Addendum No. 1

Subject: BLANKENBURG ELEMENTARY SCHOOL
NEW CAFETERIA AND KITCHEN
SDP CONTRACT NOS. B-060 C, B-061, B-062, B-063 C OF 2020/21

Location: BLANKENBURG ELEMENTARY SCHOOL
4600 W. GIRARD AVENUE,
PHILADELPHIA, PA 19131

This Addendum, dated 26th of February, 2021, shall modify and become part of the Contract Documents for the work of this project. Any items not mentioned herein, or affected by, shall be performed strictly in accordance with the original documents.

1. Bids are being extended and now due on March 4th at 2:00p.m.

2. The successful bidder is required to attend a de-scoping meeting the following day after bids are due. The time for this meeting will be communicated on the bid opening day.

3. Deadline for questions has passed; no more new questions will be received.

4. Revised Drawing Sheets Issued
   a. Drawing G101:
      i. Added “COORDINATION WITH OTHER PROJECTS” notes.
   b. Drawing AD101:
      i. Added Keynote 14: Remove and relocate two (2) built-in existing wood storage cabinets from Existing Temporary Kitchen. Relocation in the school building to be determined.
         1. See attached photo of cabinets with this addendum.
   c. Drawing A400:
      i. Revised notes on plan at Room 31 (library / IMC).
   d. Drawing FA000:
      i. Revised fire alarm drawing.
   e. Drawing FA101:
      i. Revised fire alarm drawing.
   f. Drawing FA102:
      i. Revised fire alarm drawing.

5. Revised Drawings by Narrative:
6. Revised Specifications Issued:
   a. Section 28 3111 Digital Addressable Fire Alarm Systems

7. Drawing Sketches Issued
   a. (none)

8. Reports Issued
   a. (none)

9. Questions and Clarifications

   A. Question from Mulhern Electric:

   1. For fixture types A, A1, and B, the emergency battery pack is not specified for fixtures with "EM" subscript. Please clarify if we should provide the 10W #BSL10LST or 6W battery pack #BSL6LST.
      a. Fixtures requiring EM have been indicated with EM next to the fixture symbols on drawing E101. These will be provided with an integral battery pack for a back-up time of 90 minutes as indicated in Lighting fixture schedule note 1 on drawing E000. Provide 10W ballast.

   2. Please provide suspension length from the ceiling for fixture type D. The mounting height above the floor is not indicated on electrical or architectural drawings (detail #8, A300). Suspension length is required for complete catalog number.
      a. Light fixture is 10'-6" to bottom of fixture. Suspension length to be verified in field to align with adjacent ceiling installation.

   3. There is a note on detail 5 on drawings AD10 that states to terminate electrical and data lines at a column. This scope is not shown in the electrical drawings. Please confirm if this scope is by the EC or the GC.
      a. Scope is by EC. Intent is to ensure wires are out of the way for partition to be built by GC. See updated drawings with this Addendum for additional information regarding work in this area.

   4. Detail 10 on A300 shows a recessed downlight in gyp ceiling. However, the fixture specified in that location (type C) is a suspended cylinder. Please confirm the specification is correct and that the detail should show a suspended cylinder fixture. If the detail is correct, provide a recessed downlight specification.
      a. Fixture Type C is correct as specified.

   5. Spec section 260572 Overcurrent Protective Device Short-Circuit Study has been provided. Please confirm we are only to provide a study for new panelboard feeds PP-CAFÉ and PP-K. If we are to provide a full system short circuit study, please provide a full building single line diagram so that we can quantify the number of points in the system.
a. Study required for new panel boards only. For Short circuit calculations, consider a short circuit rating of 22KA minimum at Switchboard MSB which serves the new panelboards PP-CAFÉ & PP-K.

6. There are initiating device symbols on the fire alarm floor plans that are not indicated in the symbols list on FA000. It is unclear what type of audible initiating device should be provided (speaker? Horn?). Does the existing system have voice capability or not? Please provide an updated symbols list that reflects the existing system and includes all symbols shown on the plans.
   a. The audible device shall be a speaker. Existing system does not have voice capability. Symbol list has been updated and revised drawings and specifications attached.

7. Specification 283111 states to provide a DACT (2.7). If the existing system is designed per latest fire alarm codes, there is likely a DACT at the main panel. Please confirm a new DACT is **not** required for this project.
   a. Provide DACT for the new fire alarm installation.

8. Please confirm general note 3 on FA000 ("provide a new addressable fire alarm system") is **not** applicable to this project, as the fire alarm plans indicate that we are connecting to an existing fire alarm system.
   a. The new Fire alarm system shall be a voice enabled addressable system. Refer to attached revised drawings (FA000, FA100, FA102) and specifications.

9. General demolition note 7 on FA000 calls for touch-up painting. Please confirm all painting is by the GC per spec section 011000-1.2(A)(1)(a).
   a. Painting shall be by GC.

END OF ADDENDUM NO. 1 NARRATIVE.
REFERENCED SPECIFICATION, DRAWINGS, AND SKETCHES FOLLOW.
BLANKENBURG NEW CAFETERIA
EXISTING KITCHEN CABINETRY
EXISTING TRENCH & STEEL COVER PLATES

EXISTING TRENCH COVER

REPAIR AND PATCH EXISTING PLASTER WALLS AND PREPARE FOR REPAINTING

PATCH AND SKIM COAT ALL CONC. COLUMNS EXPOSED BY NEW CONSTRUCTION

REPAIR AND PATCH EXISTING PLASTER WALLS AND PREPARE FOR REPAINTING

EXISTING SMART BOARD RELOCATED

NEW 12" X 12" VCT FLOOR FINISH TO MATCH EXISTING. PROVIDE FOR 150 SF.

REPAIR EXISTING FLOOR AS REQUIRED TO INSTALL NEW VCT TILE.

PATCH AND PAINT WALL AS REQUIRED

TERMINATE PARTITION 4" ABOVE CEILING.

RELOCATE POWER AND DATA SUPPLIES ON TO NEW PARTITION.

COORDINATE LOCATION WITH RELOCATED SMART BOARD.

SUPPLY MIN. ONE OUTLET ON OPP. HAND SIDE OF WALL.

ANY AND ALL WORK ASSOCIATED WITH MODIFICATIONS TO THE IMC / LIBRARY SHALL BE COMPLETED PRIOR TO ANY OTHER WORK ASSOCIATED WITH THE NEW CAFETERIA, KITCHEN, AND RESTROOM RENOVATION. SEE NOTES ON G101 FOR COORDINATION WITH OTHER PROJECTS.

DATE 3/31/2020

ECN GJC XXX XXXX

NEW CAFETERIA

BID DRAWINGS

JANUARY 29, 2021

SHEET OF 44

AS INDICATED

SEAL:

OFFICE OF CAPITAL PROGRAMS

440 NORTH BROAD STREET PHILADELPHIA, PA 19130 - 4015

(215) 400 - 4730 | (215) 400 - 4731 (fax) www.philasd.org

DRAWING NO.

DRAWN BY CHECKED BY FILE NO. LOCATION NO.

DRAWING TITLE PROJECT TITLE SCHOOL & LOCATION

12345678910

NO. DATE REVISION

87654321ABCDEF

DRAWING SCALE

NAME (LICENSED PROFESSIONAL) DAVID N. SCHEUERMANN STATE AND LICENSE NO: PA No. RA-013588-X

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MEP / FP Engineer

Food Service Consultant

PRINCETON ENGINEERING SERVICES

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CORSI ASSOCIATES, LLC

1489 BALTIMORE AVE, SUITE 109

SPRINGFIELD, PA 19064

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2/26/20 SCHEMATIC DESIGN

BLANKENBURG ELEMENTARY SCHOOL

4600 W GIRARD AVE. PHILADELPHIA, PA 19131

GC B-060 C OF 19/20 MC B-061 C OF 19/20 PC B-062 C OF 19/20 EC B-063 C OF 19/20

4/29/20 CONSTRUCTION DOCUMENTS 8/31/20 FOOD SERVICE REVIEW 1/04/21 PERMIT DRAWINGS 1/29/21 BID DRAWINGS 2/25/21 ADDENDUM 1

12

A400

ENLARGED PLANS

SCALE: 1/4" = 1'-0"

1

ENLARGED CAFETERIA PLAN

SCALE: 1/4" = 1'-0"

2

FLOOR PLAN AT IMC

2/19/21 ADDENDUM 1

NEW WORK LEGEND

EXISTING GUIDE TO TERMINAL

NEW GUIDE, SEE BRIEF SCHEDULE

EXISTING TRED COVER - REPAIR TO MATCH EXISTING.

NEW CHECKERED PLATE STEEN TRENCH COVER TO MATCH EXISTING. REPAIR SUPPORTS AS REQUIRED FOR FLUSH INSTALLATION TO ADJACENT SEGMENTS. ALLOW FOR 12 L.F. PLENUM BOX FOR LOUVER INSTALLED IN WINDOW.

PATCH WITH CMU PORTION OF WALL WHERE DOOR REMOVED. PAINT TO MATCH ADJACENT WALL SURFACE TYP.

TABLES SHOWN FOR REFERENCE, N.I.C.

NEW WORK LEGEND

NEW WORK NOTES

1. ALL DIMENSIONS ARE FROM FINISH FACE OF WALL, UNO

2. FOOD SERVICE CASEWORK AND ITEMS SHOWN FOR REFERENCE. SEE FOOD SERVICE DRAWINGS FOR EXACT LOCATIONS.

NEW BULKHEAD ABOVE CAFETERIA CORRIDOR

NEW BULKHEAD ABOVE EXISTING TRENCH & STEEL COVER PLATES

EXISTING DOOR TO REMAIN.

NEW DOOR, SEE DOOR SCHEDULE.

DOOR TAG, SEE DOOR SCHEDULE.

WALL TAG, SEE PARTITION TYPES.

NEW CHECKERED STEEL "TRENCH COVER" TO MATCH EXISTING. REPAIR SUPPORTS AS REQUIRED FOR FLUSH INSTALLATION TO ADJACENT SEGMENTS. ALLOW FOR 12 L.F.
BASEMENT NEW WORK FIRE ALARM PLAN

SCALE: 1/8" = 1'-0"
FIRE ALARM RISER DIAGRAM

FIRE ALARM MATRIX
SECTION 283111 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM (ADDENDUM #1)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Addressable Voice Fire-alarm control unit.
   3. Addressable System smoke detectors.
   5. Visual Notification appliances (Fire alarm Strobes)
   6. Voice/Tone Notification appliances (Fire Alarm Speakers)
   8. Addressable interface device.
   9. Integral Digital alarm communicator transmitter.
   10. System printer.

1.3 SUBMITTALS

A. General Submittal Requirements:

1. Submittals shall be approved by authorities having jurisdiction prior to submitting them to the Engineer & the Philadelphia School District.
2. Shop Drawings shall be prepared by persons with the following qualifications:
   a. Trained and certified by manufacturer in fire-alarm system design.
   b. NICET-certified fire-alarm technician, Level IV minimum.
   c. Licensed or certified by authorities having jurisdiction.

B. Product Data: For each type of product indicated.

C. Shop Drawings: For fire-alarm system. Include plans, elevations, sections, details, and attachments to other work.

2. Include voltage drop calculations for notification appliance circuits.
3. Include battery-size calculations.
4. Include amplifier loads
   Include performance parameters and installation details for each detector, verifying that each detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
5. Show critical dimensions that relate to placement and support of sampling tubes,
detector housing, and remote status and alarm indicators. Locate detectors according to manufacturer's written recommendations.

6. Include voice/alarm signaling-service equipment rack or console layout, grounding schematic, amplifier power calculation, and single-line connection diagram.

7. Include floor plans to indicate final outlet locations showing address of each addressable device.

8. Submit 3 copies for permit & 7 copies to the District for approval.

9. Also furnish PDF copy on CD.

D. Qualification Data: For qualified Installer.

E. Seismic Qualification Certificates: For fire-alarm control unit, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.

3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

F. Field quality-control reports.

G. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:

1. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.

2. Provide "Record of Completion Documents" according to NFPA 72 article "Permanent Records" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter.

3. Record copy of site-specific software.

4. Provide "Maintenance, Inspection and Testing Records" according to NFPA 72 article of the same name and include the following:

   a. Frequency of testing of installed components.

   b. Frequency of inspection of installed components.

   c. Requirements and recommendations related to results of maintenance.

   d. Manufacturer's user training manuals.

5. Manufacturer's required maintenance related to system warranty requirements.

6. Abbreviated operating instructions for mounting at fire-alarm control unit.

7. Copy of NFPA 25.

H. THE PHILADELPHIA SCHOOL DISTRICT SHALL RETAIN COMPLETE RIGHTS AND OWNERSHIP TO ALL SOFTWARE RUNNING IN THE SYSTEM. The fire alarm equipment vendor shall provide useable hard and soft copies of the software database to the Philadelphia School District at the end of the warranty period. The database provided shall be useable by any authorized and certified distributor of the product line, and shall include all applicable passwords necessary for total and unrestricted use and modification of the database. The Consulting Engineer shall define the extent of hardcopy database documentation to be provided.
1.4 QUALITY ASSURANCE

A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of all devices required for this Project.

B. Installer Qualifications: Installation shall be by personnel certified by NICET as fire-alarm Level II technician.

C. Installer shall be licensed by the City of Philadelphia to install, repair, service and test fire alarm systems.

D. Source Limitations for Fire-Alarm System and Components: Obtain fire-alarm system from single source from single manufacturer.

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

F. NFPA Certification: Obtain certification according to NFPA 72 by an NRTL.

G. City of Philadelphia Certification.

1.5 PROJECT CONDITIONS

A. Interruption of Existing Fire-Alarm Service: Do not interrupt fire-alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:

1. Notify Owner no fewer than 7 days in advance of proposed interruption of fire-alarm service.

2. Do not proceed with interruption of fire-alarm service without Owner's written permission.

1.6 SEQUENCING AND SCHEDULING

A. Existing Fire-Alarm Equipment: Maintain existing equipment fully operational until new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service and label existing fire-alarm equipment "NOT IN SERVICE" until removed from the building.

B. Equipment Removal: After acceptance of new fire-alarm system, remove existing disconnected fire-alarm equipment and wiring.

1.7 SOFTWARE SERVICE AGREEMENT

A. Comply with UL 864.

B. Technical Support: Beginning with Substantial Completion, provide software support for three years.

C. Upgrade Service: Update software to latest version at Project completion. Install and program software upgrades that become available within three years from date of Substantial Completion. Upgrading software shall include operating system. Upgrade shall include new or revised licenses for use of software.

1. Provide 30 days' notice to Owner to allow scheduling and access to system and to allow Owner to upgrade computer equipment if necessary.

D. Provide a certified copy of the fire alarm program on a disk or USB drive with the password necessary to open the program.
1.8 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Smoke Detectors & Heat Detectors: Quantity equal to 10 percent of amount of each type installed, but no fewer than 1 unit of each type.
2. Detector Bases: Quantity equal to 5 percent of amount of each type installed, but no fewer than 1 unit of each type.
3. Keys and Tools: One extra set for access to locked and tamper-proofed components.
4. Audible and Visual Notification Appliances: 10 percent of each type installed.

1.9 WARRANTY AND MAINTENANCE

A. Warranty: Contractor shall warrant the complete fire alarm system installation against defective materials or faulty workmanship for a period of THREE (3) YEARS from the date of acceptance.

B. Maintenance Service: Contractor shall also provide THREE (3) YEARS of factory-authorized maintenance service from the date of acceptance, including any required maintenance or repairs, hardware and software updates, testing and re-certifications.

C. Required Response:

1. Emergency Calls: Contractor shall provide factory-authorized service within FOUR (4) HOURS after notification by the District’s Maintenance Department of system trouble or failure.

2. Non-Emergency Calls: Contractor shall provide factory-authorized service within EIGHT (8) HOURS after notification by the District’s Maintenance Department of system trouble or failure.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, design & layout.

Basis-of-Design Product: Subject to compliance with requirements, provide comparable product by one of the following:

1. Edwards System Technology, Inc.(EST)
3. SimplexGrinnell LP; a Tyco International company.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

A. Fire-alarm signal initiation shall be by one or more of the following devices:

2. Heat detectors.
3. Smoke detectors.
4. Verified automatic alarm operation of smoke detectors.
5. Automatic sprinkler system water flow.

B. Fire-alarm signal shall initiate the following actions:

1. Continuously operate alarm notification appliances.
2. Identify alarm at fire-alarm control unit and remote annunciator(s).
3. Transmit an alarm signal to the remote alarm receiving station.
4. Unlock electric door locks in designated egress paths.
5. Release fire and smoke doors held open by magnetic door holders.
6. Activate voice/alarm communication system.
7. Switch heating, ventilating, and air-conditioning equipment controls to fire-alarm mode.
8. Activate smoke-control system (smoke management) at firefighter smoke-control system panel.
9. Activate stairwell and elevator-shaft pressurization systems.
10. Close smoke dampers in air ducts of designated air-conditioning duct systems.
11. Recall elevators to primary or alternate recall floors.
12. Activate emergency lighting control.
14. Record events in the system memory.
15. Record events by the system printer.

C. Supervisory signal initiation shall be by one or more of the following devices and actions:

1. Valve supervisory switch.
2. Duct smoke detectors.
3. Low-air-pressure switch of a dry-pipe sprinkler system.
4. Elevator shunt-trip supervision.
5. Fire Pump running, loss of power and/or phase reversal

D. System trouble signal initiation shall be by one or more of the following devices and actions:

1. Open circuits, shorts, and grounds in designated circuits.
2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
3. Loss of primary power at fire-alarm control unit.
4. Ground or a single break in fire-alarm control unit internal circuits.
5. Abnormal ac voltage at fire-alarm control unit.
7. Failure of battery charging.
8. Abnormal position of any switch at fire-alarm control unit or annunciator.

E. System Trouble and Supervisory Signal Actions: Initiate notification appliance and annunciate at fire-alarm control unit and remote annunciators. Record the event on system printer.

2.3 FIRE-ALARM CONTROL UNIT

A. General Requirements for Fire-Alarm Control Unit:

1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864 and listed and labeled by an NRTL.
   a. System software and programs shall be held in flash electrically erasable programmable read-only memory (EEPROM), retaining the information through failure of primary and secondary power supplies.
   b. Include a real-time clock for time annotation of events on the event recorder and printer.
2. Addressable initiation devices that communicate device identity and status.
   a. Smoke sensors shall additionally communicate sensitivity settings and allow for adjustment of sensitivity at fire-alarm control unit.
   b. Temperature sensors shall additionally test for and communicate the sensitivity range of the device.

3. Addressable control circuits for operation of mechanical equipment.

4. The system shall not have a Self-Mapping Feature & all devices need to be hand programmable, 1 hand held programmer to be supplied with project.

B. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.

   1. Annunciator and Display: Liquid-crystal type, 40 lines, minimum.
   2. Keypad: Arranged to permit entry and execution of programming, display, and control commands.
   3. Initiating Device, Notification Appliance, and Signaling Line Circuits: NFPA 72, Class B.

C. Notification Appliance Circuit: Operation shall sound in a code three temporal pattern followed by a fire department approved voice message.

D. Door Controls: Door hold-open devices that are controlled by smoke detectors at doors in smoke barrier walls shall be connected to fire-alarm system.

E. Remote Smoke-Detector Sensitivity Adjustment: Controls shall select specific addressable smoke detectors for adjustment, display their current status and sensitivity settings, and change those settings. Allow controls to be used to program repetitive, time-scheduled, and automated changes in sensitivity of specific detector groups. Record sensitivity adjustments and sensitivity-adjustment schedule changes in system memory, and print out the final adjusted values on system printer.

F. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.

G. Voice/Alarm Signaling Service as shown on drawings: Central emergency communication system with redundant microphones, preamplifiers, amplifiers, and tone generators provided in a separate cabinet located in the fire command center.

H. Printout of Events: On receipt of signal, print alarm, supervisory, and trouble events. Identify zone, device, and function. Include type of signal (alarm, supervisory, or trouble) and date and time of occurrence. Differentiate alarm signals from all other printed indications. Also print system reset event, including same information for device, location, date, and time. Commands initiate the printing of a list of existing alarm, supervisory, and trouble conditions in the system and a historical log of events.

I. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, shall be powered by 24-V dc source.
1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.

J. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.

K. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.

L. The Fire Alarm control panel shall be provided with a one man walk test feature and program the Fire Alarm panel for this feature.

2.4 MANUAL FIRE-ALARM BOXES

A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box. Retain one of first two subparagraphs below.
   1. Single-action mechanism to initiate an alarm, plastic-rod, pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
   2. Station Reset: Key- or wrench-operated switch.
   3. Indoor Protective Shield: Factory-fabricated clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm. Lifting the cover actuates an integral battery-powered audible horn intended to discourage false-alarm operation.
   4. Weatherproof Protective Shield where shown: Factory-fabricated clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm.
   5. Provide a sign to each manual pull station. The sign shall be mounted immediately adjacent to the manual pull station. The sign shall read "INCASE OF FIRE: SOUND ALARM AND CALL THE FIRE DEPARTMENT".

2.5 SYSTEM SMOKE DETECTORS

A. General Requirements for System Smoke Detectors:
   1. Comply with UL 268; operating at 24-V dc, nominal.
   2. Detectors shall be two-wire type.
   3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
   4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
   5. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
   6. Integral Visual-Indicating Light: LED type indicating detector is operating.
   7. Remote Control: Unless otherwise indicated, detectors shall be analog-addressable type, individually monitored at fire-alarm control unit for calibration, sensitivity, and alarm condition and individually adjustable for sensitivity by fire-alarm control unit.
      a. Rate-of-rise temperature characteristic shall be selectable at fire-alarm control unit for 15 deg per minute.
b. Fixed-temperature sensing shall be independent of rate-of-rise sensing and shall be settable at fire-alarm control unit to operate at 135 deg.

c. Provide multiple levels of detection sensitivity for each sensor.

B. Photoelectric Smoke Detectors:

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.

2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
   a. Primary status.
   b. Device type.
   c. Present average value.
   d. Present sensitivity selected.
   e. Sensor range (normal, dirty, etc.).

C. Ionization Smoke Detector:

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.

2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
   a. Primary status.
   b. Device type.
   c. Present average value.
   d. Present sensitivity selected.
   e. Sensor range (normal, dirty, etc.).

2.6 HEAT DETECTORS ADDRESSABLE & CONVENTIONAL

A. General Requirements for Heat Detectors: Comply with UL 521.

B. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135° F or a rate of rise that exceeds 15° per minute unless otherwise indicated.

1. Mounting: Twist-lock base interchangeable with smoke-detector bases.

2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

C. Heat Detector, Conventional High Fixed-Temperature Type: Actuated by temperature that exceeds a fixed temperature of 135° F.

1. Mounting: Twist-lock base.

2. Remote Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

3. Mount in a climate controlled area.

D. Heat Detector, Conventional High Fixed-Temperature Type: Actuated by temperature that exceeds a fixed temperature of 190° F.

1. Mounting: Twist-lock base.

2. Remote Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

3. Mount in a climate controlled area.
2.7 NOTIFICATION APPLIANCES

A. Connect to a signaling line circuit, equipped for mounting as indicated and with screw terminals for system connections.

B. General Requirements for Notification Appliances: Connected to notification appliance signal circuits, zoned as indicated, equipped for mounting as indicated and with screw terminals for system connections.
   1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated and with screw terminals for system connections.

C. Visible Notification Appliances (Strobes): Xenon strobe lights comply with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1 inch (25 mm) high letters on the lens.
   1. Rated Light Output:
      a. 15/30/75/110 cd, selectable in the field.
   2. Mounting: Wall mounted unless otherwise indicated.
   3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
   4. Flashing shall be in a temporal pattern, synchronized with other units.
   5. Strobe Leads: Factory connected to screw terminals.

D. Voice/Tone Notification Appliances (Speakers):
   1. Appliances shall comply with UL 1480 and shall be listed and labeled by an NRTL.
   2. High-Range Units: Rated 2 to 15 W.
   3. Low-Range Units: Rated 1 to 2 W.
   4. Mounting: Flush or surface mounted and bidirectional.
   5. Matching Transformers: Tap range matched to acoustical environment of speaker location.

2.8 REMOTE ANNUNCIATOR

A. Description: Annunciator functions shall match those of fire-alarm control unit for alarm, supervisory, and trouble indications. Manual switching functions shall match those of fire-alarm control unit, including acknowledging, silencing, resetting, and testing.
   1. Mounting: Flush or Surface cabinet, NEMA 250, Type 1.

B. Display Type and Functional Performance: Alphanumeric display and LED indicating lights shall match those of fire-alarm control unit. Provide controls to acknowledge, silence, reset, and test functions for alarm, supervisory, and trouble signals.

C. Provide one at main entrance, main office & building engineer’s office.
2.9 ADDRESSABLE INTERFACE DEVICE

A. Description: Microelectronic monitor module, NRTL listed for use in providing a system address for alarm-initiating devices for wired applications with normally open contacts.

B. Integral Relay: Capable of providing open or closed contact.

2.10 DIGITAL ALARM COMMUNICATOR TRANSMITTER

DACT: Provide alarm communicator transmitter (DACT) to transmit alarm signals to a Central Monitoring Station (CMS). The DACT shall provide two Cat. 5 cables from the fire alarm control panel to the telephone demarcation station (main telephone service box) to transmit alarm signal to the security officer at School District main office.

A. Secondary Power: Integral rechargeable battery and automatic charger.

B. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.

2.11 SYSTEM PRINTER

A. Printer shall be listed and labeled by an NRTL as an integral part of fire-alarm system.

2.12 DEVICE GUARDS

A. Description: Welded wire mesh of size and shape for the heat detector, smoke detector, Audio Visual, or other device requiring protection.

1. Factory fabricated and furnished by manufacturer of device.
2. Finish: Paint of color to match the protected device.
3. Provide for all devices in all gyms and locker rooms and where otherwise noted on drawings.

2.13 PANEL LOCKS

All locks and keys for fire alarm panel and power booster panels shall be keyed alike and keyed to the master key system of the School District of Philadelphia. Locks and pulls for doors of cabinets shall be Corbin #15767. The master key shall be #CAT 60.

2.15 AMPLIFIERS

A) Each audio power amplifier shall have integral audio signal de-multiplexers, allowing the amplifier to select any one of eight digitized audio channels as directed by system programming.

B) Audio amplifiers shall be power limited and protected from short circuits conditions on the audio circuit wiring. Each amplifier output shall provide a selectable 25/70 Vrms output, suitable for connection to emergency speakers.

D) To enhance system survivability in the event of a total loss of audio data communications, all amplifiers shall default to the local “EVAC” tone generator channel. If the local panel has an alarm condition, then all amplifiers will sound the EVAC message on their speaker circuits. In the event of a loss of the fully digitized, multiplexed audio riser data, the audio amplifiers shall automatically default to an internally generated alarm tone which shall sound a 3-3-3 temporal pattern.

2.16 REMOTE BOOSTER POWER SUPPLIES
A) Install Remote NAC Power Supplies (boosters) as required, to minimize NAC voltage drops. Remote NAC power supplies shall be treated as peripheral NAC devices and shall not be considered fire alarm control units.

B) The NAC power supplies shall be fully enclosed in a surface mounted steel enclosure with hinged door and cylinder lock, and finished in red enamel. Door keys shall be the identical to FACP enclosure keys. The enclosure shall have factory installed mounting brackets for additional UL listed fire alarm equipment within its cabinet. Enclosures shall be sized to allow ample space for interconnection of all components and field wiring, and up to 10AH batteries. The enclosure shall have provisions for an optional tamper switch. All FACP addressable control modules required to initiate the required NAC power supply output functions shall be installed within the NAC power supply enclosure.

C) Remote NAC power supply input circuits shall be configurable as Class B supervised inputs or for connection to any 6 to 45 VDC initiation source.

D) Remote booster power supplies shall provide four (4) synchronized Class B supervised or two (2) Class A, power limited, 24VDC filtered and regulated Notification Appliance Circuits (NACs). Each NAC output shall be configurable as a continuous 24Vdc auxiliary power output circuit. The booster power supply shall be capable of a total output of 6 amps.

E) The power supply NACs shall be configurable to operate independently at any one of the following rates: continuous synchronized, or 3-3-3 temporal. It shall be possible to configure the NACs to follow the main FACP NAC or activate from intelligent addressable synchronized modules. All visible NACs within the facility shall be synchronized.

F) Upon failure of primary AC power, the remote power supply shall automatically switch over to secondary battery power without losing any system functions. It shall be possible to delay reporting of an AC power failure for up to 6 hours. All standby batteries shall be continuously monitored by the power supply. Low battery and disconnection of battery power supply conditions shall immediately annunciated as locally as battery trouble. All power supply trouble conditions (DC power failure, ground faults, low batteries, and IDC/NAC circuit faults) shall identify the specific remote power supply affected at the main FACP. All power supply trouble conditions except loss of AC power shall report immediately. Interconnecting NAC Booster power supplies in a manner which prevents identification of an individual power supply trouble shall not be considered as an equal.

G) The remote booster power supply shall be capable of recharging up to 24AH batteries to 70% capacity in 24 hours maximum. Batteries provided shall be sized to meet the same power supply performance requirements as the main FACP, as detailed elsewhere in this specification.

H) All AC power connections shall be to the building's designated dedicated emergency electrical power circuit. The power circuit disconnect means shall be clearly labeled FIRE ALARM CIRCUIT CONTROL and shall have a red marking. The location of the circuit disconnect shall be labeled permanently inside the each remote NAC power supply the disconnect serves.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

A. Comply with NFPA 72 for installation of fire-alarm equipment.

B. Equipment Mounting: Install fire-alarm control unit on concrete wall with tops of cabinets not more than 72 inches (1830 mm) above the finished floor.
1. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.

C. Smoke- or Heat-Detector Spacing:
   3. Smooth ceiling spacing shall not exceed 30 feet.
   4. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Appendix A or Appendix B NFPA 72.
   5. HVAC: Locate detectors not closer than 3 feet from air-supply diffuser or return-air opening.
   6. Lighting Fixtures: Locate detectors not closer than 12 inches from any part of a lighting fixture.

D. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of duct.

E. Heat Detectors in Elevator Shafts: Coordinate temperature rating and location with sprinkler rating and location.

F. Remote Status and Alarm Indicators: Install near each smoke detector and each sprinkler water-flow switch and valve-tamper switch that is not readily visible from normal viewing position.

G. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille.

H. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches below the ceiling.

I. Device Location-Indicating Lights: Locate in public space near the device they monitor.

J. Fire-Alarm Control Unit: Surface mounted, with tops of cabinets not more than 72 inches (1830 mm) above the finished floor.

K. Annunciator: Install with top of panel not more than 54 inches above the finished floor.

3.2 CONNECTIONS

A. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 3 feet from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.

1. Smoke dampers in air ducts of designated air-conditioning duct systems.
2. Alarm-initiating connection to elevator recall system and components.
3. Alarm-initiating connection to activate emergency lighting control.
4. Alarm-initiating connection to activate emergency shutoffs for gas and fuel supplies.
5. Supervisory connections at valve supervisory switches.
6. Supervisory connections at low-air-pressure switch of each dry-pipe sprinkler system.
7. Supervisory connections at elevator shunt trip breaker.
8. Supervisory connections at fire-pump power, running and failure including a dead-phase or phase-reversal condition.
9. Supervisory connections at fire-pump control panel.

3.3 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

B. Install framed instructions in a location visible from fire-alarm control unit.

3.4 GROUNDING

A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

3.5 FIELD QUALITY CONTROL

A. Field tests shall be witnessed by Owner.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

C. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

D. Tests and Inspections:

1. Visual Inspection: Conduct visual inspection prior to testing.
   a. Inspection shall be based on completed Record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" Table in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter.
   b. Comply with "Visual Inspection Frequencies" Table in the "Inspection" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.


3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.

4. Test audible appliances for the private operating mode according to manufacturer's written instructions.

5. Test visible appliances for the public operating mode according to manufacturer's written instructions.

E. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliance.

F. Fire-alarm system will be considered defective if it does not pass tests and inspections.

G. Prepare test and inspection reports.

H. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.

I. Annual Test and Inspections with certification: One year after date of Substantial Completion & one year following that, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections & turn over to the owner.

3.6 DEMONSTRATION / FACTORY TRAINING

A. Engage a factory-authorized service representative to train Owner's Fire Alarm technician maintenance personnel, ON SITE, 8 hours minimum, to adjust, operate, and maintain fire-alarm system.

END OF SECTION 283111