compatible with ionization detectors. Their light source shall be pulsed infrared LED for low power consumption under standby conditions at 24 VDC. Removal of detector head shall interrupt supervisory circuit of fire alarm detection loop and cause trouble signal to be generated at fire alarm control panel.
3. Each detector shall have flashing status indicating LED for visual supervision. When detector is actuated, flashing LED will latch on steady and at full brilliance. The detector may be reset by actuating fire alarm control panel reset switch.
4. To minimize nuisance alarms, voltage and RF transient suppression techniques shall be employed as well as smoke verification circuit and insect screen. The detector design shall provide full solid-state construction and compatibility with other normally open fire alarm detection loop devices (heat detectors, pull stations, etc.). Detector head shall be easily disassembled to facilitate cleaning.
5. Where ceiling mounted smoke detectors including duct detector control other wiring, auxiliary contacts (size as required) shall be provided with relay detector base and shall control the following:
 - a. Coiling counter doors.
 - b. Overhead coiling doors.
 - c. Smoke/fire dampers.
 - d. Roof smoke hatch.

B. **Duct Detectors:** Analogue addressable photoelectric smoke type as specified. Duct detectors shall be furnished, wired, and installed in ducts by Electrical Contractor in openings in ducts provided by Mechanical Contractor. While duct detector locations are indicated on Drawings, these locations are approximate only and actual locations shall be coordinated between both Electrical and Mechanical Contractors considering both operation requirements and maintenance accessibility. Each duct type detector shall have two sets of contacts (one set of closed contacts shall be wired in starter control circuit of each respective air handling motor). Duct detectors shall be as follows:

1. Duct Smoke Detectors: Housing shall be analogue addressable with software programmable auxiliary 10A relay, shall have environmental compensation, shall be of solid state photoelectric type, and shall operate on light scattering photodiode principle. Detectors shall be designed to ignore invisible airborne particles or smoke densities that are below factory set alarm point. No radioactive materials shall be used. Detector construction shall be of split type (mounting base with twist-lock detecting head). Contacts between base and head shall be of the bifurcated type using spring-type, self-wiping contacts. Removal of detector head shall interrupt the supervisory circuit of fire alarm detection loop and cause a trouble signal at fire alarm control panel. Detector design shall provide full solid state construction and compatibility with other normally open fire alarm detection loop devices (heat detectors, pull stations, etc.). Duct housing couplings shall be slotted to ensure proper alignment of sampling and exhaust tubes. Detector shall have alarm LED visible through transparent front cover. Detectors shall obtain their operating power from the supervised current in fire alarm loop. Installation shall meet the requirements of NFPA 90A. Provide remote alarm/test station per item No. 2 below, for all duct detectors.
2. Remote Alarm/Test Station: Provide a remote test station with pilot light indicator in flush stainless steel plate for each duct detector. Locate at door of Mechanical Room or in ceiling tile below unit when located above lay-in ceiling. Verify exact mounting location with Architect. Engrave each plate to indicate function.
3. Where duct detectors control smoke dampers or fan motor, 2 additional auxiliary contacts rated at 10 amp, 150 volt, shall be furnished to control circuits.
4. Where duct detectors are located exterior to the building, furnish a weather-proof enclosure with heater at each detector location. Heater shall be factory assembled in enclosure. Heater shall include integral thermostat and maintain temperature within enclosure at 50 degrees Fahrenheit minimum, and be rated at 120 volt. Heater shall include a 5-year written warranty free of defects, parts and labor to be included in Owner's manual. Failure of heater shall cause a trouble signal at control panel and be associated with duct detector addressable point.

2.05 ALARM NOTIFICATION UNITS

A. **Alarm Speaker/Strobe Combination Units:**

1. Interior wall/ceiling mounted voice evacuation speaker/strobe combination units shall consist of (1) Exceder LED3 MNS Speaker/Strobe Unit. Unit shall have a white lens strobe plate with clear strobe, labeled 'ALERT', in red letters.
2. Speaker to be rated at 1/8 watt through 8 watts field selectable. Batteries and amplifier to be sized for 2 watt tap.
3. Strobe candela rating that must meet ADAAG, NFPA 72 and ANSI 117.1 requirements for spacing mounting height, and effective intensity.

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4. U.L. listed guards to be installed on speaker/strobes in gymnasiums, field house, auditorium, corridor, cafeteria, and where indicated by the letter "G".
5. Speaker/strobes shall be furnished with appropriate hardware and boxes for complete installation. Verify requirements with vendor.

B. Alarm Strobe Lights (No Horn):

1. No Letter Designation: Exterior alarm bell with strobe light for flow alarm shall be (Wheelock) MTWP-24-R Series bell/strobe, weatherproof surface junction box.
2. Bell/strobe shall be furnished with appropriate hardware and boxes for complete installation. Verify requirements with vendor.
3. Set tone to bell on high output.

2.06 SMOKE DOOR HOLDERS

- A. **General Requirements:** Smoke door holders shall be electro-magnetic type designed to operate on 24 volts DC or AC and shall be furnished and located by General Contractor with conduit, wire, auxiliary relays, power supplies, and electrical connections by Electrical Contractor at doors indicated on Drawings. Electro-magnetic door holders shall be connected to auxiliary relay in fire alarm control panel so that they will be de-energized, thus allowing associated smoke doors to close when any fire alarm is sounded or upon power failure. The installation of electro-magnetic door holder units shall be done in accordance with manufacturer's recommendations and in cooperation with other contractors. Verify each exact location with General Contractor before installation.

2.07 MANUAL STATIONS

- A. **General Requirements:** Addressable pull stations, with dual action and key locking feature.

2.08 SMOKE DAMPERS

A. General Requirements:

1. Independent Smoke/Fire Dampers: Independent smoke/fire dampers will be electric type designed to operate on 120 volts, furnished and located by Mechanical Contractor with conduit, wire, and electrical connection by Electrical Contractor at locations indicated on Drawings. Electrical Contractor shall provide 120 volt disconnect switch at each damper and shall provide 120 volt circuit through control module or relay contacts in fire alarm system so damper will automatically close upon general alarm. Installation shall be performed in accordance with manufacturer's recommendations and in cooperation with Mechanical Contractor. Verify exact location with Mechanical Contractor before installation.
2. Air Handler System Dampers: Smoke isolation dampers and smoke/fire dampers associated with an air handler will be electric type designed to operate on air handler control voltage, furnished and located by Mechanical Contractor with wiring by the Mechanical Contractor through contacts in fire alarm relay base or control module by Div. 26. Smoke isolation dampers and smoke/fire dampers associated with the air handler will be open only when the air handler is running and closed when the air handler is not running.

2.09 REMOTE INTERFACE MODULES

A. Addressable Monitor Modules:

- 1. Addressable monitor modules shall be installed as required.
 - a. Provide 1 monitor module at each individual point as indicated on Drawings.
- 2. Addressable monitor modules shall be installed as required.
 - a. Provide 1 monitor module at each powered fire alarm device.

B. Addressable Control Modules: Shall be installed as required.

- 1. Provide control modules for each horn and strobe circuit.
- 2. Provide control modules for each air handler within 3 feet of the air handler control panel and connect to the air handler. Coordinate with air handler installer.

2.10 FIRE ALARM REMOTE POWER SUPPLY

- A. General Requirements:** Provide remote signal power supplies as required. These power supplies shall be connected to a 120 volt unswitched power circuit and be complete with standby batteries and battery charger. Power supplies located throughout building as required to properly power system. Furnish and install smoke detector at each power supply location. Coordinate exact locations with Architect.

2.11 FIRE ALARM ADDITIONAL INSTALLED DEVICES

- A. General Requirements:** Provide and install spare devices as indicated in schedule, allow for 50 feet of conduit, wire and boxes required to install each device, cut and patch walls as required.

1. Spare Device Schedule:

| | |
|---------------------------------|----------|
| Alarm Speaker/Strobes | 2 |
| Duct Smoke Detectors | 2 |

- 2. Devices not used shall be turned over to the Owner for spares.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General Requirements:

- 1. Contractor to provide identification on ceilings for devices which may be located above. Identification shall consist of a permanent tag with a device name and point address.
- 2. Contractor shall furnish and install all devices, wiring, conduit, junction boxes, and outlet boxes required for installation of a complete system. All wiring shall be color coded throughout and shall test free and clear of opens, grounds, and crosses between conductors. Contractor shall pull all wiring to a location in ceiling above fire alarm control panel and provide an extra cabling length sufficient for termination by Owner.

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3. Equipment installation and wiring shall be as described above, as shown on Drawings and in accordance with detailed information furnished by equipment manufacturer. Manufacturer shall maintain full-time service organization. Supervision of final connection of wiring at fire alarm control panel and final checkout shall be by Owner.
4. Upon completion, supplier/installer shall furnish as-built Drawing indicating all devices with point address for Owner.
5. Installation shall be in accordance with National Electrical Code and as shown on Drawings.
6. Install smoke detector heads not more than 2 weeks prior to final inspection to prevent dust contamination of the detector. Test detectors in place.
7. Plenum fire rated cable may be used above accessible ceilings. Where cable is exposed or non-accessible, cable shall be installed in conduit.
8. Provide connections from addressable modules (located by elevator controller) to fire alarm control panel required to operate elevator recall properly.
9. Provide unswitched 120 volt connection to coiling door or overhead door release mechanism from closest available power source through contact in smoke detector so door will automatically close when associated smoke detector goes into alarm. Door shall not close on general alarm or from power failure.
10. Provide unswitched 120 volt connection to roof hatch release mechanism from closest available power source through contact in smoke detector so roof hatch will automatically open when associated smoke detector(s) goes into alarm, or by key switch as shown on Floor Plans. Roof hatch shall not open on general alarm or from power failure.

3.02 FINAL CONNECTIONS AND ADJUSTMENTS

A. General Requirements:

1. Manufacturer's representative's supervision of final connections and system testing shall be provided by Owner.
2. Contractor shall set alarm horn or horn/strobe sound output to 90 dBA plus/minus 1 dBA in classrooms, offices, conference rooms, and similar rooms; to 95 dBA plus/minus 1 dBA in corridors and hallways; and to 99 dBA plus/minus 1 dBA in Auditorium, gymnasiums, Cafeteria, and other such large spaces. Adjust settings as required by authority having jurisdiction. Resetting of device shall be at no additional cost to Owner.

3.03 TESTS AND INSPECTION

- A. General Requirements:** As a part of this Contract, provide an additional system testing to NFPA and local authority requirements including all documentation. Within 1 week of end of warranty period, perform an additional annual test and replace all equipment not meeting acceptance criteria. Replaced elements shall be documented and documentation provided to Owner.

3.04 WARRANTY AND SERVICE

A. General Requirements:

1. Supplier shall maintain full-time service organization and shall furnish as part of this Contract, all parts and labor to maintain and perform code required testing for one year after acceptance. Emergency maintenance shall be provided on-site within 6 hours of notification any time within this period. An additional acceptance test shall be performed at the end of this period and all components not meeting acceptance standards replaced.
2. Supplier shall reprogram the system, 6 months after Substantial Completion, to update room names and sensitivity levels of all devices. Supplier shall also provide Owner with complete report with name, locations, and sensitivity levels of all devices.

3.05 PROGRAMMING

A. General Requirements:

1. Final system programming shall be performed by Owner's vendor ECSI.

END OF SECTION