

ABERDEEN MIDDLE SCHOOL
HVAC SYSTEMIC RENOVATION

ADDENDUM NO. 1

DATE: March 07, 2024

ENGINEER: Gipe Associates
1220 East Joppa Road, Suite 223
Baltimore, Maryland 21286
Phone: (410) 832-2420

OWNER: Harford County Public Schools

PROJECT: Aberdeen Middle School
HVAC Systemic Renovation
111 Mt. Royal Avenue
Aberdeen, Maryland 21001
Gipe Project No. 23043

TO: All Prospective Bidders

The following revisions and responses to questions are made to the original bid documents, dated February 26, 2024. This addendum forms a part of the Contract Documents and modifies the Original Solicitation Documents accordingly and as noted below. Acknowledge receipt of this Addendum in the space provided on the "Addenda" form within the Form of Proposal.

A. CHANGES TO SPECIFICATIONS

1. TABLE OF CONTENTS:
Add the following, 07 72 36 AUTOMATIC SMOKE VENTS. Refer to attached specification section. Delete, 32 18 23 SPORTS COURT SURFACE COLOR COATING SYSTEM.
2. 00 01 00 INSTRUCTIONS TO BIDDERS
PART 10, Change the date "December 31, 2026" to "December 31, 2027".
3. 08 41 13 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS
Delete paragraph 3.3 FIELD QUALITY CONTROL.
4. 08 71 00 DOOR HARDWARE
Replace this entire specification section with the new one in this addendum.
5. 23 06 00 HEATING, VENTILATING & AIR CONDITIONING EQUIPMENT
Add paragraph 2.14 and 3.20 attached.
- 6.
7. 23 30 00 HVAC AIR DISTRIBUTION, 2.3.C Change "MEDIUM PRESSURE, UP TO 6-INCHES" to "UP TO 4-INCHES".
8. 23 30 00 HVAC AIR DISTRIBUTION, Delete 2.8 DISHWASHER CONDENSATE HOOD. Delete 3.9 DISHWASHER CONDENSATE HOOD.
9. 23 30 00 HVAC AIR DISTRIBUTION, 3.1 Add the following: P. Provide Pre-Fabricated for all exterior ductwork and exposed ductwork in the Gymnasium and Activity Rooms.

B. CHANGES TO DRAWINGS

1. **PH001** – LOWER LEVEL PHASING PLAN
See attached revised drawing PH001.
2. **PH002** – UPPER LEVEL PHASING PLAN
See attached revised drawing PH001.
3. **A103** – ROOF PLAN
See attached revised drawing A103. Walking pads have been added.
4. **A601** – DOOR SCHEDULE AND FRAME DETAILS
 - a. Door 201BB: Revise door hardware to EXT-01.1
 - b. Door 201BC" Revise door hardware to EXT-01.1
5. **M201** – LOWER LEVEL AREA B – NEW WORK
See attached revised drawing M201.
6. **M202** – LOWER LEVEL AREA C – NEW WORK
See attached revised drawing M202.
7. **M203** – LOWER LEVEL AREA E – NEW WORK
See attached revised drawing M203.
8. **M205** – UPPER LEVEL AREA A – NEW WORK
See attached revised drawing M205.
9. **M903** – SCHEDULES
Change the for all fan coil units from 120V to 277V.
10. **M904** – SCHEDULES
Change the for all fan coil units from 120V to 277V.
11. **M904** – SCHEDULES
Change the for all fan coil units from 120V to 277V.
12. **E000** - ELECTRICAL LEGEND, ABBREVIATIONS, & NOTES
See attached revised drawing.
13. **E401** - LOWER LEVEL AREA B - FIRE ALARM
See attached revised drawing.
14. **E402** - LOWER LEVEL AREA C – FIRE ALARM
See attached revised drawing.
15. **E403** - LOWER LEVEL AREA E – FIRE ALARM
See attached revised drawing.
16. **E404** - LOWER LEVEL AREA F – FIRE ALARM
See attached revised drawing.
17. **E405** - UPPER LEVEL AREA A – FIRE ALARM
See attached revised drawing.
18. **E406** - UPPER LEVEL AREA B – FIRE ALARM

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See attached revised drawing.

19. **E407** - UPPER LEVEL AREA D – FIRE ALARM
See attached revised drawing.

20. **E408** - UPPER LEVEL AREA E – FIRE ALARM
See attached revised drawing.

21. **E409** - UPPER LEVEL AREA C – FIRE ALARM
See attached revised drawing.

22. **E410** - UPPER LEVEL AREA F – FIRE ALARM
See attached revised drawing.

23. **E502** - FIRE ALARM RISER DIAGRAM
See attached revised drawing.

24. **E608** – SCHEDULES
See attached revised drawing.

25. **E609** - SCHEDULES
See attached revised drawing.

26. **E610** – SCHEDULES
See attached revised drawing.

C. RFI QUESTIONS, ANSWERS AND CLARIFICATIONS

1. There is a spec section 132200 for Modular offices, rooms and enclosures on the table of contents for Aberdeen Middle School but there is no such spec in the documents. Could you please provide this spec or advise if it does not apply to this.
The Specification section will be issued in an upcoming addendum.
2. I also noticed that there is a spec for elevators but there is nothing referenced on the drawings at all in relation to this. Please advise.
The Mechanical drawings have indication of the elevator work. The work is a modernization that utilizes the existing hoistway and machine therefore the specification covers all the project work.
3. Section 084113 3.3 notes that water spray testing will be performed in, "test areas indicated". Please provide the areas to be tested, if testing is required. Also, please confirm this should be completed by a third party testing agency.
See this addendum.
4. Is door 155 to be replaced? It is noted on the floor plan but not on the door schedule.
It is listed in the door schedule on drawing A601.
5. Some doors (106A for example) are noted on the door schedule with frame type W2. These doors are pairs though, and W2 seems to show a single door. It is also unclear if some of these doors are to have sidelights or not. Please clarify.
See this addendum.

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6. Can you clarify the schedule for this project? I see the spec 000100, Part 10 calls the substantial completion date being December 31st, 2026 but the phasing plans show work through 2027.
See this addendum.
7. Clarification: **ALUMINUM STOREFRONT ELEVATIONS** describe frame configuration and glazing type. Door size and configuration (single leaf or double leaf) is described in the door schedule. There occurrences where the same frame type applies to both a single and double door, reference the door schedule for width (example W2 and W3).

D. ATTACHMENTS

1. Specification Section: 08 71 00 DOOR HARDWARE
2. Specification 23 06 00 Paragraphs 2.14, 2.15 and 3.20
3. Sign-In list
4. Drawing PH001 – LOWER LEVEL PHASING PLAN
5. Drawing PH002 – UPPER LEVEL PHASING PLAN
6. Drawing A103 - ROOF PLAN.
7. Drawing M201 – LOWER LEVEL AREA B – NEW WORK.
8. Drawing M202 – LOWER LEVEL AREA C – NEW WORK.
9. Drawing M203 – LOWER LEVEL AREA E – NEW WORK
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18. Drawing E407 - UPPER LEVEL AREA D – FIRE ALARM
19. Drawing E408 - UPPER LEVEL AREA E – FIRE ALARM
20. Drawing E409 - UPPER LEVEL AREA C – FIRE ALARM
21. Drawing E410 - UPPER LEVEL AREA F – FIRE ALARM
22. Drawing E502 - FIRE ALARM RISER DIAGRAM
23. Drawing E608 – SCHEDULES
24. Drawing E609 - SCHEDULES
25. Drawing E610 – SCHEDULES

END OF ADDENDUM NO. 1

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Mechanical and electrified door hardware
2. Electronic access control system components

B. Section excludes:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 01 Section "Alternates" for alternates affecting this section.
2. Division 06 Section "Rough Carpentry"
3. Division 06 Section "Finish Carpentry"
4. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
5. Division 08 Sections:
 - a. "Metal Doors and Frames"
 - b. "Flush Wood Doors"
 - c. "Stile and Rail Wood Doors"
 - d. "Interior Aluminum Doors and Frames"
 - e. "Aluminum-Framed Entrances and Storefronts"
 - f. "Stainless Steel Doors and Frames"
 - g. "Special Function Doors"
 - h. "Entrances"
6. Division 26 "Electrical" sections for connections to electrical power system and for low-voltage wiring.
7. Division 28 "Electronic Safety and Security" sections for coordination with other components of electronic access control system and fire alarm system.

1.02 REFERENCES

A. UL LLC

1. UL 10B - Fire Test of Door Assemblies
2. UL 10C - Positive Pressure Test of Fire Door Assemblies
3. UL 1784 - Air Leakage Tests of Door Assemblies
4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule
2. Recommended Locations for Builders Hardware
3. Keying Systems and Nomenclature
4. Installation Guide for Doors and Hardware

C. NFPA – National Fire Protection Association

1. NFPA 70 – National Electric Code
2. NFPA 80 – 2016 Edition – Standard for Fire Doors and Other Opening Protectives
3. NFPA 101 – Life Safety Code
4. NFPA 105 – Smoke and Draft Control Door Assemblies
5. NFPA 252 – Fire Tests of Door Assemblies

D. ANSI - American National Standards Institute

1. ANSI A117.1 – 2017 Edition – Accessible and Usable Buildings and Facilities
2. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
3. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems
4. ANSI/WDMA I.S. 1A - Interior Architectural Wood Flush Doors
5. ANSI/SDI A250.8 - Standard Steel Doors and Frames

1.03 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
2. Prior to forwarding submittal:
 - a. Review drawings and Sections from related trades to verify compatibility with specified hardware.
 - b. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:

1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:
 - a. Wiring Diagrams: For power, signal, and control wiring and including:
 - 1) Details of interface of electrified door hardware and building safety and security systems.
 - 2) Schematic diagram of systems that interface with electrified door hardware.
 - 3) Point-to-point wiring.
 - 4) Risers.
3. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.
 - a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.

4. Door Hardware Schedule:
 - a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
 - b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
 - c. Indicate complete designations of each item required for each opening, include:
 - 1) Door Index: door number, heading number, and Architect's hardware set number.
 - 2) Quantity, type, style, function, size, and finish of each hardware item.
 - 3) Name and manufacturer of each item.
 - 4) Fastenings and other pertinent information.
 - 5) Location of each hardware set cross-referenced to indications on Drawings.
 - 6) Explanation of all abbreviations, symbols, and codes contained in schedule.
 - 7) Mounting locations for hardware.
 - 8) Door and frame sizes and materials.
 - 9) Degree of door swing and handing.
 - 10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.
 5. Key Schedule:
 - a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
 - b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
 - c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
 - d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
 - e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
 - f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.
 - g. HCPS will provide existing bittings to be re-used for entry, dogging, and mullions. (If HCPS is expected to prep the cores, we will re-use existing cores and place new cores into attic stock)
- C. Informational Submittals:
1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
 2. Provide Product Data:
 - a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
 - b. Include warranties for specified door hardware.
- D. Closeout Submittals:
1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:

- a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
- b. Catalog pages for each product.
- c. Final approved hardware schedule edited to reflect conditions as installed.
- d. Final keying schedule
- e. Copy of warranties including appropriate reference numbers for manufacturers to identify project.
- f. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.

E. Inspection and Testing:

1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:
 - a. Fire door assemblies, in compliance with NFPA 80.
 - b. Required egress door assemblies, in compliance with NFPA 101.

1.04 QUALITY ASSURANCE

A. Qualifications and Responsibilities:

1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
3. Architectural Hardware Consultant: Person who is currently certified by the Door and Hardware Institute as an Architectural Hardware Consultant (AHC) and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.
 - a. For door hardware: DHI certified AHC or DHC.
 - b. Can provide installation and technical data to Architect and other related subcontractors.
 - c. Can inspect and verify components are in working order upon completion of installation.
 - d. Architectural Hardware Consultant shall be experienced in providing consulting services for electrified door hardware installations.
 - e. Architectural Hardware Consultant shall conduct a pre-install training session onsite training on the topic of the project specific hardware.
 - f. Architectural Hardware Consultant shall perform a project punch-list for distribution and follow up to confirm completion.
4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

B. Certifications:

1. Fire-Rated Door Openings:

- a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
 - b. Provide only items of door hardware that are listed products tested by UL LLC, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.
 2. Smoke and Draft Control Door Assemblies:
 - a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105
 - b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.
 3. Electrified Door Hardware
 - a. Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.
 4. Accessibility Requirements:
 - a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.
- C. Pre-Installation Meetings
1. Keying Conference
 - a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
 - 1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
 - 2) Preliminary key system schematic diagram.
 - 3) Requirements for key control system.
 - 4) Requirements for access control.
 - 5) Address for delivery of keys.
 2. Pre-installation Conference
 - a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Inspect and discuss preparatory work performed by other trades.
 - c. Inspect and discuss electrical roughing-in for electrified door hardware.
 - d. Review sequence of operation for each type of electrified door hardware.
 - e. Review required testing, inspecting, and certifying procedures.
 - f. Review questions or concerns related to proper installation and adjustment of door hardware.
 3. Electrified Hardware Coordination Conference:
 - a. Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.
- B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.
- C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
- D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.
- E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.
- F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.06 COORDINATION

- A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.
- B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
- D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.
- E. Coordination: Coordinate time for owner to receive all existing hardware and pre-determined doors that have been carefully removed and stored.

1.07 WARRANTY

- A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.
 - 1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
 - 2. Warranty Period shall be for not less than 3 years from the date of substantial completion unless noted otherwise.
 - a. Manual Closers
 - 1) 10 years

1.08 MAINTENANCE

- A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.
- B. Extra materials shall be delivered to HCPS as directed by Owner.
- C. Maintenance service
 - 1. A hardware adjustment shall be performed 6 months after substantial completion or building occupancy.
 - 2. Beginning as substantial completion, provide 12 months full maintenance by skilled employees of door hardware supplier.
 - 3. Include quarterly preventative maintenance, repair or replacement of worn or defective products, lubrication, cleaning, and adjusting as needed for proper door hardware operation.
 - 4. Provide parts and supplies as used in manufacture and installation of original products.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Approval of alternate manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category are only to be considered by official substitution request in accordance with section 01 25 00.
- B. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.
- C. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

- A. Fabrication
 - 1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer's recognized installation standards for application intended.
 - 2. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
 - 3. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with "Metal Doors and Frames", "Flush Wood Doors", "Stile and Rail Wood Doors" to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.
- B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.
 - 1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

C. Cable and Connectors:

1. Where scheduled in the hardware sets, provide each item of electrified hardware and wire harnesses with number and gage of wires enough to accommodate electric function of specified hardware.
2. Provide Molex connectors that plug directly into connectors from harnesses, electric locking and power transfer devices.
3. Provide through-door wire harness for each electrified locking device installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.

2.03 CONTINUOUS HINGES

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Ives
2. Acceptable Manufacturers:
 - a. Best
 - b. Hager

B. Requirements:

1. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
2. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
3. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
4. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
5. On fire-rated doors, provide aluminum geared continuous hinges classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
6. Provide aluminum geared continuous hinges with electrified option scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
7. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.04 FLUSH BOLTS

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Ives
2. Acceptable Manufacturers:
 - a. Burns
 - b. Trimco

B. Requirements:

1. Provide automatic, constant latching, and manual flush bolts with forged bronze or stainless-steel face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch (305 mm) steel or brass rods at doors up to 90 inches (2286 mm) in height. For doors over 90 inches (2286 mm) in height increase top rods by 6 inches (152 mm) for each additional 6 inches (152 mm) of door height. Provide dust-proof strikes at each bottom flush bolt.

2.05 DEADBOLTS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
 - a. Schlage B600/B700/B800 Series
2. Acceptable Manufacturers and Products:
 - a. Best T Series
 - b. Falcon D100 Series

B. Requirements:

1. Provide grade 1 deadbolt series conforming to ANSI/BHMA A156.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide deadbolts with standard 2-3/4 inches (70 mm) backset. Provide 2-3/8 inches (60 mm) where noted or if door or frame detail requires. Provide deadbolt with full 1-inch (25 mm) throw, constructed of steel alloy.
4. Provide manufacturer's standard strike.

2.06 EXIT DEVICES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
 - a. Von Duprin 98/35A series
2. Acceptable Manufacturers and Products:
 - a. Sargent 8800 series

B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide smooth touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
6. Provide exit devices with weather resistant components that can withstand harsh conditions of various climates and corrosive cleaners used in outdoor pool environments.
7. Provide flush end caps for exit devices.
8. Provide exit devices with manufacturer's approved strikes.

9. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
10. Mount mechanism case flush on face of doors or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
11. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
12. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
13. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
14. Provide electrified options as scheduled.
15. Top latch mounting: double- or single-tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
16. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

2.07 CYLINDERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
 - a. Schlage Full Size Interchangeable Core Everest D124
2. Acceptable Manufacturers and Products:
 - a. No substitute

B. Requirements:

1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
 - a. Patented Restricted: cylinder with permanent core with patented, restricted keyway.
 - b. Patented Restricted: cylinder with interchangeable core with patented, restricted keyway.
3. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent protected.
4. Nickel silver bottom pins.

2.08 KEYING

A. Scheduled System:

1. Existing factory registered system:
 - a. Provide cylinders/cores keyed into Owner's existing factory registered keying system. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Requirements:

1. Construction Keying:
 - a. Replaceable Construction Cores.
 - 1) Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
 - a) 3 construction control keys
 - b) 12 construction change (day) keys.
 - 2) Owner or Owner's Representative will replace temporary construction cores with permanent cores.
2. Permanent Keying:
 - a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.
 - 1) Master Keying system as directed by the Owner.
 - b. Forward biting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
 - c. Provide keys with the following features:
 - 1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
 - 2) Patent Protection: Keys and blanks protected by one or more utility patent(s).
 - d. Identification:
 - 1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
 - 2) Identification stamping provisions must be approved by the Architect and Owner.
 - 3) Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
 - 4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
 - 5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.
 - e. Quantity: Furnish in the following quantities.
 - 1) Permanent Control Keys: 3.
 - 2) Master Keys: 6.
 - 3) Change (Day) Keys: 3 per cylinder/core that is keyed differently
 - 4) Key Blanks: Quantity as determined in the keying meeting.

2.09 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
 - a. LCN 4011 / 4111 series
2. Acceptable Manufacturers and Products:
 - a. Corbin-Russwin DC8000 series
 - b. Sargent 281 series

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.

2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
3. Cylinder Body: 1-1/2-inch (38 mm) diameter piston with 5/8-inch (16 mm) diameter double heat-treated pinion journal. QR code with a direct link to maintenance instructions.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards. Provide snap-on cover clip, with plastic covers, that secures cover to spring tube.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck. Provide graphically labelled instructions on the closer body adjacent to each adjustment valve. Provide positive stop on reg valve that prevents reg screw from being backed out.
7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
8. Pressure Relief Valve (PRV) Technology: Not permitted.
9. Hold open functions: Not permitted.
10. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
11. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.10 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Ives
2. Acceptable Manufacturers:
 - a. Burns
 - b. Trimco

B. Requirements:

1. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.
2. Vandal Resistant trim to be used exclusively on exterior doors with either night latch function or dummy, (1) Night latch cylinder per opening.

2.11 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Ives
2. Acceptable Manufacturers:
 - a. Burns
 - b. Trimco

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide concave type where lockset has a push button of thumbturn.
2. Where a wall stop cannot be used, provide universal floor stops.
3. Where wall or floor stop cannot be used, provide overhead stop.
4. Provide roller bumper where doors open into each other and overhead stop cannot be used.

2.12 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Zero International
2. Acceptable Manufacturers:
 - a. National Guard
 - b. Pemko

B. Requirements:

1. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.
2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
3. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
4. Size thresholds 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width unless otherwise specified in the hardware sets or detailed in the drawings.

2.13 DOOR POSITION SWITCHES

A. Manufacturers:

1. Scheduled Manufacturer:
 - a. Schlage
2. Acceptable Manufacturers:
 - a. GE-Interlogix
 - b. Sargent

B. Requirements:

1. Provide recessed or surface mounted type door position switches as specified.
2. Coordinate door and frame preparations with door and frame suppliers. If switches are being used with magnetic locking device, provide minimum of 4 inches (102 mm) between switch and magnetic locking device.

2.14 FINISHES

A. FINISH: BHMA 626/652 (US26D); EXCEPT:

1. Hinges at Exterior Doors: BHMA 630 (US32D)
2. Aluminum Geared Continuous Hinges: BHMA 628 (US28)
3. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
4. Protection Plates: BHMA 630 (US32D)
5. Overhead Stops and Holders: BHMA 630 (US32D)
6. Door Closers: Powder Coat to Match
7. Wall Stops: BHMA 630 (US32D)
8. Latch Protectors: BHMA 630 (US32D)
9. Weatherstripping: Clear Anodized Aluminum
10. Thresholds: Mill Finish Aluminum

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.
 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 2. Custom Steel Doors and Frames: HMMA 831.
 3. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
 4. Installation Guide for Doors and Hardware: DHI TDH-007-20
- B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.
- C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.
- D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.
- E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

- F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.
- H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.
- I. Lock Cylinders:
 - 1. Install construction cores to secure building and areas during construction period.
 - 2. Replace construction cores with permanent cores as indicated in keying section.
 - 3. Furnish permanent cores to Owner for installation.
- J. Wiring: Coordinate with Division 26, ELECTRICAL and Division 28 ELECTRONIC SAFETY AND SECURITY sections for:
 - 1. Conduit, junction boxes and wire pulls.
 - 2. Connections to and from power supplies to electrified hardware.
 - 3. Connections to fire/smoke alarm system and smoke evacuation system.
 - 4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
 - 5. Connections to panel interface modules, controllers, and gateways.
 - 6. Testing and labeling wires with Architect's opening number.
- K. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
- L. Door Closers & Auto Operators: Mount closers/operators on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers/operators so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.
- M. Overhead Stops/Holders: Mount overhead stops/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.
- N. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.
- O. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."
- P. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.
- Q. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- R. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- S. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.03 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 - 1. Spring Hinges: Adjust to achieve positive latching when door can close freely from an open position of 30 degrees.
 - 2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
 - 3. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
- B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.04 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items per manufacturer's instructions to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.05 DOOR HARDWARE SCHEDULE

- A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.
- B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.
- C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.
- D. Hardware Sets:

103820 OPT0353454 Version 2

Legend:

 Link to catalog cut sheet Electrified Opening

Hardware Group No. EXT-01 (ADDENDUM NO. 1)

For use on Door #(s):

102B 102C 137 202 241 M-4A

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112HD		628	IVE
1	EA	REMOVABLE MULLION	KR4954		689	VON
2	EA	PANIC HARDWARE	98-EO		626	VON
1	EA	MORTISE CYLINDER	20-059 X K510-730		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	DOOR PULL	VR910 DT STD (RHR LEAF ONLY)		630	IVE
2	EA	SURFACE CLOSER	4111 EDA		689	LCN
2	EA	FLOOR STOP	FS18S		BLK	IVE
1	EA	PERIMETER GASKETING	BY DOOR SUPPLIER			
1	EA	THRESHOLD	8655A		A	ZER

Hardware Group No. EXT-01.1 (ADDENDUM NO.1)

For use on Door #(s):

201BC 201BB

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112HD		628	IVE
1	EA	REMOVABLE MULLION	KR4954		689	VON
2	EA	PANIC HARDWARE	CD-98-EO		626	VON
3	EA	MORTISE CYLINDER	20-059 X K510-730		626	SCH
3	EA	FSIC CORE	23-030		626	SCH
1	EA	DOOR PULL	VR910 DT STD (RHR LEAF ONLY)		630	IVE
2	EA	SURFACE CLOSER	4111 EDA		689	LCN
2	EA	FLOOR STOP	FS18S		BLK	IVE
1	EA	PERIMETER GASKETING	BY DOOR SUPPLIER			
1	EA	THRESHOLD	8655A		A	ZER

DOOR HARDWARE

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Bid Documents

ADDENDUM NO. 1 March 6, 2024

Hardware Group No. EXT-02 **(ADDENDUM NO. 1)**

For use on Door #(s):

102CD 130 201BA 201C

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112XY		628	IVE
1	EA	CONT. HINGE	112XY TWP CON	⚡	628	IVE
1	EA	REMOVABLE MULLION	KR4954		689	VON
1	EA	PANIC HARDWARE	CD-98-EO		626	VON
1	EA	ELEC PANIC HARDWARE	SD-QEL-98-NL-OP-110MD 24 VDC	⚡	US26D /643E	VON
3	EA	MORTISE CYLINDER	20-059 X K510-730		626	SCH
1	EA	RIM HOUSING	20-079		626	SCH
4	EA	FSIC CORE	23-030		626	SCH
1	EA	DOOR PULL	VR910 NL STD		630	IVE
2	EA	SURFACE CLOSER	4111 EDA		689	LCN
2	EA	FLOOR STOP	FS18S		BLK	IVE
1	EA	PERIMETER GASKETING	BY DOOR SUPPLIER			
1	EA	THRESHOLD	8655A		A	ZER
1	EA	CARD READER	BY SECURITY			
2	EA	DOOR CONTACT	679-05	⚡	WHT	SCE
1	EA	POWER SUPPLY	BY SECURITY			

COORDINATE WITH ELECTRICAL AND SECURITY SYSTEMS.

DOORS NORMALLY CLOSED AND LOCKED.

VALID CREDENTIAL CAN BE PRESENTED TO READER TO MOMENTARILY RETRACT LATCH BOLT IN PANIC HARDWARE TO ALLOW ENTRY.

FREE EGRESS ALWAYS ALLOWED.

Hardware Group No. EXT-03 **(ADDENDUM NO. 1)**

For use on Door #(s):

106A 106B 243D

Provide each UEP door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112HD		628	IVE
2	EA	PANIC HARDWARE	98-EO		626	VON
1	EA	MORTISE CYLINDER	20-059 X K510-730		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	DOOR PULL	VR910 DT STD (RHR LEAF ONLY)		630	IVE
2	EA	SURFACE CLOSER	4111 EDA		689	LCN
2	EA	FLOOR STOP	FS18S		BLK	IVE
1	EA	PERIMETER GASKETING	BY DOOR SUPPLIER			
1	EA	THRESHOLD	8655A		A	ZER

DOOR HARDWARE

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Bid Documents

ADDENDUM NO. 1 March 6, 2024

Hardware Group No. EXT-04

For use on Door #(s):

113	114	123	124	203	204
M-4B					

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112HD		628	IVE
1	EA	PANIC HARDWARE	98-EO		626	VON
1	EA	SURFACE CLOSER	4111 EDA		689	LCN
1	EA	FLOOR STOP	FS18S		BLK	IVE
1	EA	PERIMETER GASKETING	BY DOOR SUPPLIER			

Hardware Group No. EXT-05 (ADDENDUM NO. 1)

For use on Door #(s):

165	S-24
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Provide each RU door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	MORTISE CYLINDER	20-059 X K510-730		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
	EA	NOTE	BALANCE OF HARDWARE BY DOOR SUPPLIER			

Hardware Group No. EXT-06 (ADDENDUM NO. 1)

For use on Door #(s):

155	166A	166B	235	236	237
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Provide each UEP door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112HD		628	IVE
2	EA	PANIC HARDWARE	98-EO		626	VON
1	EA	MORTISE CYLINDER	20-059 X K510-730		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	DOOR PULL	VR910 DT STD (RHR LEAF ONLY)		630	IVE
2	EA	SURFACE CLOSER	4111 EDA		689	LCN
2	EA	FLOOR STOP	FS18S		BLK	IVE
1	EA	PERIMETER GASKETING	BY DOOR SUPPLIER			
1	EA	THRESHOLD	8655A		A	ZER

Hardware Group No. EXT-07 (ADDENDUM NO. 1)

For use on Door #(s):

170

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112HD		628	IVE
2	EA	MANUAL FLUSH BOLT	FB458		626	IVE
1	EA	DUST PROOF STRIKE	DP2		626	IVE
1	EA	ONE WAY DEADBOLT	B661T		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
2	EA	PULL PLATE	8303 10" 4" X 16"		630	IVE
2	EA	SURFACE CLOSER	4111 SCUSH		689	LCN
1	EA	PERIMETER GASKETING	BY DOOR SUPPLIER			
1	EA	THRESHOLD	8655A		A	ZER

Hardware Group No. EXT-08 (ADDENDUM NO. 1)

For use on Door #(s):

245

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112HD		628	IVE
1	EA	ONE WAY DEADBOLT	B661T		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	PULL PLATE	8303 10" 4" X 16"		630	IVE
1	EA	SURFACE CLOSER	4111 EDA		689	LCN
1	EA	FLOOR STOP	FS18S		BLK	IVE
1	EA	PERIMETER GASKETING	BY DOOR SUPPLIER			

Hardware Group No. EXT-09

For use on Door #(s):

B-14B

G-14B

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112HD		628	IVE
1	EA	ONE WAY DEADBOLT	B661T		626	SCH
1	EA	FSIC CORE	23-030		626	SCH
1	EA	PUSH PLATE	8200 8" X 16"		US32D	IVE
1	EA	PULL PLATE	8303 10" 4" X 16"		630	IVE
1	EA	SURFACE CLOSER	4011		689	LCN
1	EA	WALL STOP	WS406/407CCV		626	IVE
1	EA	PERIMETER GASKETING	BY DOOR SUPPLIER			

DOOR HARDWARE

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Bid Documents

ADDENDUM NO. 1 March 6, 2024

Hardware Group No. INT-01

For use on Door #(s):

M-4C

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	112HD		628	IVE
1	EA	PANIC HARDWARE	98-EO		626	VON
1	EA	SURFACE CLOSER	4111 SCUSH		689	LCN
1	EA	PERIMETER GASKETING	BY DOOR SUPPLIER			

END OF SECTION

2.14 DUCTLESS SPLIT HEAT PUMP SYSTEM (INVERTER TYPE) (WALL MOUNTED)

- A. The air conditioning system shall be a Mitsubishi Electric Series split type system, LG, Daikin, Hitachi, or approved equal. The system to consist of a slim silhouette, compact wall mounted packaged evaporator section and matching Slim Line air cooled outdoor unit. The units shall be listed by Electrical Testing Laboratories (ETL) and bear the ETL label. All wiring to be in accordance with the National Electrical Code (N.E.C.). The units shall be rated in accordance with ARI Standard 210 and bear the ARI label. A full charge of R-410A for 100 feet of refrigerant tubing shall be provided in the condensing unit. A dry nitrogen holding charge shall be provided in the evaporator. System SEER shall meet or exceed Federal Standards, latest edition.
- B. The units shall have a manufacturer's warranty for a period of one (1) year from date of installation. The compressor shall have a warranty of six (6) years from date of installation. If, during this period, any part should fail to function properly due to defects in workmanship or material, it shall be replaced or repaired at the discretion of Mitsubishi Electronics America, Inc. This warranty does not include labor. Manufacturer shall have ten years experience in the U.S. market.
- C. The unit performance shall be as scheduled on the contract drawings.
- D. The indoor unit shall be completely factory assembled, and wired. The casing shall have a white finish. The evaporator fan shall be an assembly of line flow fans direct driven by a single motor. The fans shall be statically and dynamically balanced and run on a permanently lubricated bearing. An adjustable guide vane shall be provided with the ability to change the air flow from horizontal to vertical. A motorized air sweep louver shall provide an automatic change in air flow by directing the air from side to side for uniform air distribution. Return air shall be filtered by means of an easily removable washable filter. The evaporator coil shall be of nonferrous construction with smooth plate fins bonded to copper tubing. The tubing shall have inner grooves for high efficiency heat exchange. All tube joints shall be brazed with phoscopper or silver alloy. The coil shall be pressure tested at the factory. A condensate pan with drain shall be provided under the coil. Split system unit manufacturer shall furnish condensate lift pumps for field installation with the indoor unit. Condensate pumps shall be complete with float switch sensor, alarm, reed switch, relay, contact, adaptors and detection unit, etc., for a completely operational system. Contractor shall mount, pipe, and wire condensate pump per split system manufacturer's recommendations. Condensate pump shall be model EE as manufactured by Sauermann or approved equal.

- E. The control system shall consist of two (2) microprocessors interconnected by a single non polar two wire cable as supplied. Wiring shall run from indoor unit to controller direct. NO SPLICES. When running longer lengths or more than one set of remote controller wires together, a double insulated, two wire cable equivalent to that provided e.g. Belden 9407 cable, is mandatory or use shielded two wire cable. One microprocessor shall be factory wired and located within the indoor unit. It shall have the capability of sensing return air temperature and indoor coil temperature; receive and process commands from the remote controller; provide emergency operation; and control the outdoor unit. The microprocessor within the wall mounted remote controller shall provide automatic cooling; display set point and room temperature; a 24 hour on/off timer so that automatic operation can be set on the timer at one-hour intervals from one to twenty-four hours; have self-diagnostic function display; check mode for memory of most recent problem; control operation of the air sweep louvers; and provide on off and system/mode function switching. Normal operation of the remote controller provides individual system control in which one remote controller and one indoor unit are installed in the same room. The remote controller shall have the capability of controlling up to a maximum of 50 systems at a maximum developed control cable distance of 1650 feet. Control voltage between the remote controller and the indoor unit shall be 12 volts, D.C. The control voltage between the indoor unit and the outdoor unit shall be 12 volts, D.C. Both 12VDC shall be generated from the indoor unit microprocessor board. The system shall be capable of automatic restart when power is restored after power interruption. System shall include twenty function self diagnostics including total hours of compressor run time.
- F. The outdoor unit shall be completely factory assembled, piped and wired. The casing shall be fabricated of galvanized steel, bonderized and finished with baked enamel. The unit shall be furnished with one (1), direct drive, propeller type fan arranged for horizontal discharge. The motors shall have inherent protection be of the permanently lubricated type, and resiliently mounted for quiet operation. Each fan shall be provided with a raised guard to prevent contact with moving parts. The variable speed compressor shall be of the high-performance, rotary type with crankcase heater, accumulator and internal thermal overloads. The variable speed compressor shall be mounted so as to avoid the transmission of vibration. The refrigeration system shall be equipped with high pressure switch and have the capability to operate with a maximum height difference of 100 feet and overall refrigerant tubing length of 100 feet between indoor and outdoor sections without the need for line size changes, traps or additional oil. Refrigerant flow from the condenser to be controlled by means of a capillary tube. The condenser coil shall be of nonferrous construction with smooth plate fins bonded to copper tubing. The coil shall be protected with an integral metal guard. The unit shall be controlled by the microprocessor located in the matching indoor unit. A built in, low-ambient controller will allow cooling to 0 degrees F outdoor temperature. The outdoor condensing unit shall be placed on vibration isolators and mounted on rooftop equipment rail or concrete pad as indicated on contract drawings.

- G. High condensate water safety shutdown: Each indoor unit detection unit shall be interlocked to alarm and stop the outdoor unit if a high condensate water level is sensed.

2.15 DUCTLESS SPLIT SYSTEMS AIR CONDITIONER (INVERTER TYPE)

- A. The air conditioning system shall be a Mitsubishi Electric Series split type system, LG, Daikin, Hitachi or approved equal. The system to consist of an evaporator unit, as scheduled, and matching air-cooled condenser outdoor unit. The units shall be listed by Electrical Testing Laboratories (ETL) and bear the ETL label. All wiring to be in accordance with the National Electrical Code (N.E.C.). The units shall be rated in accordance with ARI Standard 210 and bear the ARI label. A full charge of R-410A for refrigerant tubing as indicated on the drawings shall be provided in the condensing unit. A dry nitrogen holding charge shall be provided in the evaporator. System SEER shall meet or exceed Federal Standards, latest edition.
- B. The units shall have a manufacturer's warranty for a period of two (2) year from date of installation. The compressor shall have a warranty of five (5) years from date of installation. If, during this period, any part should fail to function properly due to defects in workmanship or material, it shall be replaced or repaired at the discretion of Mitsubishi Electronics America, Inc. This warranty does not include labor. Manufacturer shall have ten years experience in the U.S. market.
- C. The unit performance shall be as scheduled on the contract drawings.
- D. The indoor unit shall be completely factory assembled, and wired. The casing shall have a white finish. The evaporator fan shall be an assembly of line flow fans direct driven by a single motor. The fans shall be statically and dynamically balanced and run on a permanently lubricated bearing. An adjustable guide vane shall be provided with the ability to change the air flow from horizontal to vertical. A motorized air sweep louver shall provide an automatic change in air flow by directing the air from side to side for uniform air distribution. Return air shall be filtered by means of an easily removable washable filter. The evaporator coil shall be of nonferrous construction with smooth plate fins bonded to copper tubing. The tubing shall have inner grooves for high efficiency heat exchange. All tube joints shall be brazed with phoscopper or silver alloy. The coil shall be pressure tested at the factory. A condensate pan with drain shall be provided under the coil. Split system unit manufacturer shall furnish condensate lift pumps for field installation with the indoor unit. Integral condensate pumps shall be complete with float switch sensor, alarm, reed switch, relay, contact, adaptors and detection unit, etc., for a completely operational system.

- E. The control system shall consist of two (2) microprocessors interconnected by a single non polar two wire cable as supplied. Wiring shall run from indoor unit to controller direct. NO SPLICES. When running longer lengths or more than one set of remote controller wires together, a double insulated, two wire cable equivalent to that provided e.g. Belden 9407 cable, is mandatory or use shielded two wire cable. One microprocessor shall be factory wired and located within the indoor unit. It shall have the capability of sensing return air temperature and indoor coil temperature; receive and process commands from the remote controller; provide emergency operation; and control the outdoor unit. The microprocessor within the wall mounted remote controller shall provide automatic cooling; display set point and room temperature; a 24 hour on/off timer so that automatic operation can be set on the timer at one-hour intervals from one to twenty-four hours; have self-diagnostic function display; check mode for memory of most recent problem; control operation of the air sweep louvers; and provide on off and system/mode function switching. Normal operation of the remote controller provides individual system control in which one remote controller and one indoor unit are installed in the same room. The remote controller shall have the capability of controlling up to a maximum of 50 systems at a maximum developed control cable distance of 1650 feet. Control voltage between the remote controller and the indoor unit shall be 12 volts, D.C. The control voltage between the indoor unit and the outdoor unit shall be 12 volts, D.C. Both 12VDC shall be generated from the indoor unit microprocessor board. The system shall be capable of automatic restart when power is restored after power interruption. System shall include twenty function self-diagnostics including total hours of compressor run time.
- F. The outdoor unit shall be completely factory assembled, piped and wired. The casing shall be fabricated of galvanized steel, bonderized and finished with baked enamel. The unit shall be furnished with one (1), direct drive, propeller type fan arranged for horizontal discharge. The motors shall have inherent protection be of the permanently lubricated type, and resiliently mounted for quiet operation. Each fan shall be provided with a raised guard to prevent contact with moving parts. The variable speed compressor shall be of the high-performance, rotary type with crankcase heater, accumulator and internal thermal overloads. The variable speed compressor shall be mounted so as to avoid the transmission of vibration. The refrigeration system shall be equipped with high pressure switch and have the capability to operate with a maximum height difference of 130 feet and overall refrigerant tubing length as required per the drawings between indoor and outdoor sections without the need for line size changes, traps or additional oil. Refrigerant flow from the condenser to be controlled by means of a capillary tube. The condenser coil shall be of nonferrous construction with smooth plate fins bonded to copper tubing. The coil shall be protected with an integral metal guard. The unit shall be controlled by the microprocessor located in the matching indoor unit. A built in, low-ambient controller will allow cooling to 0 degrees F outdoor temperature.
- G. High condensate water safety shutdown: Each indoor units' detection unit shall be interlocked to alarm and stop the outdoor unit if a high condensate water level is sensed.

3.20 DUCTLESS SPLIT HEAT PUMP AND AIR CONDITIONING SYSTEMS

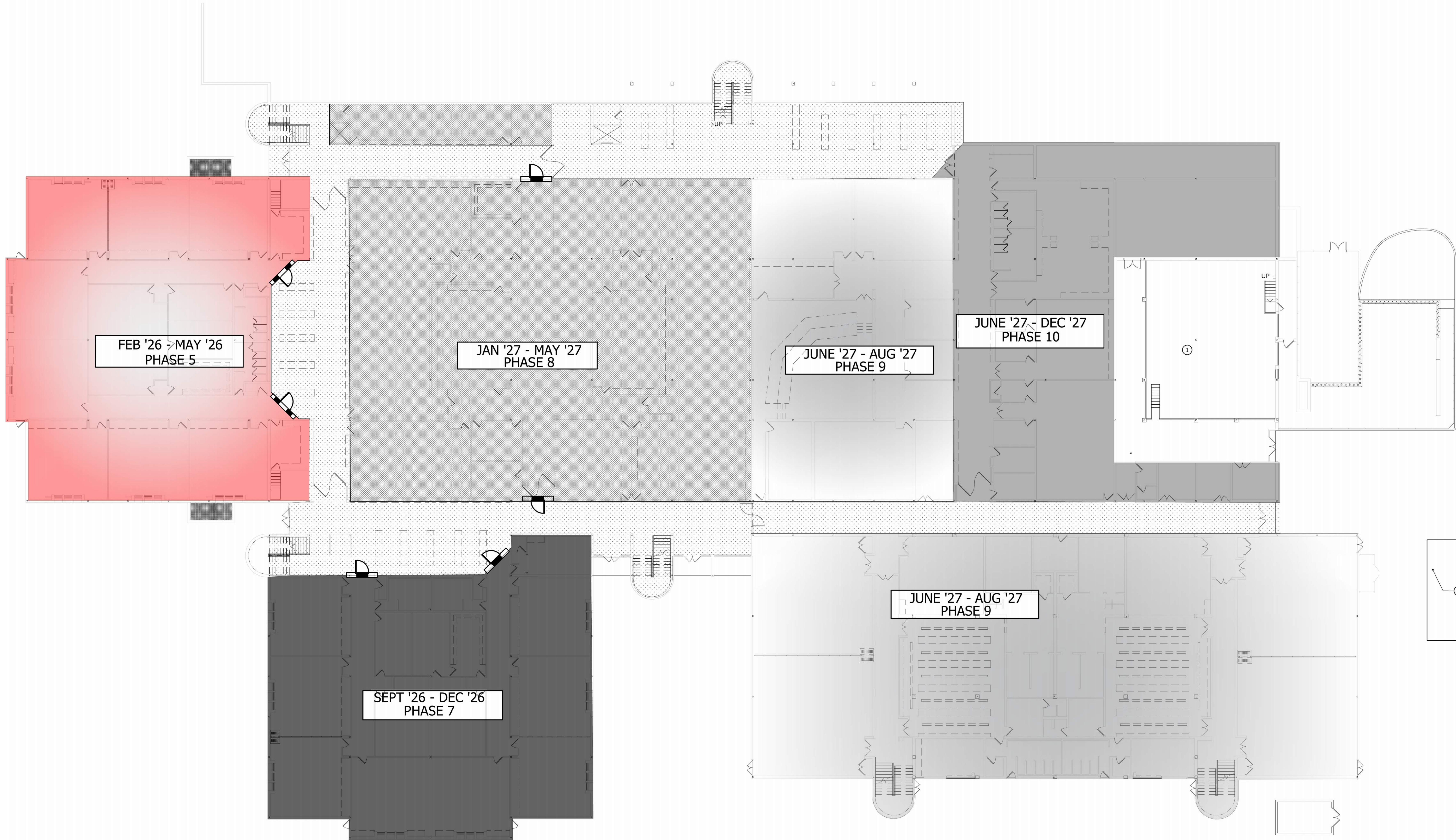
- A. Install where indicated on the drawings and in accordance with manufacturer's recommendations.
- B. Comb out fins on the condensing unit where deformed or bent. Replace or repair broken fins.
- C. Pipe condensate piping as indicated on the drawings.
- D. Provide all field wiring between the outdoor and indoor unit as required.

Pre-Bid Meeting Attendance Sheet
Aberdeen Middle School
HVAC Systemic Renovations
 Tuesday, March 4, 2024 @ 2:00 pm
 Aberdeen Middle School
 111 Mount Royal Avenue., Aberdeen, MD 21001
Bid Opening – March 25, 2023 2:00 PM

Name	Company & Address	Telephone # Fax #	Email Address
Michael Girardot	FLO-TROTT Hunt Valley MD 21030 10604 Beaver Dam Rd	410.527.0060	www.Flo-Tro.com
Scott Dixon	Gipe Assoc.	443-752-7527	sdixon@gipe.net
GARY RINEHART	KEY SYSTEMS 10839 PHILADELPHIA RD WHITE MARSH 21162	410-335-5460 410-344-2085	GARY @ KEYSYSTEMSELECTRIC.COM
TROY MATTHEWS	DENVER-ELEK	410-574-8400 EXT 218	BIDS@DENVER-ELEK .COM
Shane Goetzinger	Anchor Mechanical	443-907- 9958	Sgoetzinger @ Anchormechn.com
Steve Hynson	Modular Genius	443-462-8640	shynson@modulargenius.com
TROY SCHUTZ	TOWSON MECHANICAL	410-668-1210	TSCHUTZ@TOWSONMECHANICAL.COM
Steven Bosse	Temp Air Company	443-417-3385	Sbosse@tempaircompany.com
Andy Smith	United Energy Products 1610 Professional Blvd. 21114	410-570-7855	Andy@uepsales.com
ERIK BADDERS	JOHNSON CONTROL, INC. LINTHICUM, MD	410-598-7330	erik.a.badders@jci.com
Steve Teague	Anchor Mechanical	443-390-0055	Steague @ anchormechn.com

Pre-Bid Meeting Attendance Sheet
Aberdeen Middle School
HVAC Systemic Renovations
 Tuesday, March 4, 2024 @ 2:00 pm
 Aberdeen Middle School
 111 Mount Royal Avenue., Aberdeen, MD 21001
Bid Opening – March 25, 2023 2:00 PM

Name	Company & Address	Telephone # Fax #	Email Address
John Kiwo	BARCO ENT. INC 11200 Pulaski Hwy	410-335-0668 410-335-0790	BARCO@BARCOENT.COM
KEVIN SINGH	TMI	443-5311115	KSingL@TowsonMed.com
Beau Schmeisser	Active Crane Rentals	302-998-1000	Beau@ActiveCrane.com
Formuala Brigman	BRAWNER BUILDERS 11011 McCormick Rd, Ste 300 Hunt Valley MD 21031	410-666-2500 410-666-2842	POC@brawnerbuilders.com
Pete Hock Corey Ferguson	Modern Controls, Inc 26 Bellecor dr New Castle, DE 19726	267 337 0318	phock@moderncontrols.com
Stefan Bustin	Superior Auto. Sprinkler 1545 S. Philadelphia Blvd. Aberdeen 21001	410-856-8558	Stefan with Superior @outlook.com



- DRAWING NOTES**
- ① THE NEW CHILLED WATER SYSTEM AND HEATING SYSTEM CAN BE INSTALLED EARLIER DURING THE PROJECT. THE EX HEATING SYSTEM SHALL REMAIN OPERATIONAL UNTIL THE NEW SYSTEM IS OPERATIONAL AND TIED INTO THE REMAINING EXISTING IF REQUIRED. CONTRACTOR SHALL TEMPORARILY RELOCATE THE EX CHILLED WATER PUMPS TO ALLOW NEW SYSTEM INSTALLATION. EX CHILLED WATER SHALL BE RELOCATED TO CLEAR SPACE FOR THE NEW PIPING. CONTRACTOR MAY USE TEMPORARY HYDRAULIC APPROVED HOSES TO ACHIEVE TEMPORARY RELOCATIONS.
- ② MECHANICAL COURTYARD CAN BE STARTED WHEN THE CONTRACTOR IS READY AND THE PERMITS ARE ISSUED.
-  — TEMPORARY CONSTRUCTION BARRIER

- GENERAL NOTES (ALL PHASING DRAWINGS)**
- CONTRACTOR SHALL BE REQUIRED TO MAINTAIN THE EX HEATING AND COOLING OPERATIONAL DURING THE RENOVATION.
 - CENTRAL EQUIPMENT WITHIN A PHASE THAT SERVES OTHER PHASES SHALL REMAIN OPERATIONAL OR TEMPORARY SERVICES SHALL BE PROVIDED.
 - WHEN INSTALLING PIPING THAT WILL SERVE FUTURE PHASES, INSTALL THE TEES WITH VALVES AND CAPS.
 - CONTRACTOR IS REQUIRED TO DRAIN, FILL AND PURGE HYDRONIC SYSTEMS AS REQUIRED.
 - DUCTWORK ON THE ROOFS MAY BE INSTALLED PRIOR TO THE PHASE STARTING. PROTECT THE ENDS OF THE DUCTS WITH METAL CAPS UNTIL THE ASSOCIATED PHASE BEGINS.

ALL CORRIDORS SHALL REMAIN ACCESSIBLE TO BUILDING OCCUPANTS. WORK IN THESE AREAS SHALL BE OFF-HOUR AND WEEKENDS. METAL PAN CEILINGS MAY BE REMOVED AND THE SERVICES SHALL BE SECURED TO STRUCTURE IF SUPPORTED BY EX CEILING. EX LIGHTING AND SPRINKLER SHALL REMAIN UNTIL CHANGED.

NO.	DATE	DESCRIPTION	
		REVISIONS	ADDITION NO. 1
1	3/7/24		
2			
3			
4			
5			

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Giipe Associates Inc.
Consulting Engineers
1220 East Apple Road
Towson, MD 21286
Tel: 410.332.2418
Fax: 410.332.2418

6719 Brooke Drive
Exton, Maryland 21601
Tel: 410.332.2418
Fax: 410.332.2418

WO# 23043

PROJECT MANAGER	SED
DESIGNER	SED
DATE	2/26/2024

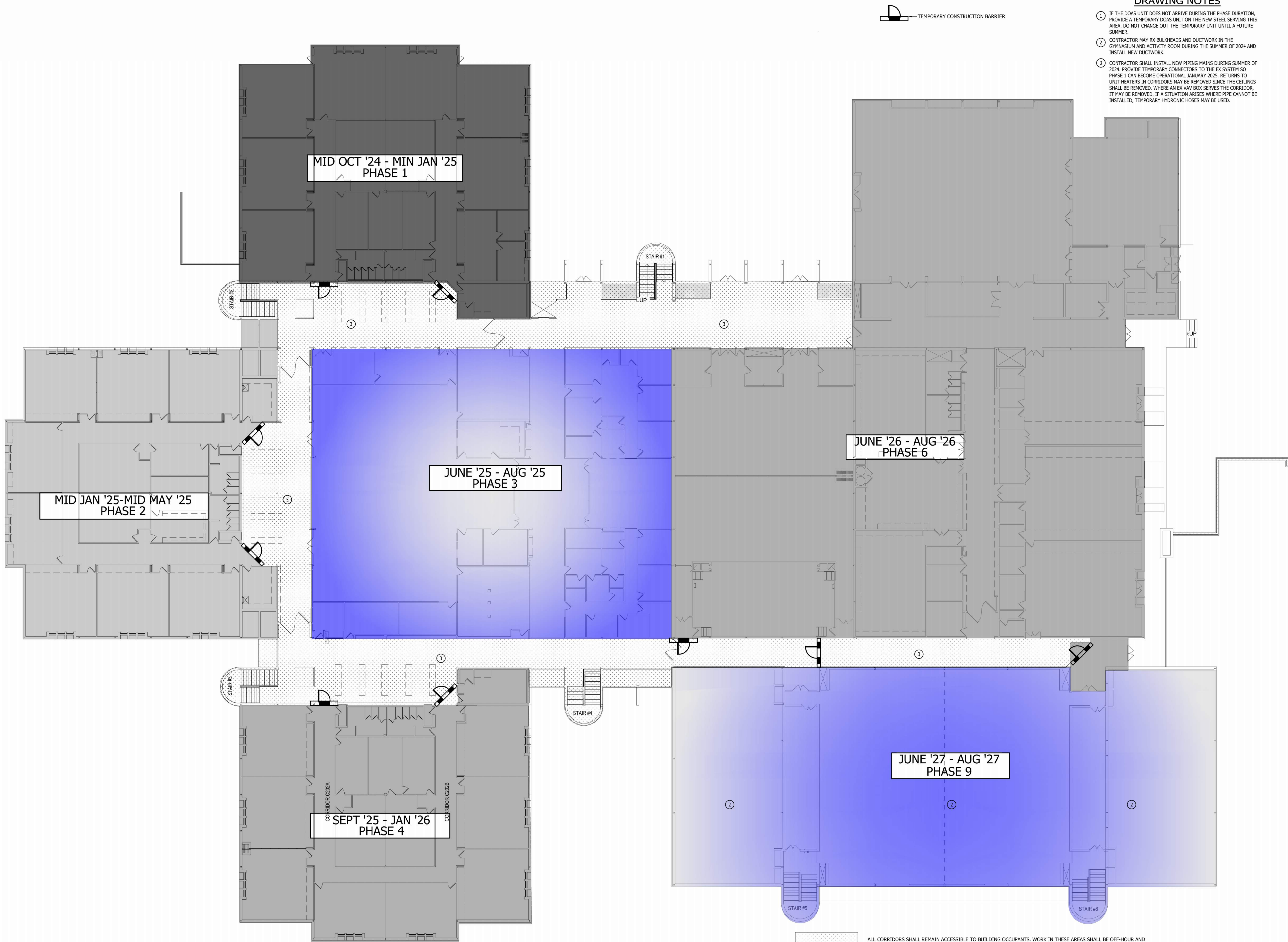
LOWER LEVEL PHASING PLAN

HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL
HVAC SYSTEMIC RENOVATIONS
111 MT ROYAL AVE, ABERDEEN, MARYLAND 21001.

BID SUBMISSION

PH001

PSC-12.006



TEMPORARY CONSTRUCTION BARRIER

DRAWING NOTES

- 1 IF THE DOAS UNIT DOES NOT ARRIVE DURING THE PHASE DURATION, PROVIDE A TEMPORARY DOAS UNIT ON THE NEW STEEL SERVING THIS AREA. DO NOT CHANGE OUT THE TEMPORARY UNIT UNTIL A FUTURE SUMMER.
- 2 CONTRACTOR MAY RX BULKHEADS AND DUCTWORK IN THE GYMNASIUM AND ACTIVITY ROOM DURING THE SUMMER OF 2024 AND INSTALL NEW DUCTWORK.
- 3 CONTRACTOR SHALL INSTALL NEW PIPING MAINS DURING SUMMER OF 2024. PROVIDE TEMPORARY CONNECTORS TO THE EX SYSTEM SO PHASE 1 CAN BECOME OPERATIONAL JANUARY 2025. RETURNS TO UNIT HEATERS IN CORRIDORS MAY BE REMOVED SINCE THE CEILINGS SHALL BE REMOVED. WHERE AN EX VAV BOX SERVES THE CORRIDOR, IT MAY BE REMOVED. IF A SITUATION ARISES WHERE PIPE CANNOT BE INSTALLED, TEMPORARY HYDRONIC HOSES MAY BE USED.

REVISIONS		
NO.	DATE	DESCRIPTION
1	3/7/24	ADDENDUM NO. 1

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Giipe Associates Inc.
Consulting Engineers
8719 Brooke Drive
Easton, Maryland 21601
Tel: 410.322.4800
Fax: 410.322.4806

WO# 23043

PROJECT MANAGER SED

DESIGNER SED

DATE 2/26/2024

UPPER LEVEL PHASING PLAN
HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL
HVAC SYSTEMIC RENOVATIONS
111 MT ROYAL AVE, ABERDEEN, MARYLAND 21001

BID SUBMISSION

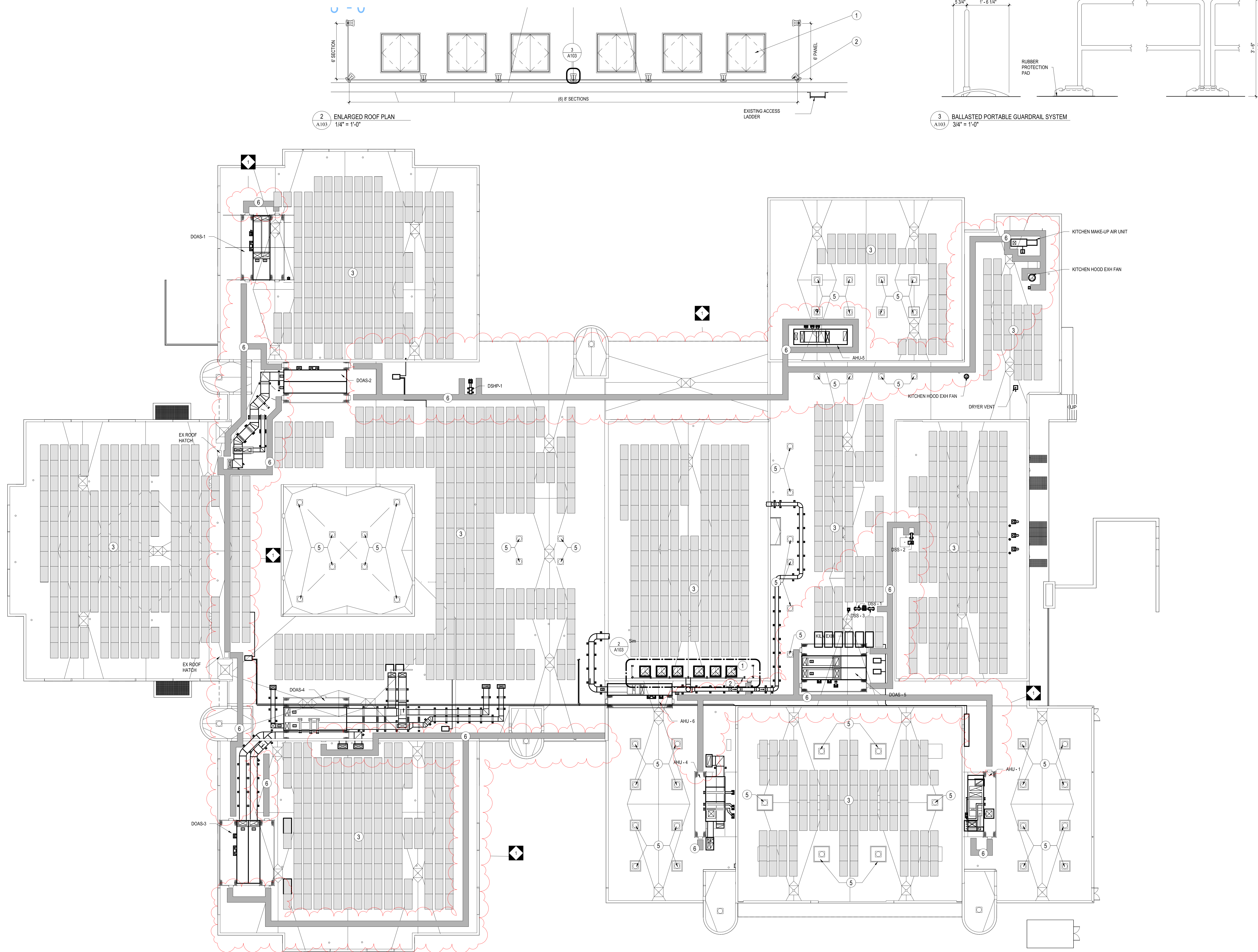
PH002

PSC-12.006

1 PH002 UPPER LEVEL PHASING PLAN NOT TO SCALE



ALL CORRIDORS SHALL REMAIN ACCESSIBLE TO BUILDING OCCUPANTS. WORK IN THESE AREAS SHALL BE OFF-HOUR AND WEEKENDS. METAL PAN CEILINGS MAY BE REMOVED AND THE SERVICES SHALL BE SECURED TO STRUCTURE IF SUPPORTED BY EX CEILING. EX LIGHTING AND SPRINKLER SHALL REMAIN UNTIL CHANGED.



1 OVERALL ROOF PLAN
A103 1/16" = 1'-0"

2 ENLARGED ROOF PLAN
A103 1/4" = 1'-0"

3 BALLASTED PORTABLE GUARDRAIL SYSTEM
A103 3/4" = 1'-0"

LEGEND		ROOF PLAN NOTES:	
1 SMOKE VENT	3 EXISTING SOLAR PANELS	5 EXISTING SKYLIGHT INFILLS	1. COORDINATE ROOF-MOUNTED EQUIPMENT & PENETRATIONS. REFER TO MEP DRAWINGS. 2. PROVIDE ROOFING MANUFACTURERS' STANDARD DETAILS FOR ALL PENETRATIONS & FLASHING AS PER ROOFING MANUFACTURERS' WARRANTY. 3. ROOF MOUNTED EQUIPMENT CURBS AND SUPPORTS SHALL BE FURNISHED AND INSTALLED BY THE EQUIPMENT SUPPLIER. 4. EXISTING SOLAR PANELS TO REMAIN UNLESS NOTED IN MEP DRAWINGS. 5. ALL ROOF WORK SHALL BE COORDINATED WITH AND PERFORMED BY THE APPROVED CONTRACTOR BY FIRESTONE BUILDING PRODUCTS, THE WARRANTY HOLDER OF THE ROOF. 6. ALL PV PANEL WORK SHALL BE COORDINATED WITH AND PERFORMED BY THE APPROVED CONTRACTOR BY LUMINACE SOLAR OPERATIONS, SHIVANSH CHAURUSHAI, 1-973-796-7319, shivansh.chaurushai@luminace.com
2 GUARD RAIL SYSTEM	4 EXISTING ROOF HATCHES	6 WALKING PADS	

REVISIONS		DESCRIPTION	
NO.	DATE	DESCRIPTION	APPENDIX NO. 1
1	3/5/2024		

PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 8490, EXPIRATION DATE: 03/04/2025.

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Giipe Associates Inc.
Consulting Engineers
6715 Bayview Drive
Suite 205
Aberdeen, MD 21001
Phone: 410.822.6588
Fax: 410.822.6306

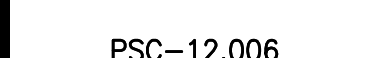
WO# 23043

PROJECT MANAGER: S. WENTZ
DESIGNER: C. LIMBERT
DATE: 2/26/2024

ROOF PLAN
HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL
HVAC SYSTEMIC RENOVATIONS
111 MT ROYAL AVE, ABERDEEN, MARYLAND 21001.

BID DOCUMENTS

A103
PSC-12.006



1. EX IS INDICATED IN THIN/LIGHT LINE WEIGHT.
2. NEW WORK IS INDICATED IN THICKER/DARK LINE WEIGHT
3. ALL SP WORK INDICATED ON PLAN IS BASE BID WORK.

① NEW CHASE WALL. REFER TO ARCHITECTURAL DRAWINGS

- ①
- ② 1-1/4" CR UP AND DN TO CONDENSATE PUMP A
- ③ NOT USED.
- ④ 2-1/2" CHR, 2-1/2" CHS, 2" HS, AND 2" HR UP.

REVISIONS		
NO.	DATE	DESCRIPTION
1	3/7/24	ADDENDUM NO. 1

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PROJECT MANAGER	SED
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DESIGNER	SED
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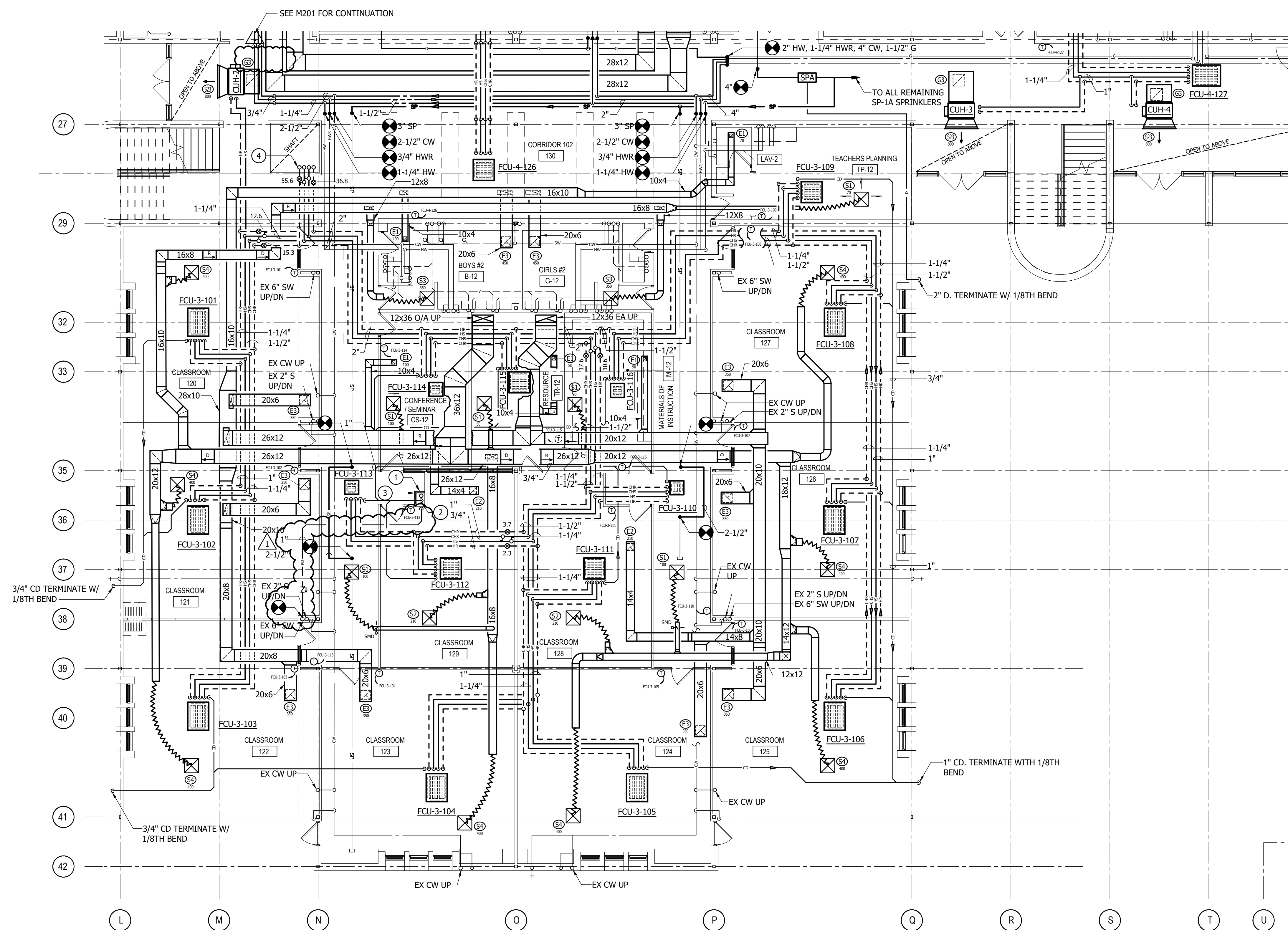
DATE 2/26/2024

LOWER LEVEL AREA C - NEW WORK

BID SUBMISSION

M202

PSC-12.006

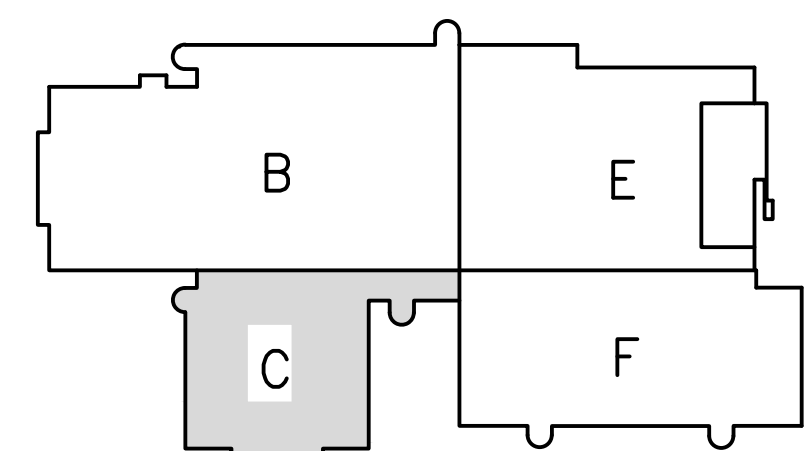


1
M202

LOWER LEVEL AREA C - NEW WORK

SCALE: 1/8" = 1'-0"

N



SCALE: 1/8" = 1'-0"



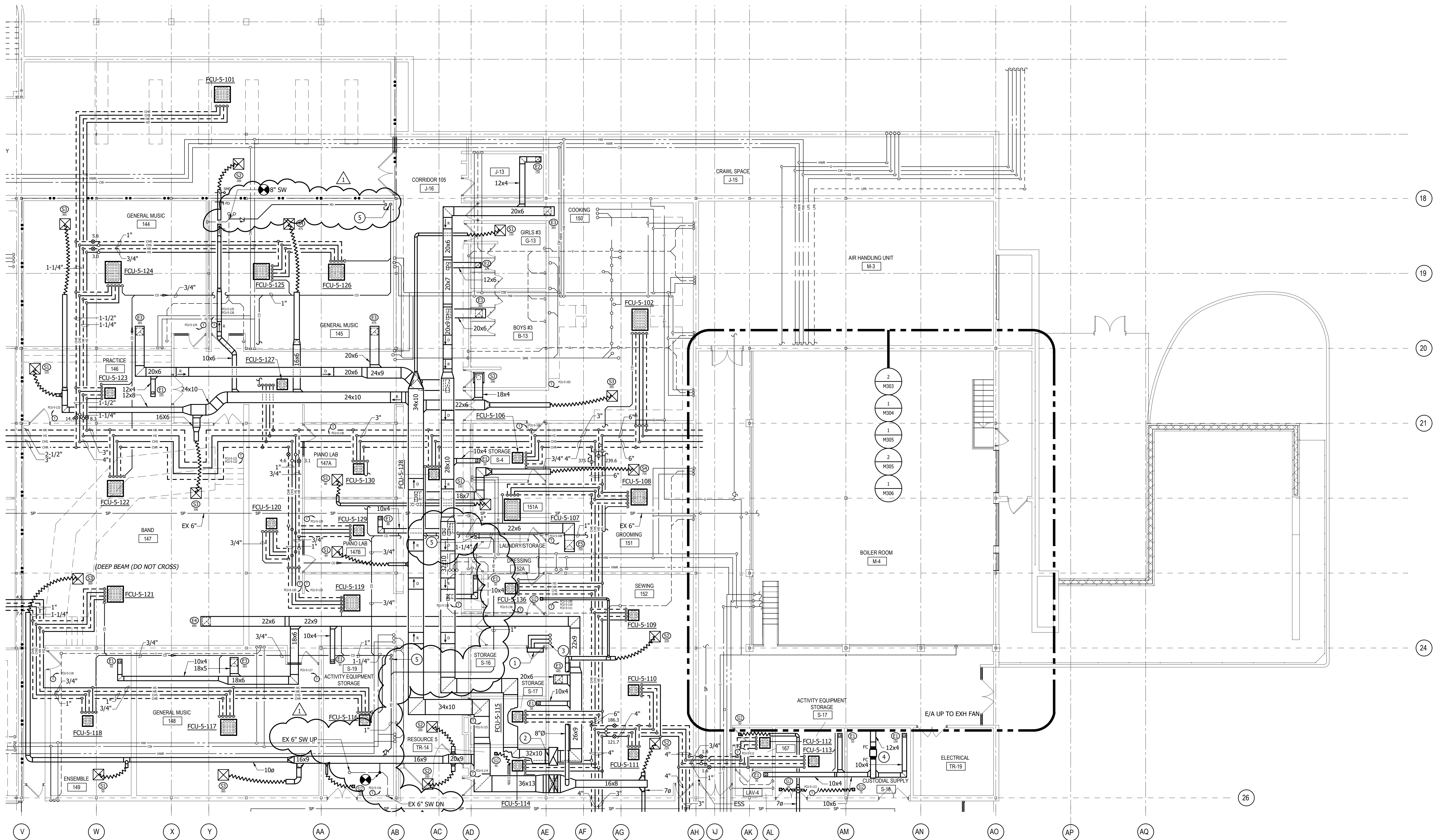
KEY PLAN
N.T.S.

GENERAL NOTES:

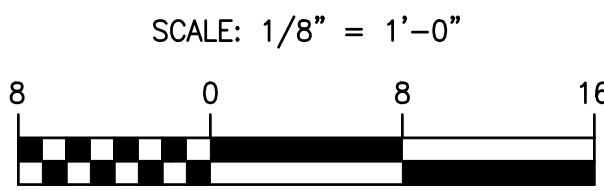
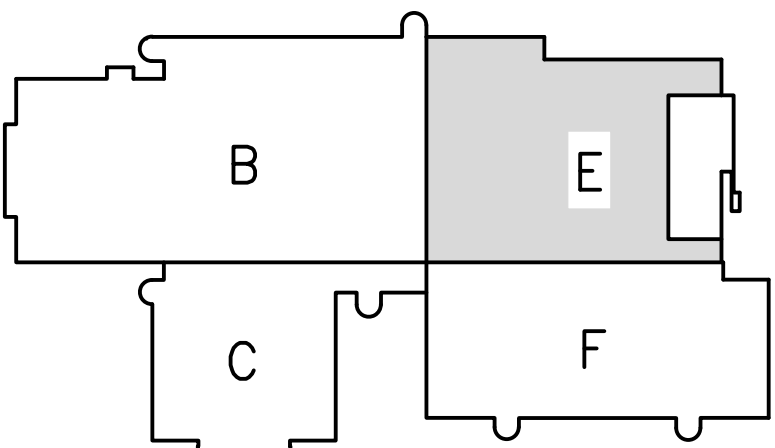
- EX IS INDICATED IN THIN/LIGHT LINE WEIGHT.
- NEW WORK IS INDICATED IN THICKER/DARK LINE WEIGHT.
- ALL SP WORK INDICATED ON PLAN IS BASE BIDWORK.

DRAWING NOTES:

- DSS-3 EVAPORATOR, MOUNT ON WALL ABOVE DOOR.
- 40X20 R/A UP, 40X12 S/A AND 40X8 S/A UP TO 40X20 SA UP, 40X20 RA AND 40X20 SA DN.
- RS, RL AND 3" PD UP, SIZE RS AND RL PIPING IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- FAN-1, SUPPORT FROM STRUCTURE ABOVE.
- 1-1/4" CD DN TO CONDENSATE PUMP P-A.



1 LOWER LEVEL AREA E - NEW WORK
SCALE: 1/8" = 1'-0"



KEY PLAN
N.T.S.

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Giipe Associates Inc.
Consulting Engineers
6719 Spoke Drive
1220 East Apple Road
P.O. Box 1000
Towson, MD 21286
Phone: 410.332.2418
Fax: 410.332.2418

WO# 23043

PROJECT MANAGER SED

DESIGNER SED

DATE 2/26/2024

LOWER LEVEL AREA E - NEW WORK
HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL
HVAC SYSTEMIC RENOVATIONS
111 MT ROYAL AVE, ABERDEEN, MARYLAND 21001.

BID SUBMISSION

M203

PSC-12.006

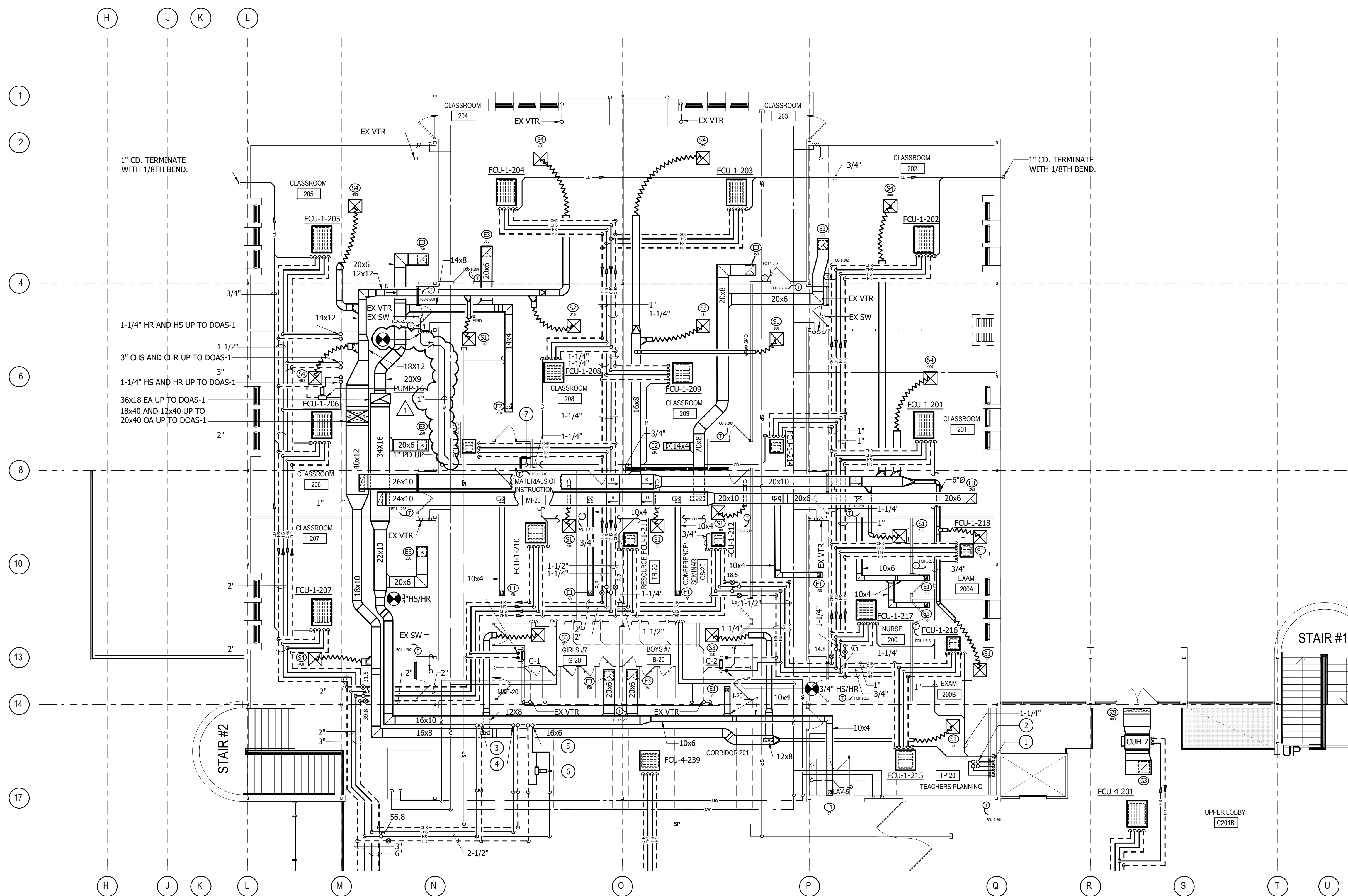
GENERAL NOTES:

1. EX IS INDICATED IN THIN/LIGHT LINE WEIGHT.
2. NEW WORK IS INDICATED IN THICKER/DARK LINE WEIGHT.
3. ALL SP WORK INDICATED ON PLAN IS BASE BID WORK.

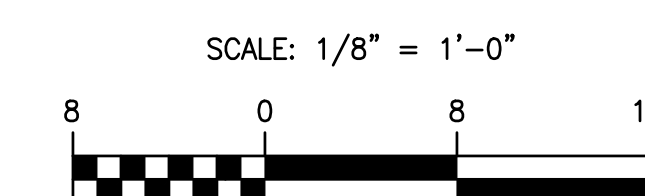
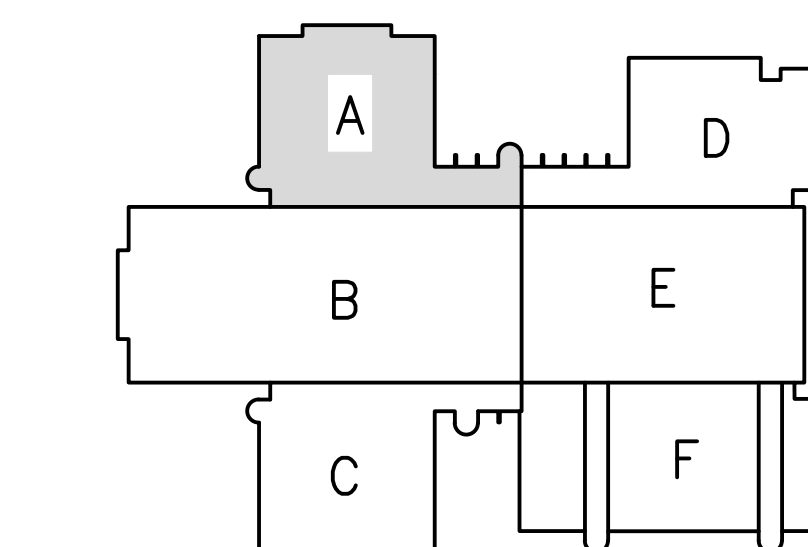
DRAWING NOTES:

- 1 1-1/4" CD, 1" PD, 2"PD, RS/RL AND 1"PD DN, RX WALL TO INSTALL PIPING AND REPAIR WALL TO MATCH EX WALL.
- 2 1" PD, 2"PD, RS/RL AND 1"PD UP.
- 3 2" HR AND HS UP TO DOAS-2.
- 4 4" CHS AND CHR UP TO DOAS-2.
- 5 2" HS AND HR UP TO DOAS-2.

- 6 DUMP
- 7 1-1/4" CD DN AND 1" PD DN TO CONDENSATE TO PUMP A.



1 UPPER LEVEL PLAN AREA A - NEW WORK
SCALE: 1/8" = 1'-0"



KEY PLAN
N.T.S.

Gipe Associates Inc.
Consulting Engineers

WO# 23043

PROJECT MANAGER SED

DESIGNER SED

DATE 2/26/2024

UPPER LEVEL AREA A - NEW WORK
HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL
HVAC SYSTEMIC RENOVATIONS
111 MT ROYAL AVE, ABERDEEN, MARYLAND 21001.

BID SUBMISSION

M205

PSC-12.006

A	AMPERE, AMPERES	HOA	HAND-OFF-AUTOMATIC	RGS	RIGID GALVANIZED STEEL
AF	ABOVE FINISHED FLOOR	HP	HORSEPOWER	RL	RELOCATED
AFG	ABOVE FINISHED GRADE	IDF	INTERMEDIATE DISTRIBUTION FRAME	RL	REMOVE AND RELOCATE
AHU	AIR HANDLING UNIT	IMC	INTERMEDIATE METAL CONDUIT	RX	REMOVE EXISTING
AIC	AMPERE INTERRUPTING CAPACITY	KCMIL	THOUSAND CIRCULAR MILS	SWBD	SWITCHBOARD
ATS	AUTOMATIC TRANSFER SWITCH	KVA	KILOVOLT-AMPERES	SWGR	SWITCHGEAR
AWG	AMERICAN WIRE GAUGE	KW	KILOWATT	TB	TELEPHONE TERMINAL BOARD
C	CONDUIT	L	LOW	TB	TYPICAL
CB	CIRCUIT BREAKER	LRA	LOCKED ROTOR AMPERES	UH	UNIT HEATER
CKT	CIRCUIT	MCA	MINIMUM CIRCUIT AMPERES	V	VOLT, VOLTS
CT	CURRENT TRANSFORMER	MCB	MAIN CIRCUIT BREAKER	UN	UNLESS OTHERWISE NOTED
DIA	DIAMETER	MCC	MOTOR CONTROL CENTER	UP	UNSHIELDLED TWISTED PAIR
DWG	DRAWING	MDF	MAIN DISTRIBUTION FRAME	UV	UNIT VENTILATOR
ECB	ELECTRICAL CONTRACTOR	MLO	MAIN LUGS ONLY	VFD	VARIABLE FREQUENCY DRIVE
ECB	ENCLOSED CIRCUIT BREAKER	MPOP	MAIN POINT OF PRESENCE	VSD	VARIABLE SPEED DRIVE
EF	EXHAUST FAN	MTD	MOUNTED	VR	VANDALL RESISTANT
EPO	EMERGENCY POWER OFF	MH	MOUNTING HEIGHT/MANHOLE	W	WATTS, WIRE, WIRES
ETR	EXISTING TO REMAIN	NCC	NATIONAL ELECTRICAL CODE	WP	WEATHERPROOF
EWG	ELECTRIC WATER COOLER	NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION	XFMR	TRANSFORMER
EX	EXISTING				
FAAP	FIRE ALARM ANNUNCIATOR PANEL	NFSS	NONFUSED SAFETY SWITCH		
FACP	FIRE ALARM CONTROL PANEL	NIC	NOT IN CONTRACT		
FLA	FULL LOAD AMPERES	NO	NUMBER		
FSS	FUSED SAFETY SWITCH	OC	ON CENTERS		
GFEP	GROUND FAULT EQUIPMENT PROTECTION	P	POLE, POLES		
GFI	GROUND FAULT INTERRUPTING	ø,PH	PHASE		
G	GROUND	PNL	PANEL		
GW	GROUND WIRE	PVC	POLYVINYL CHLORIDE		
H	HIGH	RAF	RETURN AIR FAN		

1. GENERAL NOTES ON THIS DRAWING SHALL APPLY TO ALL ELECTRICAL DRAWINGS ON THIS PROJECT. CAREFULLY READ ALL GENERAL NOTES PRIOR TO COMMENCEMENT OF WORK.	6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT ROUTING OF WIRING AND CONDUITS AND SHALL BE RESPONSIBLE FOR SIZING ALL BRANCH CIRCUIT WIRING TO LIMIT VOLTAGE DROP TO 3%. CONTRACTOR SHALL SIZE CONDUIT TO ACCOMMODATE WIRING PER NEC. 20 AMPERE CIRCUITS SHALL BE SIZED AS FOLLOWS:	8. ELECTRICAL BOXES IN FIRE RATED PARTITIONS SHALL NOT EXCEED 16 SQUARE INCHES IN AREA (IF 4"x4"). SHALL BE MADE OF STEEL, AND SHALL BE SUCH THAT THE CUMULATIVE AREA OF BOX "CUTOUTS" IN THE FIREWALL DOES NOT EXCEED 100 SQUARE INCHES PER 100 SQUARE FEET OF WALL AREA. ELECTRICAL BOXES ON OPPOSITE SIDES OF THE SAME FIREWALL SHALL BE SEPARATED BY A HORIZONTAL AND VERTICAL DISTANCE OF NOT LESS THAN 24 INCHES. THE ELECTRICAL CONTRACTOR SHALL MAKE MINOR ADJUSTMENTS, AS NECESSARY, TO ELECTRICAL BOX LOCATIONS TO ENSURE COMPLIANCE WITH THIS REQUIREMENT SINCE BOX LOCATIONS ARE TYPICALLY NOT DIMENSIONED ON THE DRAWINGS. CONSULT ARCHITECT IF CLARIFICATION IS REQUIRED.																																						
2. THE ELECTRICAL CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE DRAWINGS OF ALL OTHER TRADES ON THE PROJECT. ELECTRICAL OR SYSTEMS CONNECTIONS INDICATED ON ARCHITECTURAL, MECHANICAL, CIVIL, STRUCTURAL, KITCHEN AND ALL OTHER DRAWINGS WHICH ARE PART OF THIS PROJECT, SHALL BE CONSIDERED A PART OF THIS CONTRACT AND SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR AT NO EXTRA COST TO THE OWNER.	<table border="1"> <thead> <tr> <th colspan="4">20 AMPERE CIRCUITS</th> </tr> <tr> <th colspan="2">120 VOLT</th> <th colspan="2">277 VOLT</th> <th rowspan="2">MINIMUM CONDUIT SIZE</th> </tr> <tr> <th>WIRING LENGTH</th> <th>WIRE SIZE</th> <th>WIRING LENGTH</th> <th>WIRE SIZE</th> </tr> </thead> <tbody> <tr> <td>0' - 60'</td> <td>#12</td> <td>0' - 130'</td> <td>#12</td> <td>3/4"</td> </tr> <tr> <td>60' - 100'</td> <td>#10</td> <td>130' - 210'</td> <td>#10</td> <td>3/4"</td> </tr> <tr> <td>100' - 150'</td> <td>#8</td> <td>210' - 340'</td> <td>#8</td> <td>3/4"</td> </tr> <tr> <td>150' - 240'</td> <td>#6</td> <td>340' - 540'</td> <td>#6</td> <td>3/4"</td> </tr> <tr> <td>OVER 240'</td> <td>#4</td> <td>OVER 540'</td> <td>#4</td> <td>1"</td> </tr> </tbody> </table> NOTES: BRANCH CIRCUITS IN PANELBOARDS WITH 200% RATED NEUTRAL BUS, ALL DIMMED LIGHTING CIRCUITS, AND ALL CIRCUITS WITH ECM MOTORS SHALL HAVE DEDICATED NEUTRAL CONDUCTORS.	20 AMPERE CIRCUITS				120 VOLT		277 VOLT		MINIMUM CONDUIT SIZE	WIRING LENGTH	WIRE SIZE	WIRING LENGTH	WIRE SIZE	0' - 60'	#12	0' - 130'	#12	3/4"	60' - 100'	#10	130' - 210'	#10	3/4"	100' - 150'	#8	210' - 340'	#8	3/4"	150' - 240'	#6	340' - 540'	#6	3/4"	OVER 240'	#4	OVER 540'	#4	1"	9. ROPEPLY SUPPORT ALL EXISTING LV CABLEING, INCLUDING BUT NOT LIMITED TO VOICE, DATA, VIDEO, CONTROLS, FIRE ALARM, SECURITY, CCTV, ETC. ABOVE CEILINGS. REMOVE AFTER DEMOLITION ONCE WORK IS COMPLETED IN THAT PHASE.
20 AMPERE CIRCUITS																																								
120 VOLT		277 VOLT		MINIMUM CONDUIT SIZE																																				
WIRING LENGTH	WIRE SIZE	WIRING LENGTH	WIRE SIZE																																					
0' - 60'	#12	0' - 130'	#12	3/4"																																				
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150' - 240'	#6	340' - 540'	#6	3/4"																																				
OVER 240'	#4	OVER 540'	#4	1"																																				
4. PROVIDE PROPER WORKING CLEARANCE AT ALL ELECTRICAL EQUIPMENT IN ACCORDANCE WITH 2017 NATIONAL ELECTRICAL CODE ARTICLE 110-26 SPACES ABOVE ELECTRICAL EQUIPMENT. ALL SPACES SHALL BE CONSIDERED AS CONDITION 2 OR 3. MINIMUM WORKING SPACE WIDTH SHALL BE 30 INCHES OR MATCH THE WIDTH OF THE EQUIPMENT WHICH EVER IS GREATER. IN ALL CASES WORK SPACE SHALL PERMIT AT LEAST 90 DEGREE OPENING OF EQUIPMENT DOORS OR HINGED PANELS.		10. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE FOLLOWING EXISTING AND NEW SYSTEMS UNTIL ALL PHASES ARE COMPLETE: CLOSED-CIRCUIT CAMERA SYSTEM CARD ACCESS SYSTEM SECURITY DETECTION SYSTEM FIRE ALARM SYSTEM PUBLIC ADDRESS SYSTEM DATA NETWORK CATV SYSTEM CONTRACTOR MAY REQUEST DEMONSTRATION FROM OWNER, PRIOR TO CONSTRUCTION, THAT ALL SYSTEMS ARE FULLY FUNCTIONING WITHOUT ANY DEFICIENCIES. ANY DEFICIENCIES DURING OR AFTER CONSTRUCTION PERIOD SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR FOR REPAIR.																																						
5. COORDINATE MOUNTING HEIGHTS OF ALL DEVICES WITH ARCHITECTURAL PLANS, SECTIONS, ELEVATIONS AND CASEWORK DRAWINGS PRIOR TO ROUGH-IN.	7. WIRING AND CONDUIT SIZES INDICATED IN PANEL SCHEDULES ARE MINIMUM ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT WIRING AND CONDUIT SIZES. CONTRACTOR SHALL PROVIDE SPLICE BLOCKS AND REDUCING PINS AS REQUIRED TO TERMINATE WIRING AND MAKE FINAL CONNECTIONS.																																							

SYMBOL	DESCRIPTION
	NOTE: ALL RECEPTACLES SHALL BE TAMPER-RESISTANT U.O.N.
	SINGLE RECEPTACLE - M.H. 18" AFF U.O.N.
	DUPLEX, DOUBLE DUPLEX RECEPTACLE - M.H. 18" AFF U.O.N.
	DUPLEX, DOUBLE DUPLEX RECEPTACLE - M.H. 6" ABOVE COUNTER OR 42" AFF U.O.N., 48" AFF MAX.
	DUPLEX, DOUBLE DUPLEX RECEPTACLE - GFCI TYPE - M.H. 18" AFF U.O.N.
	DUPLEX, DOUBLE DUPLEX RECEPTACLE - WEATHER-RESISTANT GFCI TYPE WITH WEATHERPROOF WHILE-IN-USE COVER - M.H. 18" AFF U.O.N.
	DUPLEX, DOUBLE DUPLEX RECEPTACLE - GFCI TYPE - M.H. 6" ABOVE COUNTER OR 43" AFF U.O.N., 48" AFF MAX.
	ROOFTOP GFCI RECEPTACLE - WEATHER-RESISTANT GFCI DUPLEX RECEPTACLE IN FS BOX ON CONDUIT STUB WITH WEATHERPROOF WHILE-IN-USE COVER - SEE DETAILS FOR ADDITIONAL INFORMATION
	DUPLEX, DOUBLE DUPLEX RECEPTACLE - USB CHARGING OUTLET TYPE - M.H. 18" AFF U.O.N.
	DUPLEX, DOUBLE DUPLEX RECEPTACLE - DUAL-CONTROLLED TYPE - M.H. 18" AFF U.O.N.
	SPECIAL PURPOSE RECEPTACLE OUTLET - NEMA CONFIGURATION AS NOTED - M.H. 18" AFF U.O.N.
	DISTRIBUTION PANELBOARD - SURFACE-MOUNTED, TOP 6-6" AFF
	PANELBOARD - SURFACE-MOUNTED, FLUSH-MOUNTED, TOP 5-6" AFF
	TRANSFORMER - REFER TO DRY TYPE TRANSFORMER SCHEDULE
	TRANSFORMER - PAD-MOUNTED
	ENCLOSURE OR CABINET AS NOTED
	ENCLOSED CIRCUIT BREAKER IN NEMA 1 ENCLOSURE U.O.N.; MOUNT 5'-6" AFF, SIZE AS NOTED
	SAFETY DISCONNECT SWITCH - FUSED, NON-FUSED IN NEMA 1 ENCLOSURE U.O.N. - MOUNT TOP 48" AFF U.O.N.; RATING AND FUSING AS NOTED
	MAGNETIC MOTOR CONTROLLER; FVNR WITH CONTROL XFMR, RED AND GREEN INDICATING LIGHTS, HOA SELECTOR SWITCH IN NEMA 1 ENCLOSURE U.O.N.; MOUNT 5'-6" AFF TO TOP U.O.N.
	COMBINATION MAGNETIC MOTOR CONTROLLER; FVNR WITH CONTROL XFMR, RED AND GREEN INDICATING LIGHTS, HOA SELECTOR SWITCH AND DISCONNECT SWITCH IN NEMA 1 ENCLOSURE U.O.N.; MOUNT 5'-6" AFF TO TOP U.O.N.
	TOGGLE SWITCH - SINGLE POLE, TWO POLE - HORSEPOWER RATED, WITH LOCKABLE HANDLE GUARD COVERPLATE - M.H. 42" AFF TO BOTTOM, 48" AFF TO TOP UON
	MANUAL MOTOR CONTROLLER - SINGLE POLE, WITH H.O.A. SWITCH AND LOCKABLE HANDLE GUARD COVERPLATE IN NEMA 1 ENCLOSURE U.O.N. - M.H. 48" AFF TO TOP UON
	MANUAL MOTOR SWITCH - TWO POLE, THREE POLE - 30A, 600VAC, WITH LOCKABLE HANDLE GUARD COVERPLATE - M.H. 48" AFF TO TOP UON
	TO GROUND
	EPO PUSH-BUTTON - M.H. 48" AFF TO TOP
	SOLENOID VALVE
	VARIABLE FREQUENCY DRIVE - FURNISEHD UNDER DIVISION 23, INSTALLED UNDER DIVISION 26
	AUTOMATIC TEMPERATURE CONTROL PANEL
	SURGE PROTECTION DEVICE
	SURFACE RACEWAY - HORIZONTAL RUN - M.H. 18" AFF UON
	SURFACE RACEWAY - VERTICAL DROP
	SURFACE RACEWAY - HORIZONTAL RUN WITH VERTICAL DROP - M.H. 18" AFF UON
	SURFACE RACEWAY WITH WIRING DEVICES - M.H. 18" A.F.F. U.O.N.
	MOTOR; AS NOTED
	CONTACTOR IN NEMA 1 ENCLOSURE, UON.

SYMBOL	DESCRIPTION
	LIGHTING FIXTURE - 1'x4' - UPPER-CASE LETTER INDICATES FIXTURE TYPE, LOWER-CASE LETTER INDICATES SWITCH DESIGNATION (WHERE INDICATED)
	LIGHTING FIXTURE - 2'x4' - UPPER-CASE LETTER INDICATES FIXTURE TYPE, LOWER-CASE LETTER INDICATES SWITCH DESIGNATION (WHERE INDICATED)
	LIGHTING FIXTURE - 2'x2' - UPPER-CASE LETTER INDICATES FIXTURE TYPE, LOWER-CASE LETTER INDICATES SWITCH DESIGNATION (WHERE INDICATED)
	STRIP LIGHTING FIXTURE - UPPER-CASE LETTER INDICATES FIXTURE TYPE, LOWER-CASE LETTER INDICATES SWITCH DESIGNATION (WHERE INDICATED)
	WALL SCONCE LIGHTING FIXTURE - NORMAL POWER - UPPER-CASE LETTER INDICATES FIXTURE TYPE, LOWER-CASE LETTER INDICATES SWITCH LEG (WHERE INDICATED)
	DOWNLIGHT LIGHTING FIXTURE - NORMAL POWER - UPPER-CASE LETTER INDICATES FIXTURE TYPE, LOWER-CASE LETTER INDICATES SWITCH LEG (WHERE INDICATED)
	INDICATES LIGHTING FIXTURE WITH INTEGRAL EMERGENCY TRANSFER RELAY. MAKE CONNECTION TO EMERGENCY CIRCUIT.
	EMERGENCY LIGHTING UNIT - INTEGRAL BATTERY; REMOTE HEAD - M.H. 8'-0" AFF U.O.N.
	EXIT SIGN - CEILING-MOUNTED, WALL-MOUNTED; SHADING INDICATES ILLUMINATED FACE, DIRECTIONAL ARROWS AS INDICATED/REQUIRED - EXIT SIGNS SHALL GENUINELY BE CENTERED OVER THE DOOR OPENING
	EXIT SIGN - CEILING-MOUNTED, WALL-MOUNTED; WITH INTEGRAL EMERGENCY LIGHTING HEADS
	LINE VOLTAGE TOGGLE SWITCH - SINGLE POLE, 3-WAY, 4-WAY; SUBSCRIPT INDICATES FIXTURES/OUTLETS CONTROLLED - M.H. 48" TO TOP.
	LINE VOLTAGE PILOT LIGHT TOGGLE SWITCH, LIT WHEN ON; M.H. 48" AFF TO TOP
	LINE VOLTAGE LIGHTED TIME SWITCH; PUSHBUTTON STYLE; M.H. 48" AFF TO TOP
	LINE VOLTAGE KEY SWITCH; M.H. 48" AFF TO TOP
	LOW VOLTAGE SWITCH; SUBSCRIPT INDICATES FIXTURES/OUTLETS CONTROLLED. PROVIDE NUMBER OF SWITCHES TO MATCH SUBSCRIPT. M.H. 48" AFF TO TOP. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
	LOW VOLTAGE MAINTAINED KEY SWITCH; M.H. 48" AFF TO TOP
	OCCUPANCY SENSOR, LOW VOLTAGE DIGITAL W/ CONTROLLER, DUAL TECHNOLOGY, CEILING, WALL MOUNT 10'-0" AFF UON; SUBSCRIPT F- CORNER COVERAGE. LOWER-CASE SUBSCRIPT INDICATES FIXTURES CONTROLLED
	VACANCY SENSOR, LOW VOLTAGE DIGITAL W/ CONTROLLER, DUAL TECHNOLOGY, CEILING, WALL MOUNT 10'-0" AFF UON; SUBSCRIPT F- CORNER COVERAGE. LOWER-CASE SUBSCRIPT INDICATES FIXTURES CONTROLLED
	OCCUPANCY SENSOR, LINE VOLTAGE, DUAL TECHNOLOGY - SINGLE LOAD, WALL SWITCH TYPE; M.H. 48" AFF TO TOP
	VACANCY SENSOR, LINE VOLTAGE, DUAL TECHNOLOGY - SINGLE LOAD, WALL SWITCH TYPE; M.H. 48" AFF TO TOP
	EMERGENCY TRANSFER RELAY; MOUNT ABOVE CEILING IN NEMA 1 ENCLOSURE
	PHOTOELECTRIC DAYLIGHT HARVESTING DIMMING CONTROL SENSOR; CEILING, WALL MOUNT M.H.10'-0" UON
	TIME CLOCK - SEE TIME CLOCK SCHEDULE

SYMBOL	DESCRIPTION
	BRANCH CIRCUIT CONDUIT AND WIRING CONCEALED IN CEILING OR WALL SPACE, OR SURFACE MOUNTED WHERE NO CEILING OR WALL SPACE EXISTS; REFER TO PANEL SCHEDULES FOR MINIMUM WIRE AND CONDUIT SIZES
	BRANCH CIRCUIT CONDUIT AND WIRING IN SLAB, UNDER FLOOR OR UNDERGROUND; REFER TO PANEL SCHEDULES FOR MINIMUM WIRE AND CONDUIT SIZES
	4" CONDUIT SLEEVE THROUGH WALL, LOCATED ABOVE CEILING. PROVIDE FIRE STOP AS REQUIRED.
L1A1-1	HOMERUN TO PANELBOARD - REFER TO PANEL SCHEDULES FOR MINIMUM WIRE AND CONDUIT SIZES. (NOTE: CONDUCTOR SIZE DEPENDENT ON HOMERUN LENGTH)
	EQUIPMENT CONNECTION
	CONDUIT UP
	CONDUIT DOWN
	JUNCTION BOX; CEILING, WALL MOUNTED
	ENCLOSURE OR CABINET AS NOTED
	DRAWING NOTE - NEW WORK
#/E###	DETAIL REFERENCE: DETAIL NUMBER/DRAWING NUMBER
	ITEMS SHOWN DASHED/HEAVY ARE TO BE REMOVED
	ITEMS SHOWN SOLID/HEAVY ARE NEW WORK
	ITEMS SHOWN SOLID/LIGHT ARE EXISTING TO REMAIN
	ITEMS SHOWN DASHED/HEAVY WITH RL SUBSCRIPT ARE TO BE REMOVED AND RELOCATED. EXTEND ASSOCIATED CONDUIT AND WIRING TO NEW LOCATION AS REQUIRED.
#	CIRCUIT NUMBERS INDICATED ADJACENT TO WIRING DEVICES AND FIXTURES INDICATE CIRCUIT DESIGNATIONS. EXTEND HOMERUNS TO DEVICES WITH SAME CIRCUIT DESIGNATIONS.
	PART PLAN DESIGNATION
	SECTION DESIGNATION

SYMBOL	DESCRIPTION
	PROJECTOR HIGH DROP - MOUNT HIGH ON WALL ADJACENT TO WALL MOUNT PROJECTOR BRACKET-. REFER TO DETAILS FOR CONFIGURATION
	PROJECTOR LOW DROP; - M.H. 18" AFF U.O.N. - REFER TO DETAILS FOR CONFIGURATION
	PROJECTOR DROP; SEE DETAILS FOR CONFIGURATION - MOUNT IN 2X2 DROP CEILING PLATE
	VIDEO DROP - MOUNT TO SUIT MONITOR - SEE DETAILS FOR CONFIGURATION
	VIDEO LOW DROP - M.H. 70" AFF U.O.N. - SEE DETAILS FOR CONFIGURATION
	VIDEO LOW DROP - M.H. 18" AFF U.O.N. - SEE DETAILS FOR CONFIGURATION
	DIGITAL SIGNAGE DROP - M.H. 96" AFF U.O.N. - SEE DETAILS FOR CONFIGURATION
	WIRELESS ACCESS POINT OUTLET - CEILING MOUNTED - REFER TO DETAILS FOR CONFIGURATION
	DATA DROP - M.H. 18" A.F.F. U.O.N. - REFER TO DETAILS FOR CONFIGURATION
	ANALOG TELEPHONE OUTLET - M.H. 18" A.F.F. U.O.N. - REFER TO DETAILS FOR CONFIGURATION
	DATA/TELEPHONE OUTLET - M.H. 18" A.F.F. U.O.N. - REFER TO DETAILS FOR CONFIGURATION
	SURFACE RACEWAY WITH WIRING DEVICES - M.H. 18" A.F.F. U.O.N.
	PUBLIC ADDRESS SYSTEM SPEAKER - CEILING-MOUNTED, WALL-MOUNTED 96" AFF U.O.N. - SUBSCRIPT H DENOTES HORN TYPE
	LOCAL SOUND SYSTEM SPEAKER - CEILING-MOUNTED, WALL-MOUNTED 96" AFF U.O.N.
	DIGITAL CLOCK - WALL MOUNTED - SINGLE FACE, DOUBLE FACE - M.H. 12" BELOW CEILING U.O.N.
	24" - 24V ANALOG CLOCK - M.H. 12" BELOW CEILING U.O.N.
	CONDUIT SLEEVE THRU WALL PARTITION ABOVE FINISHED CEILING WHERE REQUIRED - 2" SLEEVE AT CLASSROOMS WITH PULL CORD AT ALL OTHER SPACES - 1" SLEEVE WITH A PULL CORD U.O.N.

SYMBOL	DESCRIPTION
	VIDEO SURVEILLANCE CAMERA - CEILING-MOUNTED, WALL-MOUNTED AND CORNER MOUNTED 10'-0" AFF TO BOTTOM OF DEVICE IF EXTERIOR, 7'-6" AFF TO BOTTOM OF DEVICE IF INTERIOR U.O.N.; WP DENOTES WEATHERPROOF, PTZ DENOTES PAN/TILT/ZOOM
	ACCESS CONTROL SYSTEM - CARD READER - M.H. 48" AFF TO TOP
	ACCESS CONTROL SYSTEM - DOOR LOCK
	INTRUSION DETECTION SYSTEM - MOTION DETECTOR - CEILING MOUNTED, WALL MOUNTED 7'-6" AFF U.O.N.

CAREFULLY REMOVE BALLASTS FROM FIRES THAT HAVE BEEN DISCONNECTED FROM POWER SOURCE. CUT ELECTRICAL WIRING TO BALLAST AS CLOSE TO BALLAST AS POSSIBLE. HUEA VACUUM AND WEET WIPE BALLASTS. PACKAGE IN US DOT APPROVED TYPE 1/PC OR TYPE 1/7H BARRELS. FILL BARRELS TO 2/3 CAPACITY ONLY WITH BALLASTS. INSTALL GASKET ON LID, APPLY LOCK RING AND SEAL APPLY EPA-APPROVED PCB LABELS TO THE BARRELS, INCLUDING THE DATE INDICATING WHEN WASTE WAS FIRST ADDED TO BARREL. PLACE THE BALLASTS IN STORAGE LOCATED WITHIN A BUILDING DESIGNATED BY THE OWNER'S PROJECT RESIDENT. THE CONTRACTOR SHALL PROVIDE A RECORD OF THE LOCATION OF EACH BARREL. THE CONTRACTOR SHALL PROVIDE A RECORD OF THE BARREL STORAGE AREA WITH SIGNS, MARKS AND LINES PER CODE REGULATIONS. THE CONTRACTOR SHALL PROVIDE IN WRITING A TOTAL BALLAST COUNT, OR THEIR TOTAL WEIGHT BY BARREL, INCLUDING THE STORAGE LOCATION. THE BALLASTS ARE NOT TO BE REMOVED FROM THE WORK SITE BY THE CONTRACTOR.

SYMBOL	DESCRIPTION
	FIRE ALARM SYSTEM - CONTROL PANEL - SURFACE-MOUNTED, FLUSH-MOUNTED - TOP 5'-6" AFF
	FIRE ALARM SYSTEM - ANNUNCIATOR PANEL - SURFACE-MOUNTED, FLUSH-MOUNTED - TOP 5'-6" AFF
	FIRE ALARM SYSTEM - NAC PANEL - SURFACE-MOUNTED, FLUSH-MOUNTED - TOP 5'-6" AFF
	FIRE ALARM - MANUAL PULL STATION - M.H. 42" TO BOTTOM, 48" TO TOP
	FIRE ALARM SYSTEM - COMBINATION SPEAKER/FLASHING STROBE LIGHT - WALL-MOUNTED 7'-6" AFF OR 6" FROM CEILING, WHICHEVER IS LOWER, CEILING MOUNTED, NUMBER INDICATES CANDELLA RATING. IF NO CANDELLA RATING IS INDICATED PROVIDE 110CD
	FIRE ALARM SYSTEM - FLASHING STROBE LIGHT - WALL-MOUNTED 7'-6" AFF OR 6" FROM CEILING, WHICHEVER IS LOWER, CEILING MOUNTED, NUMBER INDICATES CANDELLA RATING. IF NO CANDELLA RATING IS INDICATED PROVIDE 110CD
	FIRE ALARM SYSTEM - SPEAKER - WALL-MOUNTED 7'-6" AFF OR 6" FROM CEILING, WHICHEVER IS LOWER, CEILING MOUNTED
	FIRE ALARM SYSTEM - SMOKE DETECTOR - CEILING MOUNTED, WALL MOUNTED 7'-6" AFF U.O.N.
	FIRE ALARM SYSTEM - SMOKE DETECTOR FOR ELEVATOR RECALL - CEILING MOUNTED
	FIRE ALARM SYSTEM - HEAT DETECTOR - CEILING MOUNTED, WALL MOUNTED 7'-6" AFF U.O.N.
	FIRE ALARM SYSTEM - CARBON MONOXIDE DETECTOR - CEILING MOUNTED, WALL MOUNTED 18" AFF U.O.N.
	FIRE ALARM SYSTEM - FLOW SWITCH
	FIRE ALARM SYSTEM - TAMPER SWITCH
	FIRE ALARM SYSTEM - DUCT DETECTOR - STANDARD, WEATHERPROOF
	FIRE ALARM SYSTEM - DUCT DETECTOR REMOTE TEST STATION - M.H. 42" AFF TO BOTTOM, 48" AFF TO TOP
	FIRE ALARM SYSTEM - ADDRESSIBLE MONITOR MODULE
	FIRE ALARM SYSTEM - ADDRESSIBLE CONTROL MODULE
	SMOKE DAMPER OR COMBINATION FIRE SMOKE DAMPER; PROVIDE MONITOR MODULE FOR SMOKE DETECTOR PROVIDED WITH DAMPER AND 120V-24V CONTROL POWER TRANSFORMER WITH PRIMARY AND SECONDARY FUSING AS REQUIRED
	FIRE ALARM SYSTEM - MAGNETIC DOOR LOCK - PROVIDED UNDER DIVISION 08, CONNECTED UNDER DIVISION 28 - INTERLOCK WITH FACP TO RELEASE LOCKS DURING FIRE ALARM - FIELD COORDINATE MOUNTING HEIGHT WITH DOORS
	FIRE ALARM SYSTEM - HORN - WALL-MOUNTED 7'-6" AFF OR 6" FROM CEILING, WHICHEVER IS LOWER
	EMERGENCY COMMUNICATIONS SYSTEM - REMOTE MICROPHONE - M.H. 42" AFF TO BOTTOM, 48" AFF TO TOP

1. NOT ALL ITEMS WITHIN LEGEND(S) MAY BE UTILIZED ON THIS PROJECT.

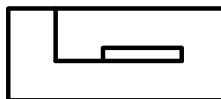
REVISIONS		
NO.	DATE	DESCRIPTION
1	3/7/24	ADDENDUM NO. 1

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Gipe Associates Inc.
Consulting Engineers

1220 East Joppa Road
Suite 223
Towson, MD. 21286
Phone: 410.832.2420
Fax: 410.832.2418

8719 Brooke Drive
Suite 2-5
Easton, Maryland 21601
Phone: 410.822.8688
Fax: 410.822.6306



WO# 23043

PROJECT MANAGER	EMP
DESIGNER	EMP
DATE	2/26/2024

ELECTRICAL LEGEND, ABBREVIATIONS & NOTES

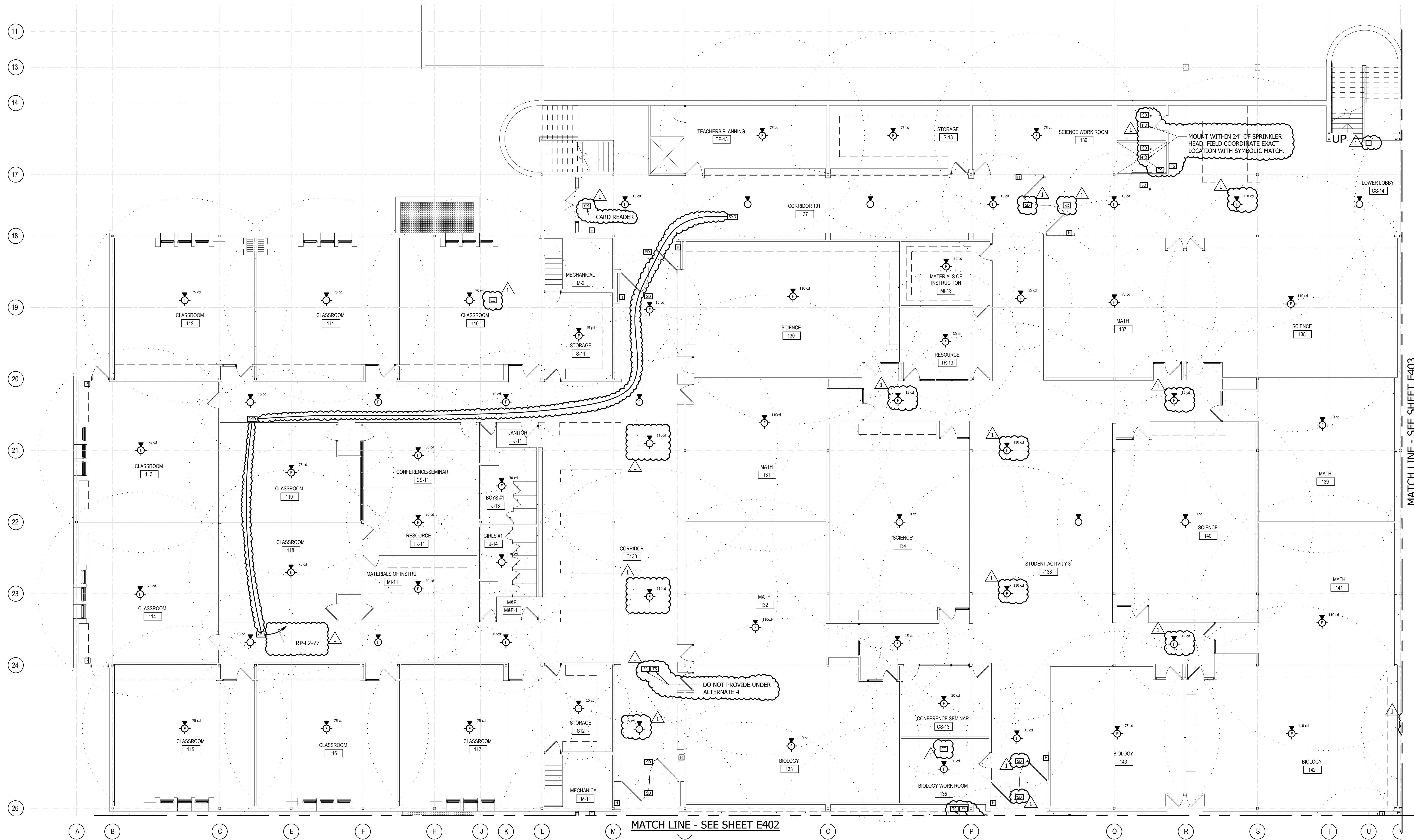
HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL
HVAC SYSTEMIC RENOVATIONS
111 MT ROYAL AVE. ABERDEEN, MARYLAND 21001.

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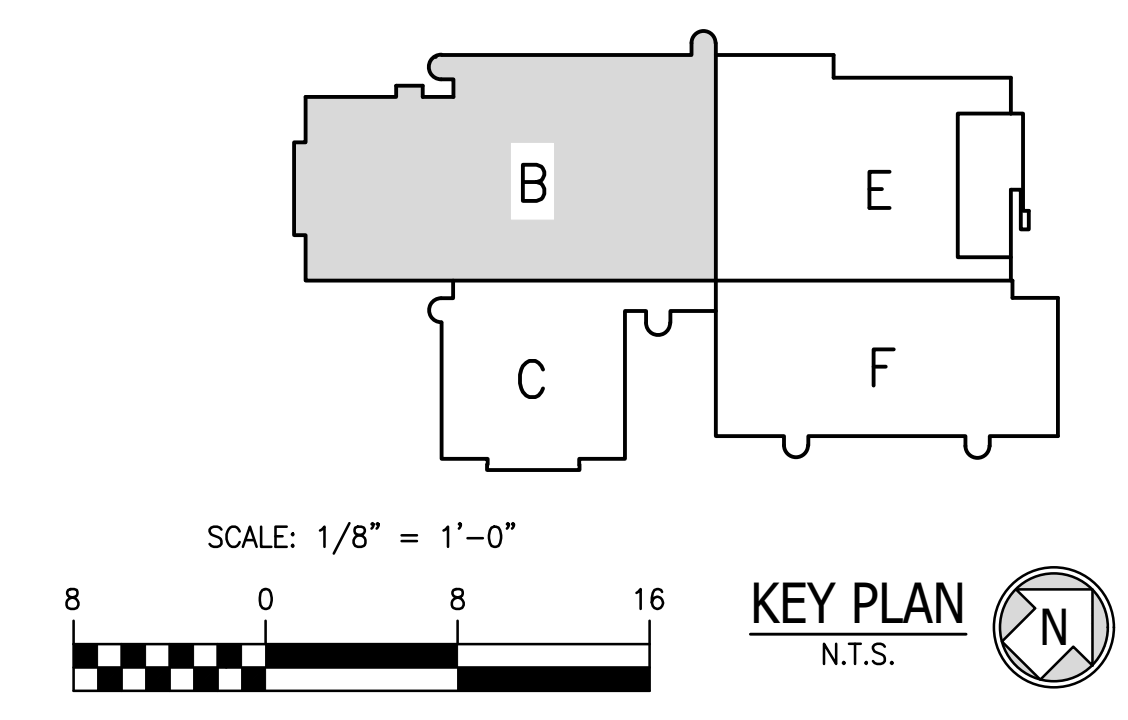
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PSC-12.006





1
E401 LOWER LEVEL AREA B - FIRE ALARM
SCALE: 1/8" = 1'-0"



REVISIONS	NO.	DATE	DESCRIPTION
	1	3/7/24	ADDENDUM NO. 1

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Gipe Associates Inc.
Consulting Engineers
6710 Regale Drive
Suite 205
Aberdeen, MD 21011
Phone: 410.832.2418
Fax: 410.832.6396

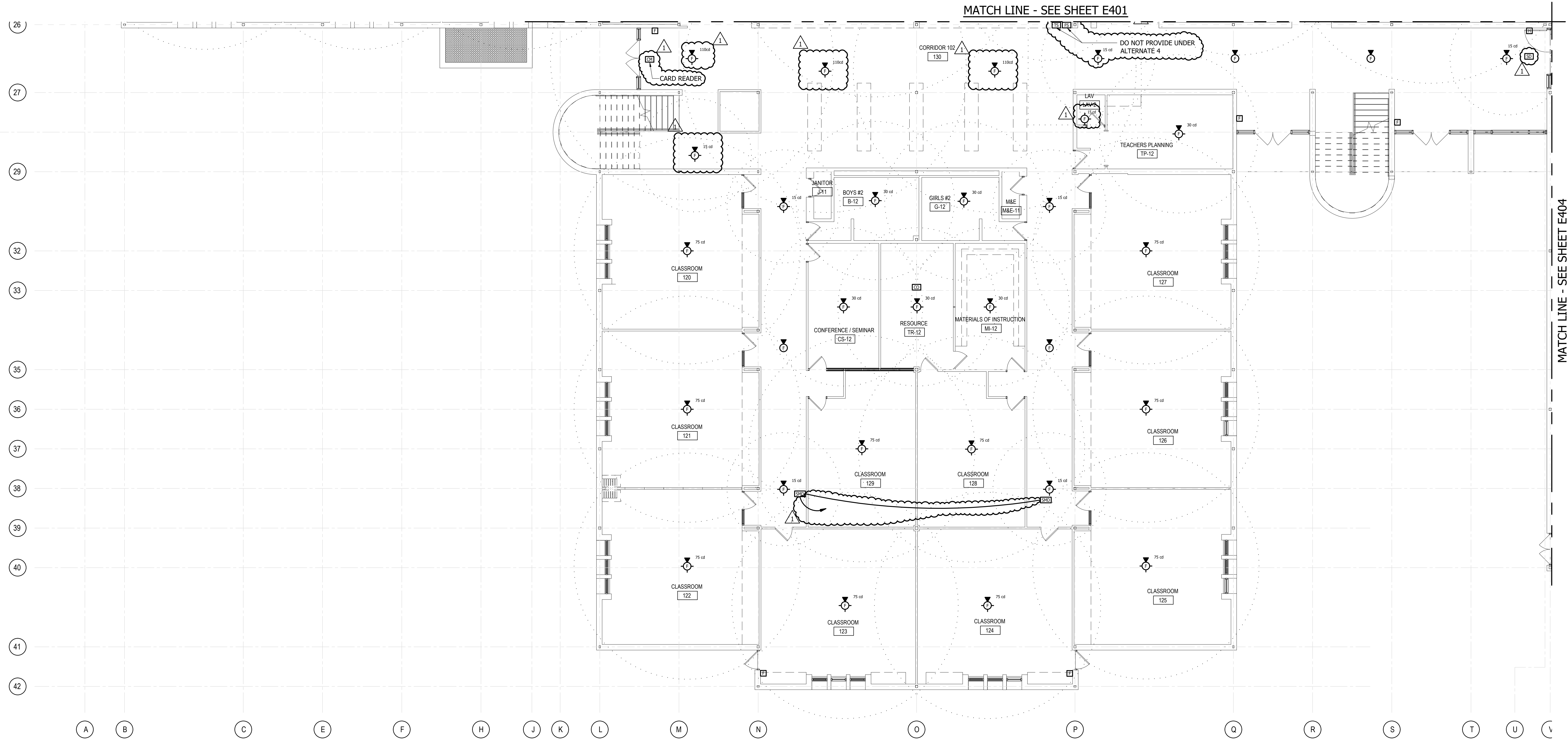
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PROJECT MANAGER: EMP
DESIGNER: EMP
DATE: 2/26/2024

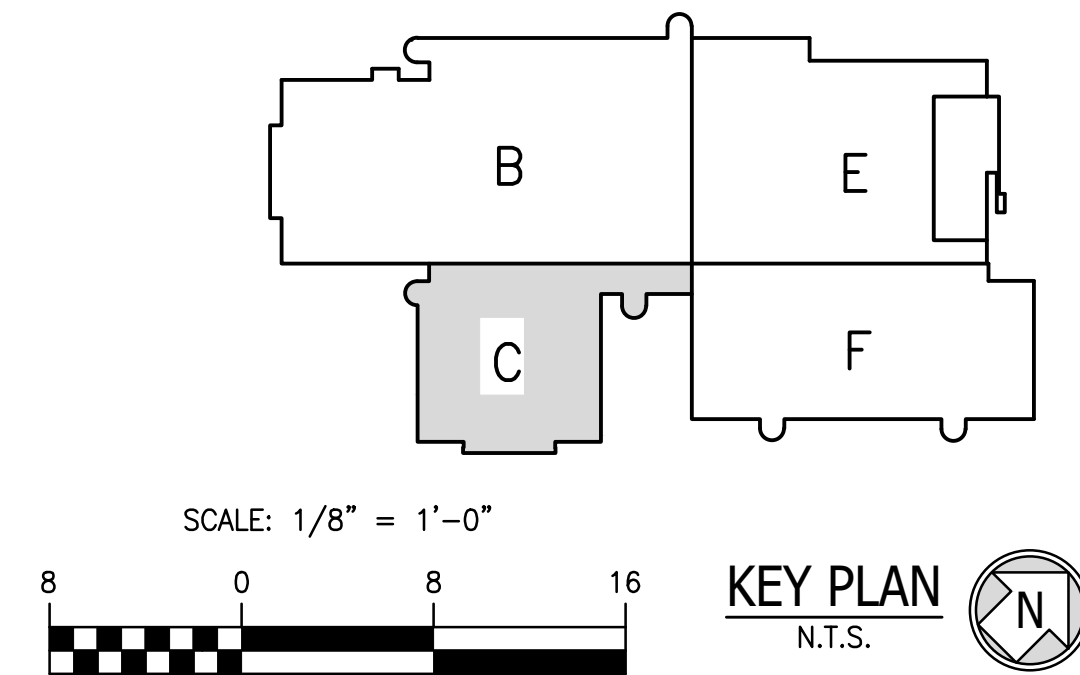
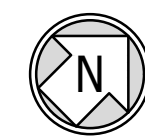
LOWER LEVEL AREA B - FIRE ALARM
HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL
HVAC SYSTEMIC RENOVATIONS
111 MT ROYAL AVE, ABERDEEN, MARYLAND 21001.

BID SUBMISSION

E401
PSC-12.006



1
E402 LOWER LEVEL AREA C - FIRE ALARM
SCALE: 1/8" = 1'-0"



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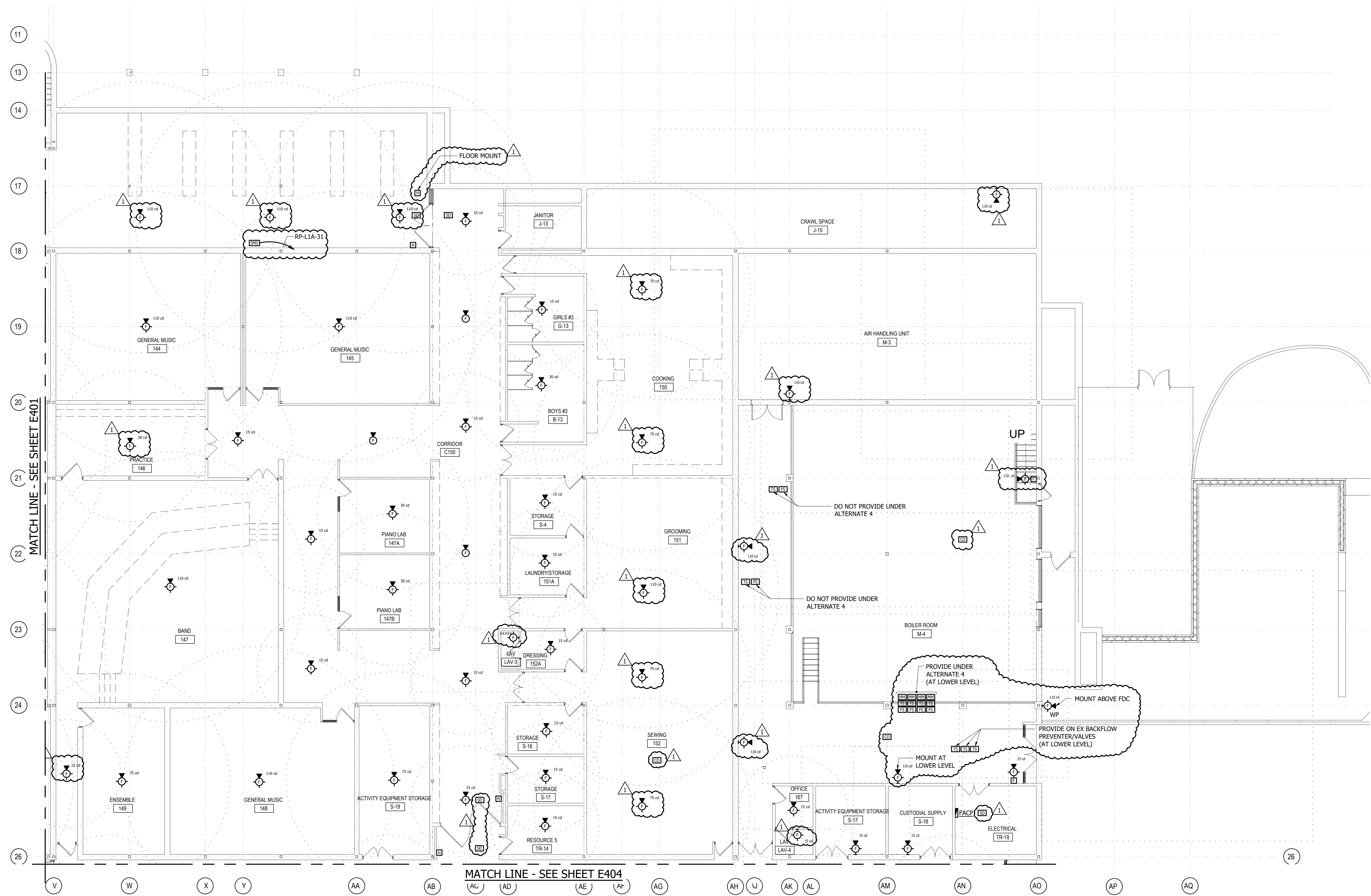
Gipe Associates Inc.
Consulting Engineers
6710 Regatta Drive
Suite 2-5
Aberdeen, MD 21001
Phone: 410.822.6588
Fax: 410.822.6596

WO# 23043
PROJECT MANAGER EMP
DESIGNER EMP
DATE 2/26/2024

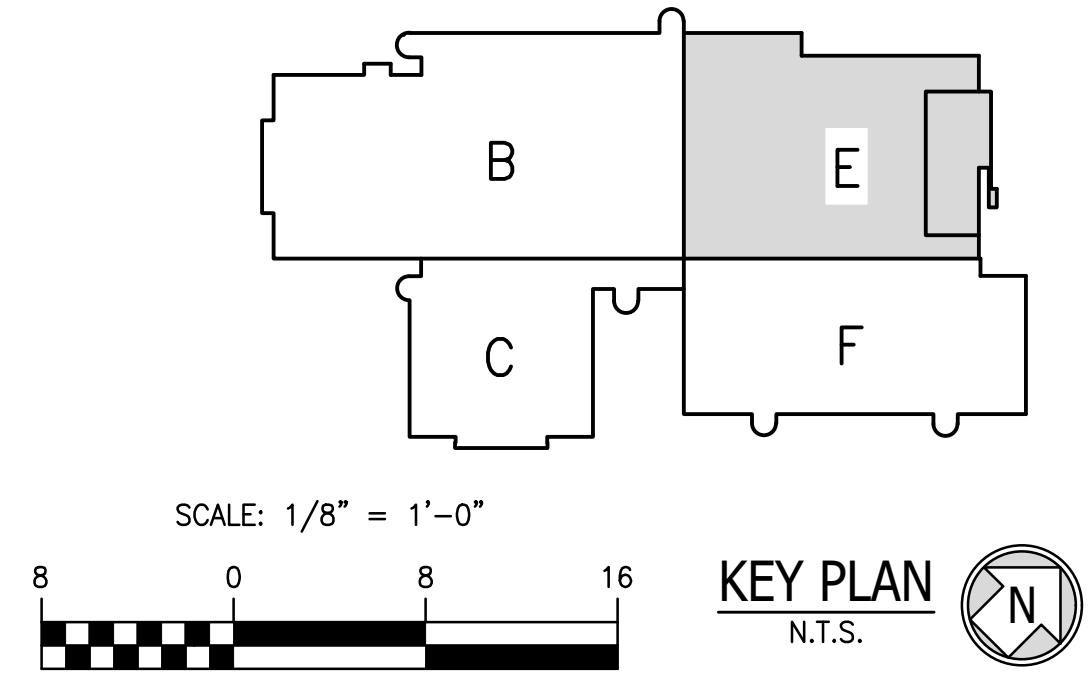
LOWER LEVEL AREA C - FIRE ALARM
HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL
HVAC SYSTEMIC RENOVATIONS
111 MT ROYAL AVE, ABERDEEN, MARYLAND 21001.

BID SUBMISSION

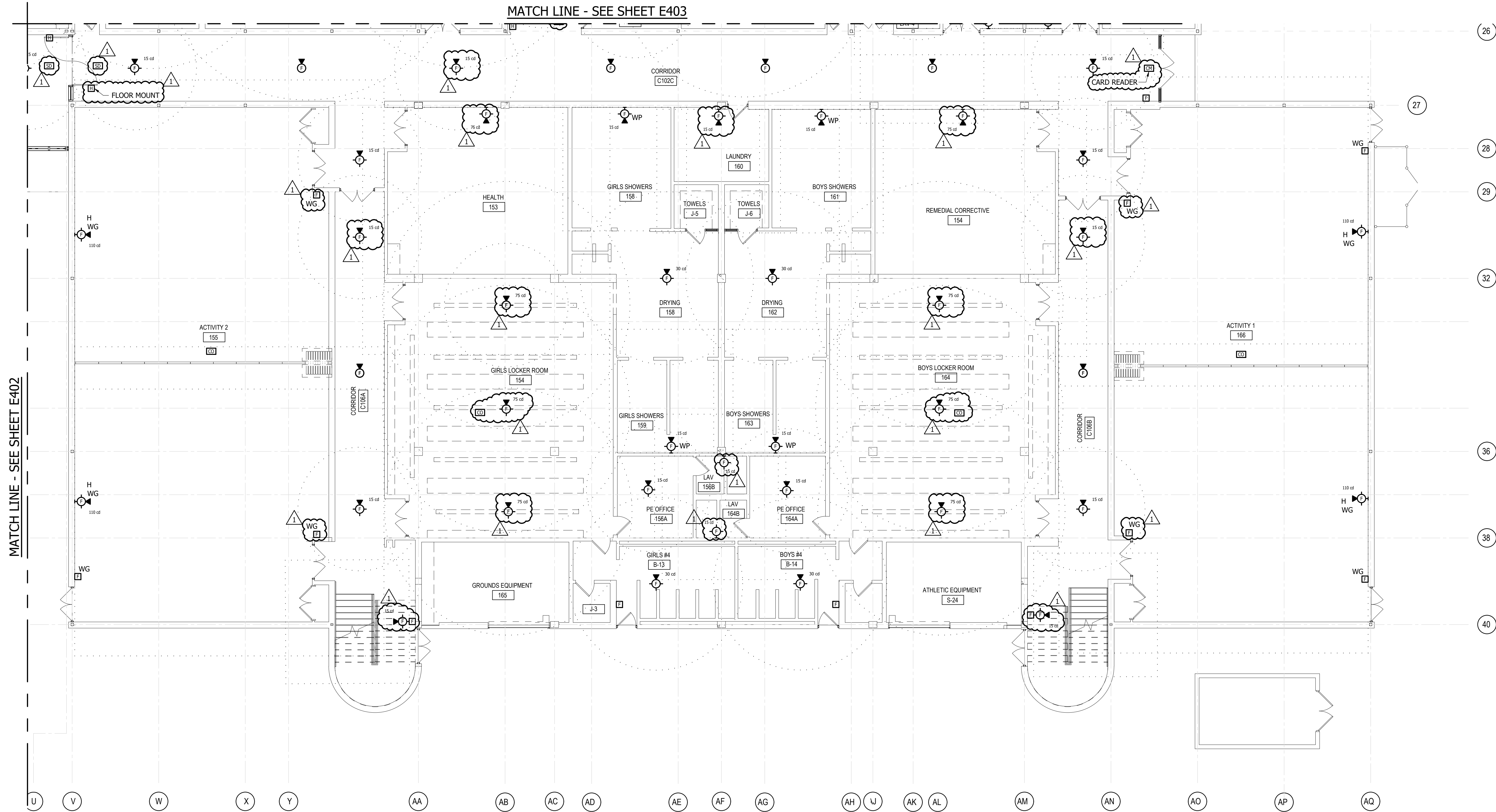
E402
PSC-12.006



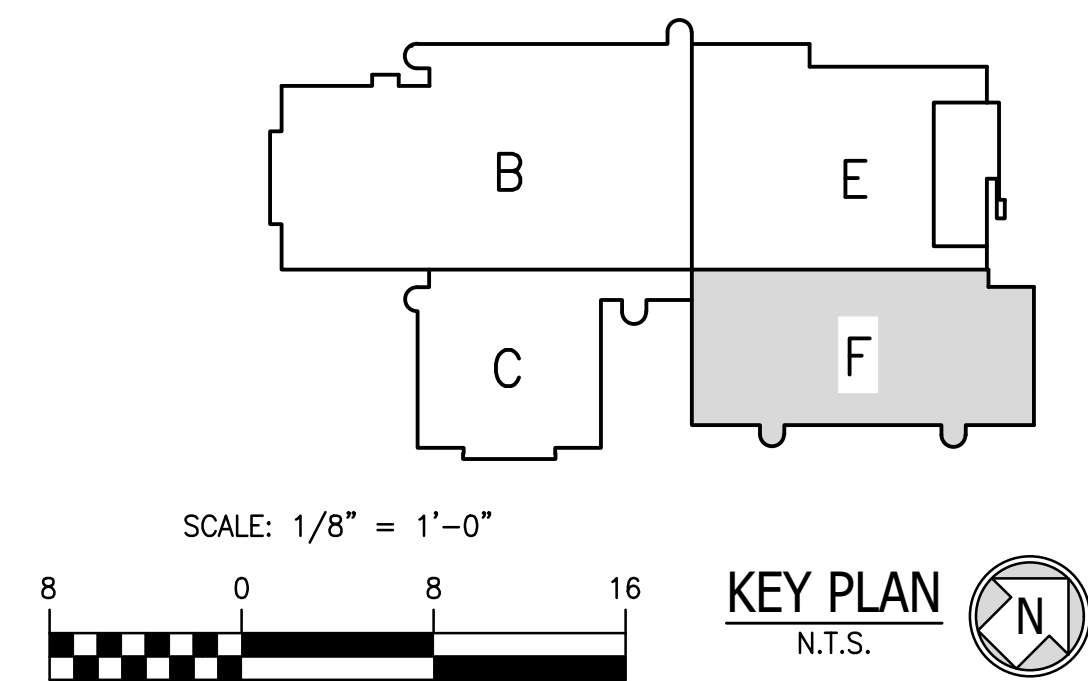
1 LOWER LEVEL AREA E - FIRE ALARM
E403 SCALE: 1/8" = 1'-0"



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WO# 23043			
PROJECT MANAGER EMP			
DESIGNER EMP			
DATE 2/26/2024			
LOWER LEVEL AREA E - FIRE ALARM HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL HVAC SYSTEMIC RENOVATIONS 111 MT ROYAL AVE, ABERDEEN, MARYLAND 21001.			
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E403 PSC-12.006			



1
E404 LOWER LEVEL AREA F - FIRE ALARM
SCALE: 1/8" = 1'-0"



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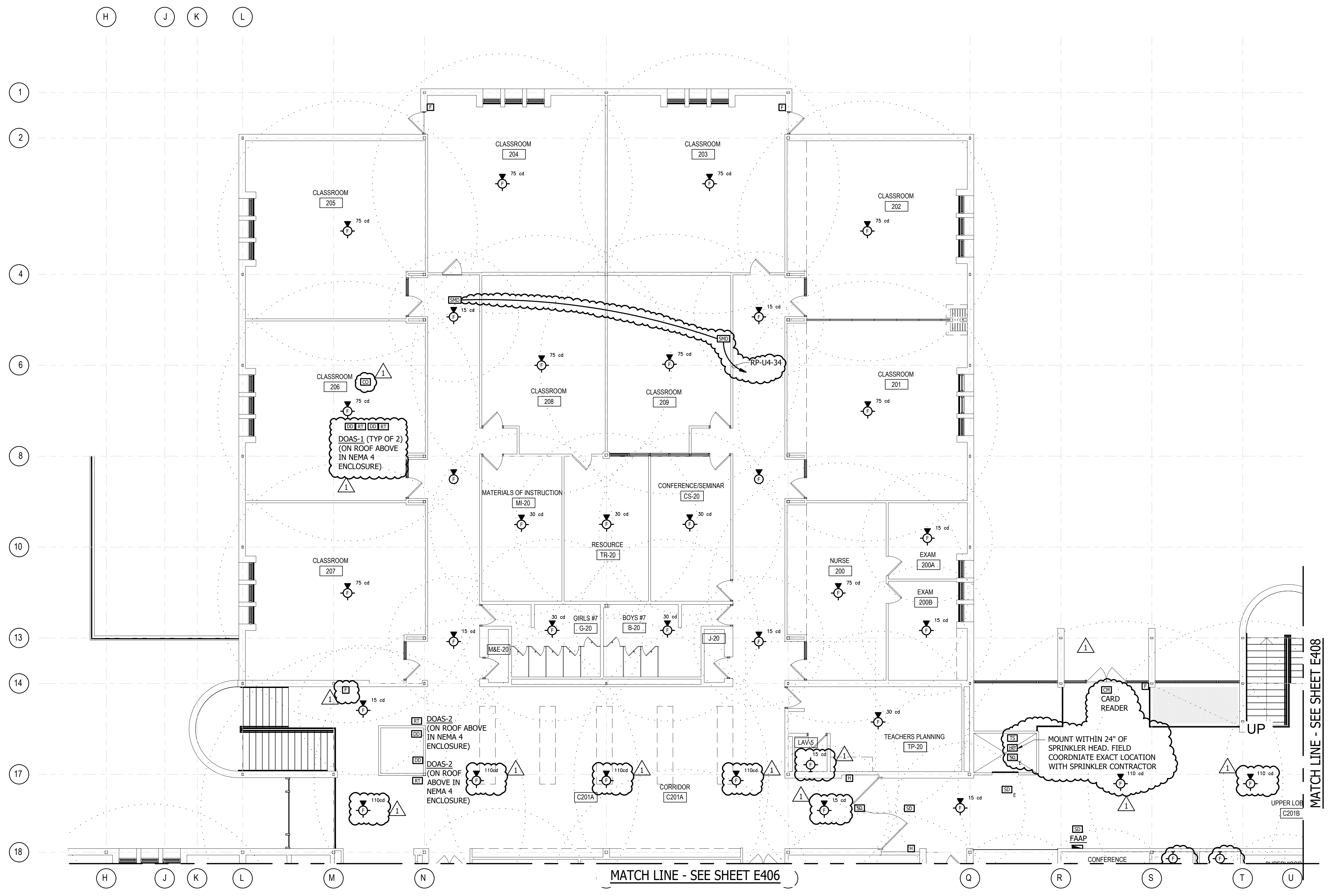
Gipe Associates Inc.
Consulting Engineers
5210 Regatta Drive
Suite 2-5
Aberdeen, MD 21001
Phone: 410.822.6580
Fax: 410.822.6396

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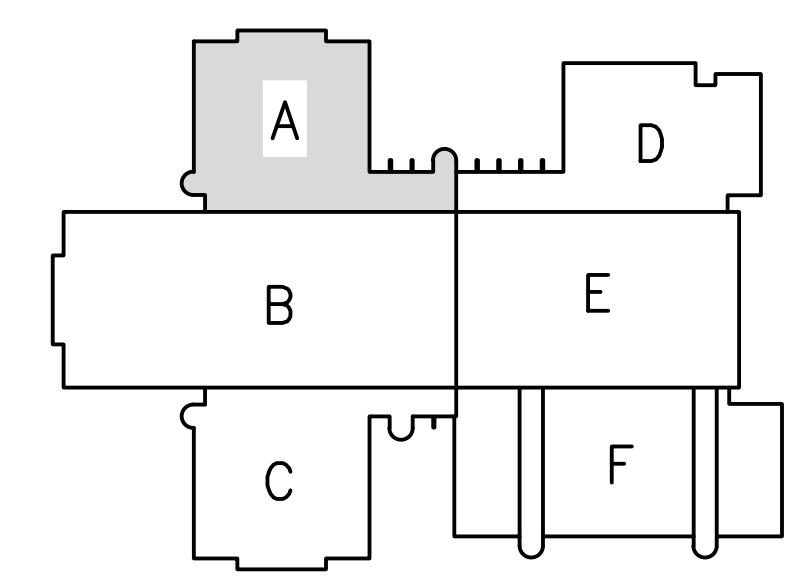
LOWER LEVEL AREA F - FIRE ALARM
HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL
HVAC SYSTEMIC RENOVATIONS
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E404
PSC-12.006



1 UPPER LEVEL AREA A - FIRE ALARM
E405 SCALE: 1/8" = 1'-0"



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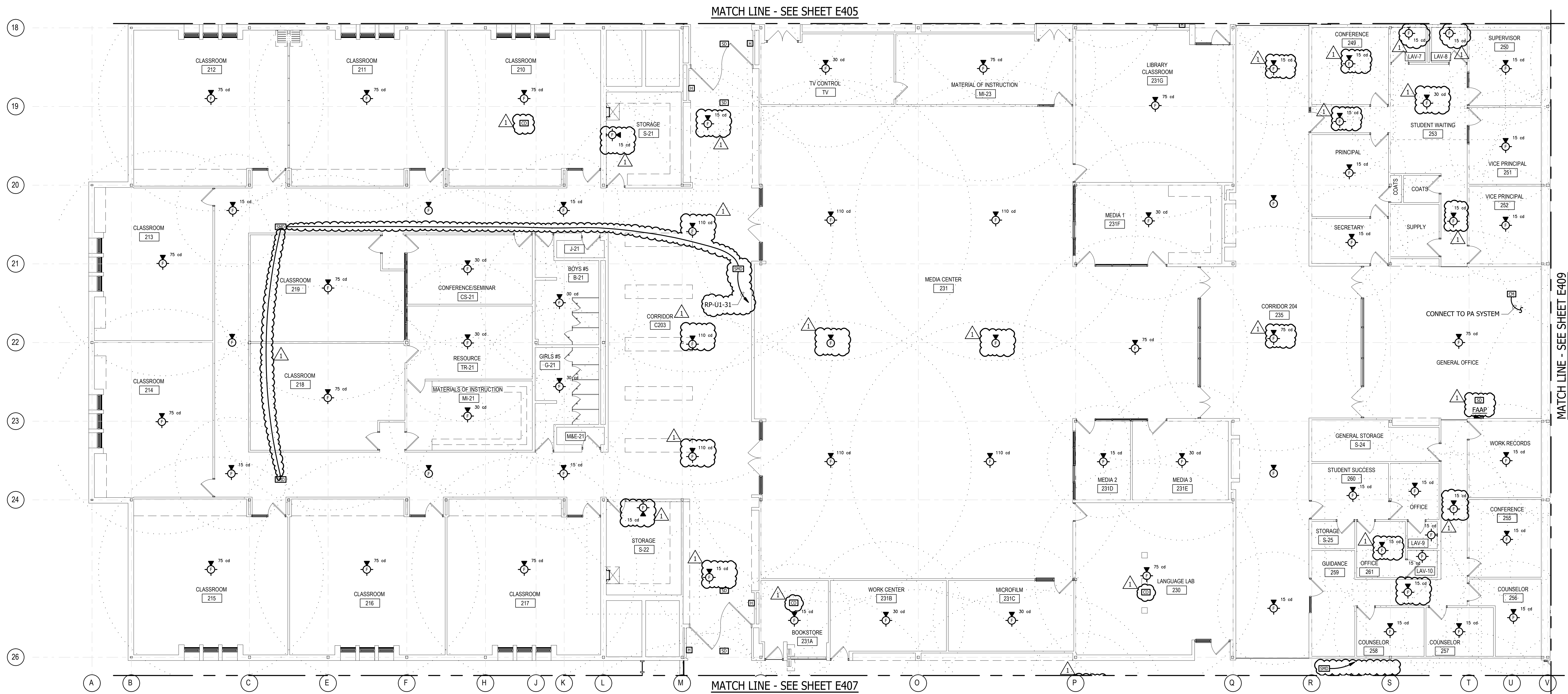
Gipe Associates Inc.
Consulting Engineers
6710 Regatta Drive
Suite 2-5
Aberdeen, MD 21001
Phone: 410.822.2418
Fax: 410.822.2418

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UPPER LEVEL AREA A - FIRE ALARM
HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL
HVAC SYSTEMIC RENOVATIONS
111 MT ROYAL AVE, ABERDEEN, MARYLAND 21001.

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E405
PSC-12.006

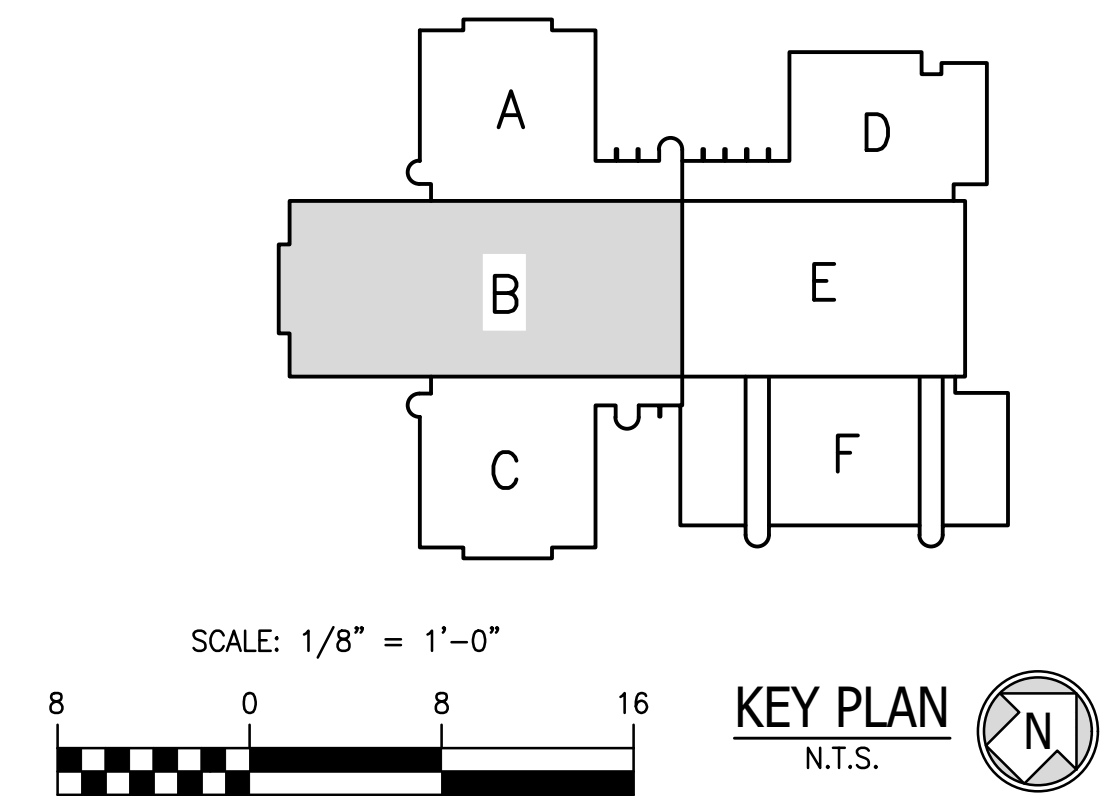


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E406

UPPER LEVEL AREA B - FIRE ALARM

SCALE: 1/8" = 1'-0"

N



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		1	3/7/24	ADDENDUM NO. 1
		2		
		3		
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Gipe Associates Inc.
Consulting Engineers

5710 Regatta Drive
Suite 2-5
Aberdeen, MD 21001
Phone: 410.822.6588
Fax: 410.822.6596

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PROJECT MANAGER EMP

DESIGNER EMP

DATE 2/26/2024

UPPER LEVEL AREA B - FIRE ALARM

HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL

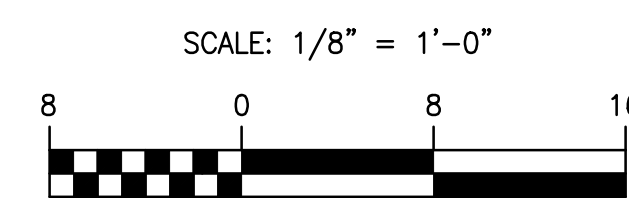
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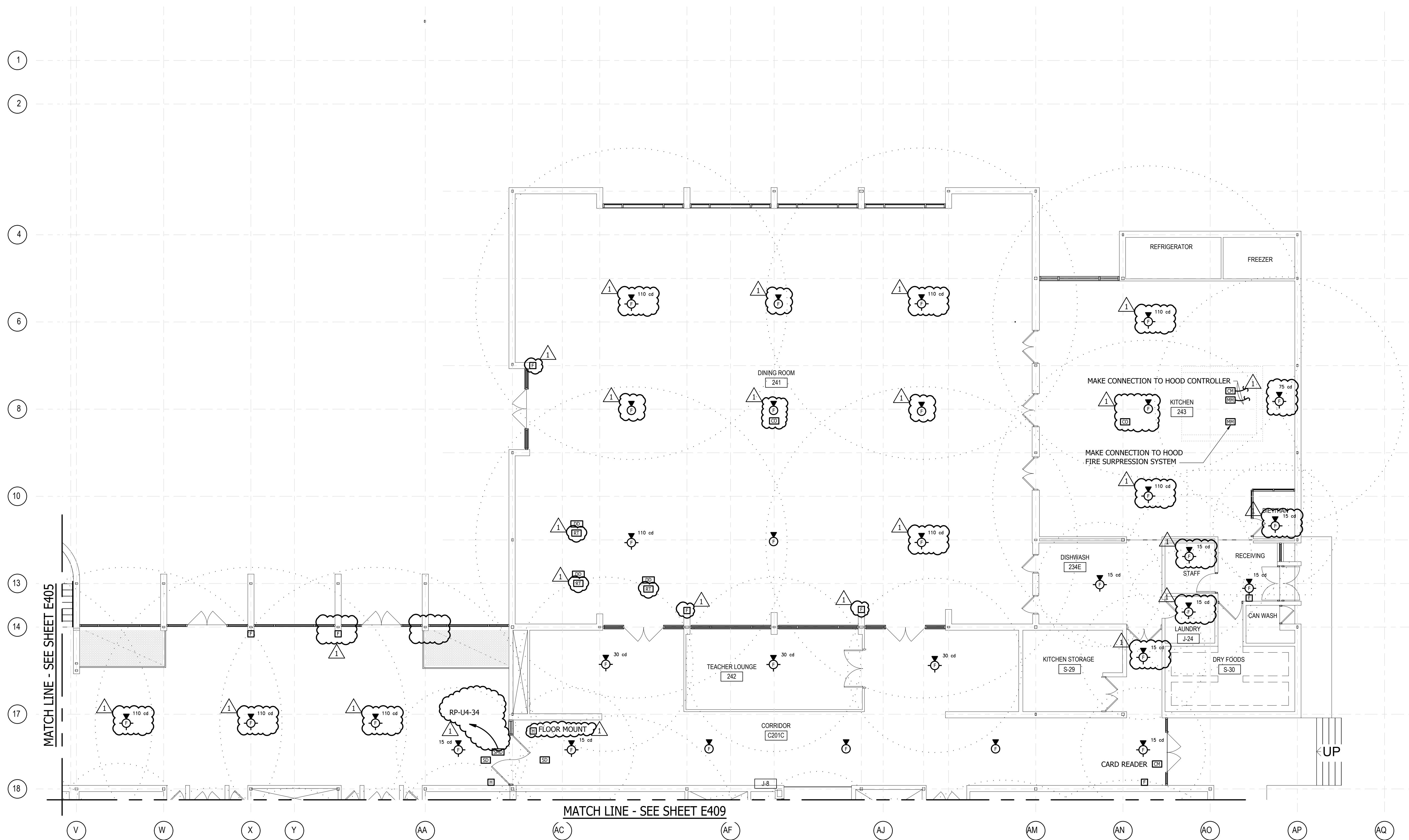
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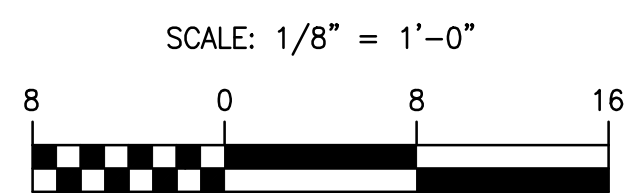
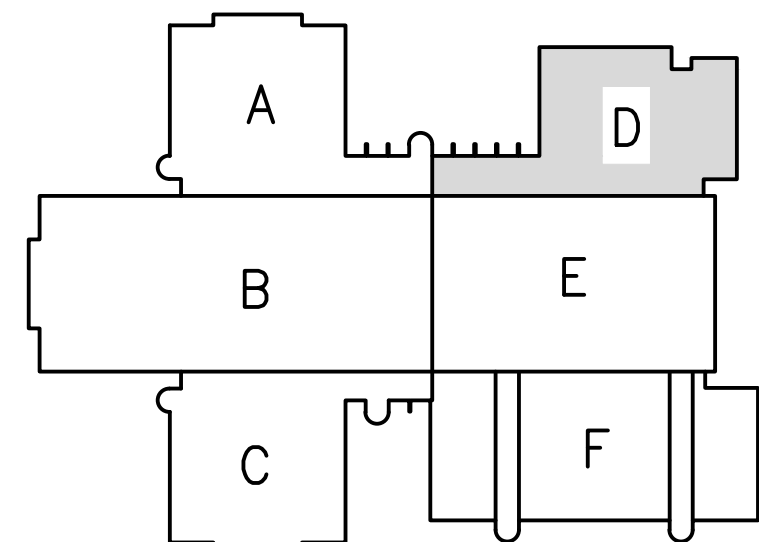


KEY PLAN
N.T.S.





1
E408
UPPER LEVEL AREA D - FIRE ALARM
SCALE: 1/8" = 1'-0"



KEY PLAN
N.T.S.

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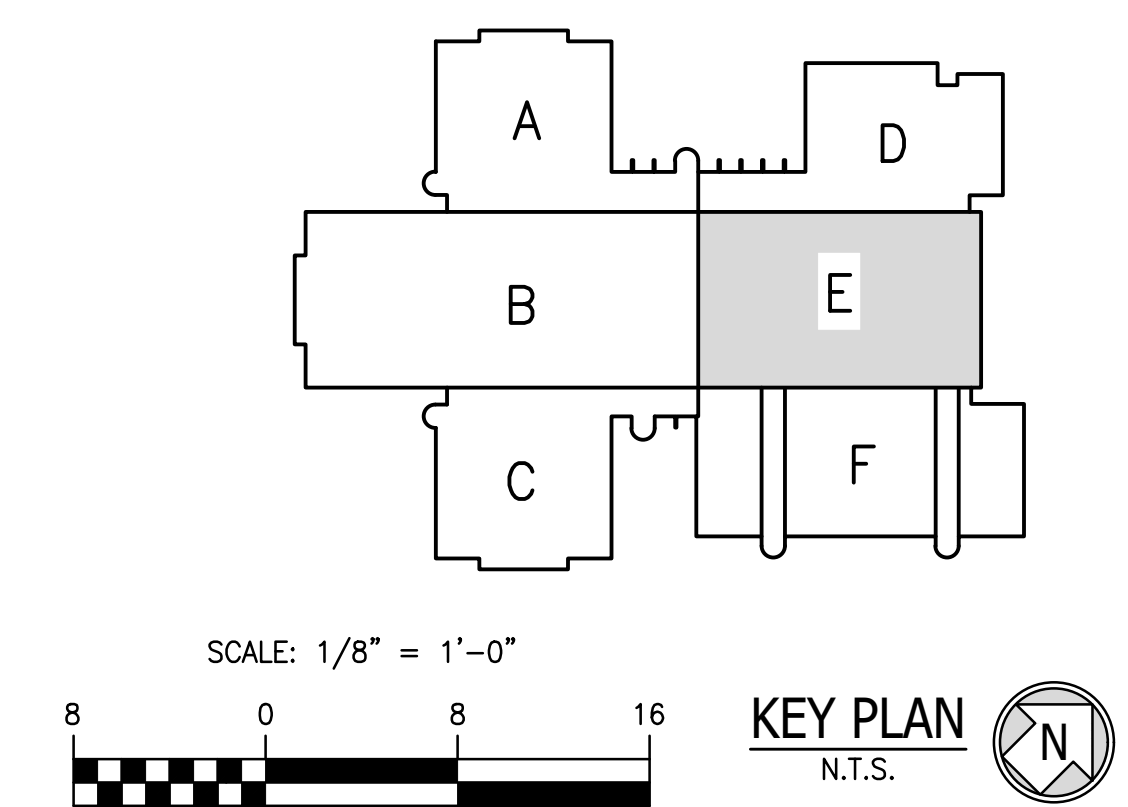
Giipe Associates Inc.
Consulting Engineers
6710 Regatta Drive
Suite 2-5
Aberdeen, MD 21001
Phone: 410.822.2600
Fax: 410.822.6396

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UPPER LEVEL AREA D - FIRE ALARM
HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL
HVAC SYSTEMIC RENOVATIONS
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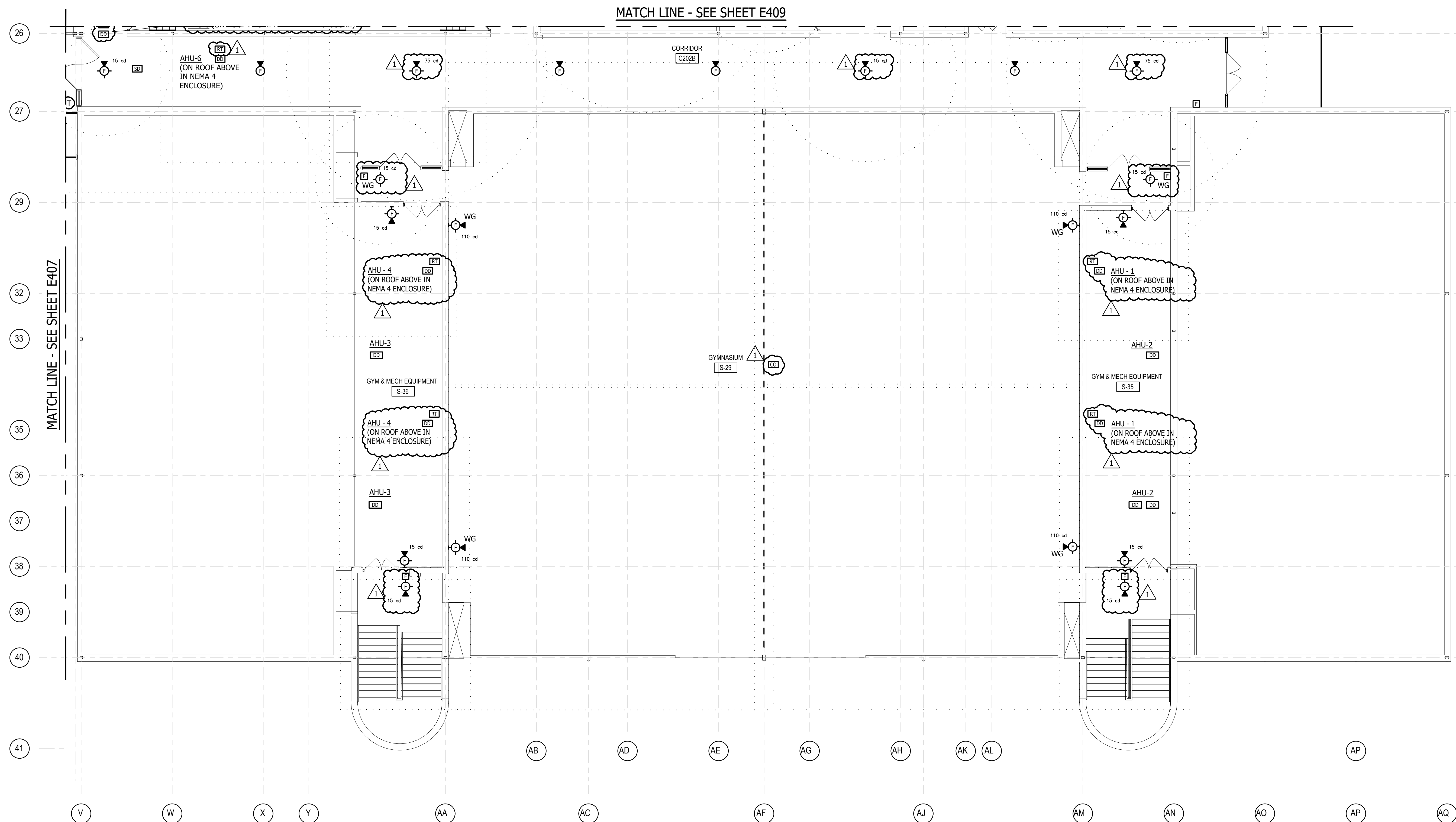
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E409

PSC-12.006

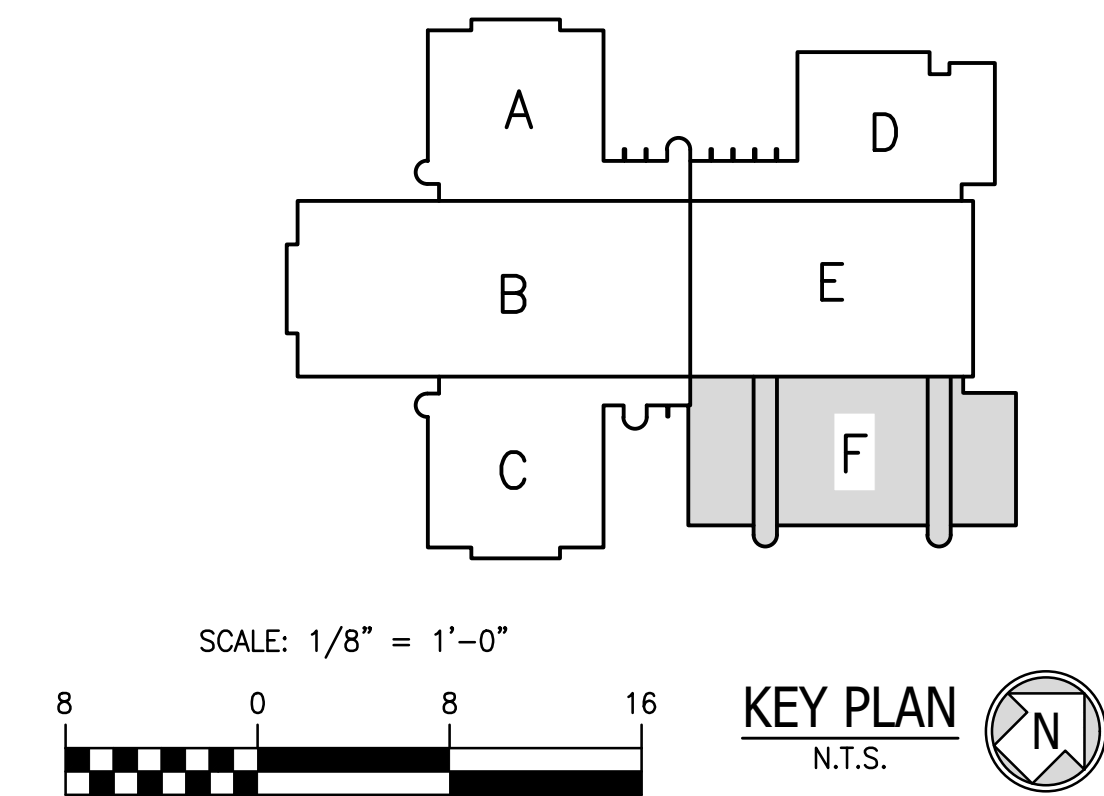


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E410

UPPER LEVEL AREA F - FIRE ALARM

SCALE: 1/8" = 1'-0"

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Gipe Associates Inc.
Consulting Engineers

6710 Regale Drive
Suite 2-5
Aberdeen, MD 21011
Phone: 410.522.6596
Fax: 410.522.2418

WO# 23043

PROJECT MANAGER	EMP
DESIGNER	EMP
DATE	2/26/2024

UPPER LEVEL AREA F - FIRE ALARM

HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL

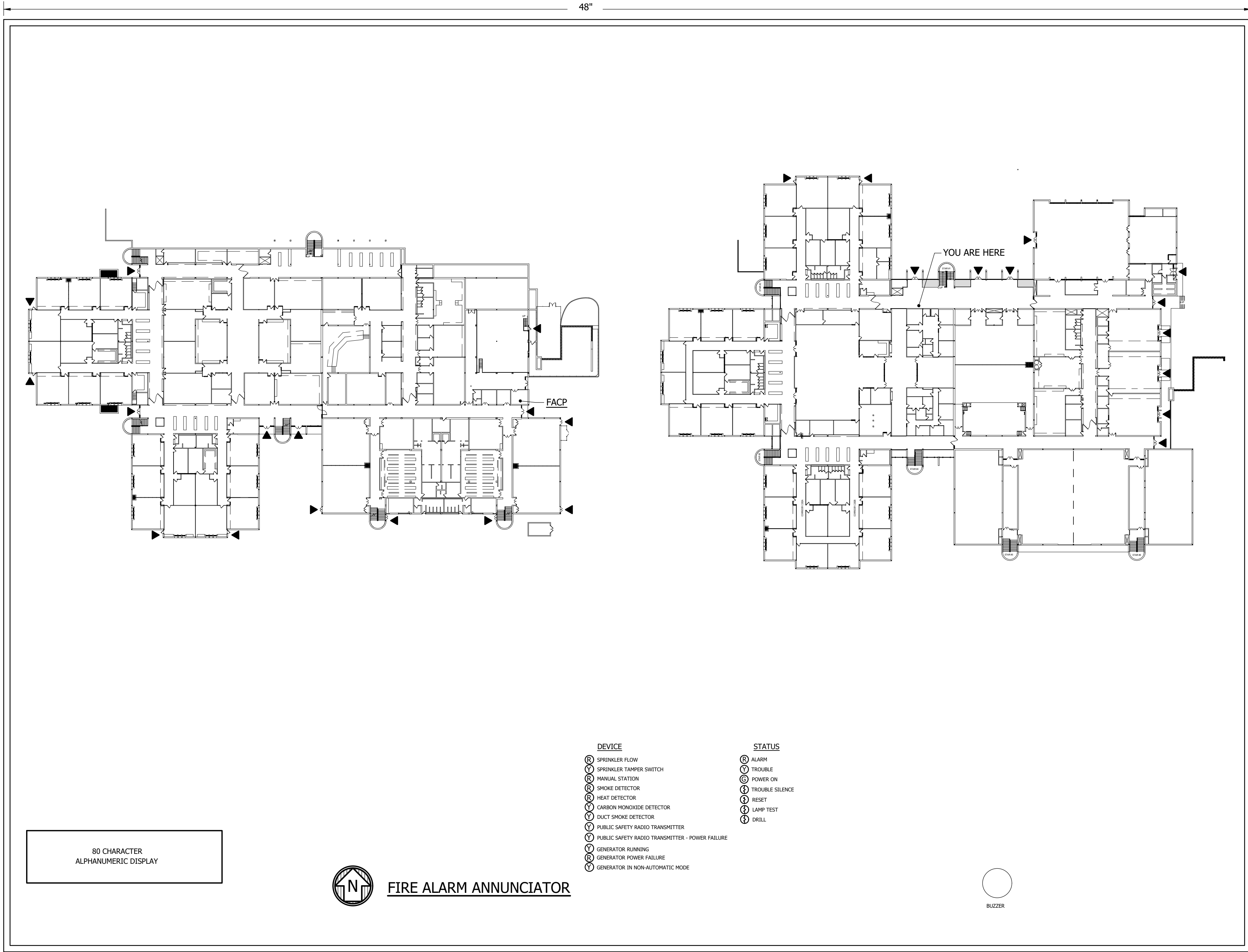
HVAC SYSTEMIC RENOVATIONS

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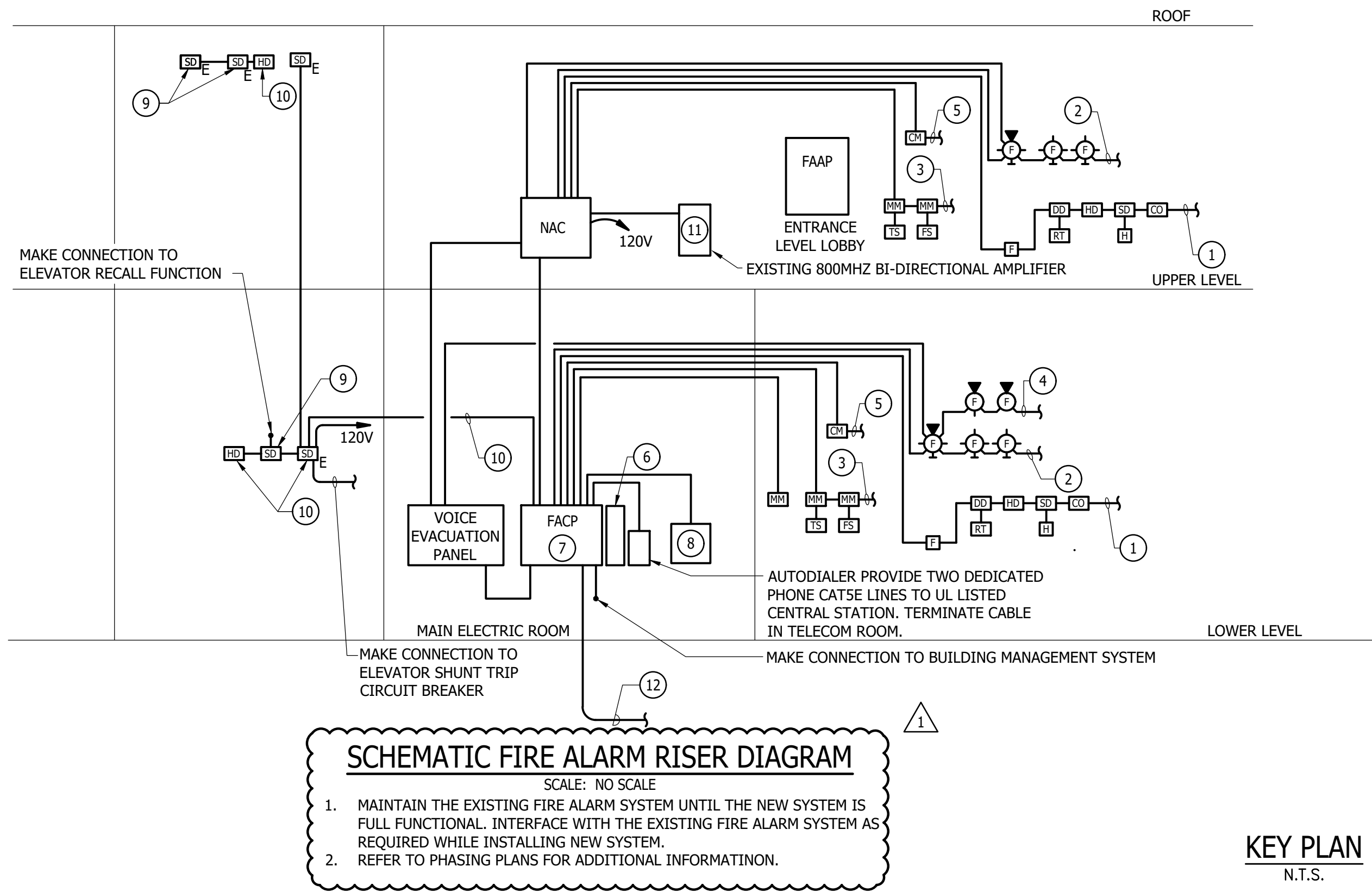
PSC-12.006



FIRE ALARM GRAPHIC ANNUNCIATOR PANEL DETAIL
SCALE: NO SCALE

1. PROVIDE ADDITIONAL GRAPHICS AND TEXT AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
2. FIRE ALARM ANNUNCIATOR SHALL BE COLOR CODE WITH 'BLUE' LINE FOR SPRINKLER ZONES. FIRE ALARM CONTRACTOR SHALL COORDINATE WITH SPRINKLER CONTRACTOR AND INDICATE SPRINKLER ZONES ON GRAPHIC ANNUNCIATOR.
3. SPRINKLER SYSTEM RISERS, FIRE DEPARTMENT CONNECTION AND FIRE WALLS SHALL BE CLEARLY SHOWN ON ANNUNCIATOR.
4. PROVIDE GENERATOR RUNNING, GENERATOR TROUBLE, GENERATOR IN AUTOMATIC MODE SUPERVISORY ALARMS FROM GENERATOR TO FIRE ALARM SYSTEM.

FIRE ALARM SYSTEM NFPA OPERATIONS MATRIX			SYSTEM OUTPUTS																		
			Control Unit Annunciation						Notification						Life Safety Control						
									AT BUILDING						AT BUILDING						AT BUILDING
			ACTIVATE COMMON ALARM SIGNAL	ACTIVATE AUDIBLE ALARM SIGNAL	ACTIVATE COMMON SUPERVISORY SIGNAL INDICATOR	ACTIVATE AUDIBLE SUPERVISORY SIGNAL	ACTIVATE COMMON TROUBLE SIGNAL INDICATOR	ACTIVATE AUDIBLE COMMON TROUBLE SIGNAL	ACTIVATE VISUAL SIGNALS AND INTERRUPT PA SYSTEMS	ACTIVATE AUDIBLE SIGNALS AND INTERRUPT PA SYSTEMS	DISPLAY CHANGE OF STATUS	TRANSMIT ALARM SIGNAL TO UL LISTED SUPERVISING CENTRAL STATION VIA AUTO DIALER	TRANSMIT SUPERVISORY SIGNAL TO UL LISTED SUPERVISING CENTRAL STATION VIA AUTO DIALER	RECALL ELEVATOR TO DESIGNATED LEVEL	SHUT DOWN POWER SUPPLY TO ELEVATOR AND CAB LIGHTING	RELEASE SECURITY DOORS	SHUT OFF FUEL SUPPLIES	SHUT DOWN RESPECTIVE HVAC	RELEASE SMOKE DAMPERS		
SYSTEM INPUTS			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
MANUAL FUNCTION	Manual Pull Stations	A	Alarm Signal	Alarm Signal					Alarm Signal	Alarm Signal	Alarm Signal	Alarm Signal					Activate				A
SMOKE AUTOMATIC FUNCTION	Smoke Detectors	B	Alarm Signal	Alarm Signal					Alarm Signal	Alarm Signal	Alarm Signal	Alarm Signal					Activate				B
	Smoke Detectors Elevator Lobby/Machine Room	C	Alarm Signal	Alarm Signal					Alarm Signal	Alarm Signal	Alarm Signal	Alarm Signal			Activate						C
	Duct Smoke Detectors Air Handling Units	D			Superv Signal	Superv Signal					Superv Signal		Superv Signal					Activate			D
	Duct Smoke Detectors Smoke Dampers	E			Superv Signal	Superv Signal					Superv Signal		Superv Signal						Activate		E
HEAT AUTOMATIC FUNCTION	Heat Detectors	F	Alarm Signal	Alarm Signal					Alarm Signal	Alarm Signal	Alarm Signal	Alarm Signal									F
	Heat Detectors Elevator Machine Room/Shaft	G	Alarm Signal	Alarm Signal					Alarm Signal	Alarm Signal	Alarm Signal	Alarm Signal			Activate	Activate					G
SPRINKLER OR HOOD AUTOMATIC FUNCTION	Water Flow	H	Alarm Signal	Alarm Signal					Alarm Signal	Alarm Signal	Alarm Signal	Alarm Signal						Activate			H
	Sprinkler Control Valve	I			Superv Signal	Superv Signal			Alarm Signal	Alarm Signal	Superv Signal		Superv Signal								I
SYSTEM AUTOMATIC FUNCTION	AC Power Failure	J					Trouble Signal	Trouble Signal			Trouble Signal			Trouble Signal							J
	Low Battery	K					Trouble Signal	Trouble Signal			Trouble Signal			Trouble Signal							K
	Open Circuit	L					Trouble Signal	Trouble Signal			Trouble Signal			Trouble Signal							L
	Ground Fault	M					Trouble Signal	Trouble Signal			Trouble Signal			Trouble Signal							M
	Notification Appliance Circuit Short	N					Trouble Signal	Trouble Signal			Trouble Signal			Trouble Signal							N
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
			Control Unit Annunciation						Notification						Life Safety Control						



GENERAL NOTES:

1. PROVIDE WIRING PER MANUFACTURER'S RECOMMENDATIONS IN CONDUIT.
2. REFER TO FLOOR PLANS FOR EXACT QUANTITY AND LOCATION OF DEVICES.
3. COORDINATE WITH OWNER FOR CONNECTING TO EXISTING CAMPUS FIRE ALARM SYSTEM.

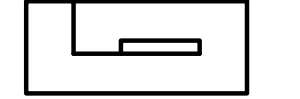
DRAWING NOTES:

- 1 TO OTHER ALARM INITIATING DEVICES IN THIS ZONE.
- 2 TO OTHER ALARM NOTIFICATION DEVICES IN THIS ZONE.
- 3 TO OTHER SPRINKLER SYSTEM DEVICES IN THIS ZONE.
- 4 TO OTHER VOICE EVACUATION SPEAKERS IN THIS ZONE.
- 5 TO OTHER CONTROL MODULES (INCLUDING DOOR RELEASE AND SOUND SYSTEM OVERRIDES) IN THIS ZONE.
- 6 INTEGRATED AUDIO SYSTEM FOR VOICE EVACUATION.
- 7 PROVIDE INTERFACE WITH LOCAL GYM AND CAFETERIA SOUND SYSTEMS TO CUT OFF PUBLIC ADDRESS UPON ALARM. PUBLIC ADDRESS SYSTEM SHALL REACTIVATE UPON SYSTEM RESET.
- 8 PROVIDE ALL NAC PANELS, PROGRAMMING, CONTROL MODULE(S), AND MONITORING MODULE(S) AS NECESSARY/REQUIRED TO INTERFACE THE EXISTING FIRE ALARM SYSTEM/DEVICES WITH THE NEW FIRE ALARM SYSTEM. INITIATION OF EITHER THE EXISTING SYSTEM OR THE NEW SYSTEM SHALL ACTIVATE NOTIFICATION DEVICES OF BOTH SYSTEMS. SILENCING OF THE SYSTEM SHALL BE COMPLETED THROUGH THE NEW FIRE ALARM SYSTEM REGARDLESS OF THE INITIATING DEVICE.
- 9 PROVIDE TWO (2) SETS OF RELAYS IN ELEVATOR HEAT DETECTOR FOR OPERATION OF ELEVATOR SHUNT TRIP CIRCUIT BREAKER (IN ACCORDANCE WITH NFPA). PROVIDE RELAYS, CONDUIT, WIRING AND ALL APPURTENANCES FOR ELEVATOR CONTROLS AS RECOMMENDED BY FIRE ALARM SYSTEM AND ELEVATOR MANUFACTURERS.
- 10 PROVIDE TWO (2) SETS OF RELAYS IN EACH ELEVATOR SMOKE DETECTOR (BOTH IN SHAFT AND LOBBY). COORDINATE EMERGENCY RECALL/CONTROL SEQUENCE WITH THE ELEVATOR INSPECTOR AND STATE FIRE MARSHAL AND PROVIDE ALL RELAYS, CONDUIT, WIRING AND APPURTENANCES AS REQUIRED.
- 11 PROVIDE MONITORING OF EXISTING DISTRIBUTED ANTENNA SYSTEM (DAS) AS REQUIRED PER NFPA 1221, INCLUDING BUT NOT LIMITED TO DONOR ANTENNA MALFUNCTION, ACTIVE RF-EMITTING DEVICE FAILURE, LOW BATTERY CAPACITY INDICATION (LESS THAN 70% OF THE 12-HOUR CAPACITY), ACTIVE SYSTEM COMPONENT FAILURE, LOSS OF NORMAL AC POWER, AND FAILURE OF BATTERY CHARGER. PROVIDE MONITORING OF COMMUNICATIONS LINK BETWEEN THE DAS AND FIRE ALARM SYSTEM.
- 12 IN EACH MODULAR, PROVIDE 1 COMBINATION SPEAKER/STROBE (75CD) PER ROOM AND 4 PULL STATIONS. COORDINATE THE INSTALLATION OF DEVICES WITH MODULAR. REMOVE AFTER COMPLETION OF PROJECT.

REVISIONS		DESCRIPTION
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Gipe Associates Inc.
Consulting Engineers
6718 Spokes Drive
Edison, Maryland 21001
Phone: 410.332.2418
Fax: 410.332.2418



WO# 23043

PROJECT MANAGER EMP

DESIGNER EMP

DATE 2/26/2024

FIRE ALARM RISER DIAGRAM
HARFORD COUNTY PUBLIC SCHOOLS - ABERDEEN MIDDLE SCHOOL
HVAC SYSTEMIC RENOVATIONS
111 MT ROYAL AVE, ABERDEEN, MARYLAND 21001.

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E502

PSC-12.006



MECHANICAL SCHEDULE NOTES:

1. INSTALL VFD (FURNISHED UNDER MECHANICAL DIVISION) MAKE ALL CONNECTIONS TO EQUIPMENT.
2. MAKE CONNECTION TO VFD.
3. PROVIDE COMBINATION STARTER/DISCONNECT.
4. PROVIDE KINDORF SUPPORTS FOR MOUNTING.
5. PROVIDE SINGLE POLE MANUAL MOTOR STARTING SWITCH WITH HOA SWITCH.
6. PROVIDE CONNECTION AT OUTDOOR UNIT AND EXTEND CONNECTION TO INDOOR UNIT AS RECOMMENDED BY MFR.
7. ROUTE HOMERUN VIA CONTACTOR CB.
8. MAKE CONNECTION TO CONTROLLER FURNISHED WITH UNIT AS REQUIRED BY SYSTEM MANUFACTURER.
9. PROVIDE L15-R RECEPTACLE ADJACENT TO UNIT.
10. MAKE CONNECTION TO REMOTE DIGITAL CONTROLLER FURNISHED WITH UNIT AS REQUIRED BY MFR.
11. PROVIDE RECEPTACLE ADJACENT TO UNIT.
12. PROVIDE WEATHERPROOF WIRE TROUGH FOR SPLICING LOAD-SIDE CONDUCTORS FOR INDIVIDUAL CONNECTION INDICATED (VFD/CIRCUIT BREAKER) AS REQUIRED.
13. MAKE CONNECTION TO DISCONNECT PROVIDED WITH UNIT.

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

EQUIPMENT NAME	LOAD			SERVICE		SOURCE CIRCUIT	STARTER SIZE	DISCONNECT (MOUNT AT UNIT UON)				NOTES
	KW	HP	AMPS	VOLTS	PH			POLE	AMPS	FUSE (VERIFY W/ NAMEPLATE)	NEMA ENCLOSURE	
CHILLER-1			503	480	3	SWBD-7		3	800	600	3R	
CHILLER-2			503	480	3	SWBD-8		3	800	600	3R	
DOAS-1				480	3	DPM-11		3	60	35	3R	12
	SAF	7.5	8.7									2
	RAF	5	5.9									2
	HW	1/4										2
DOAS-2				480	3	DPM-12		3	100	80	3R	12
	SAF	20	23.5									2
	RAF	10	12.5									2
	HW	1/4										2
DOAS-3				480	3	DPM-13		3	100	80	3R	12
	SAF	20	23.5									2
	RAF	7.5	9.8									2
	HW	1/4										2
DOAS-4				480	3	DPM-14		3	100	70	3R	12
	SAF	15	18									2
	RAF	10	12.5									2
	HW	1/4										2
DOAS-5				480	3	DPM-15		3	100	80	3R	12
	SAF	20	24									2
	RAF	10	12.5									2
	HW	1/4										2
AHU-1				480	3	DPM-16		3	60	60	3R	12
	SAF	4@4.4	18.8									2
	RAF	7-1/2	10.7									2
AHU-2	SAF	7 1/2	7	480	3	MP-8						1
	RAF	3	3.3	480	3							1
AHU-3												
	SAF	7 1/2	7	480	3							1
	RAF	3	3.3	480	3	MP-19						1
AHU-4				480	3	DPM-17		3	60	50	3R	12
	SAF	15	17.2									2
	RAF	3	7.4									2
AHU-5				480	3	DPM-18		3	60	40	3R	12
	SAF	10	9.4									2
	RAF	3	6.6									2
AHU-6				480	3	DPM-19		3	60	40	3R	12
	SAF	10	9.4									2
	RAF	5	5.8									2
BOILER-1			12.0	480	3	MP-1		3	30	25	1	4.7
BOILER-2			12.0	480	3	MP-2		3	30	25	1	4.7
BOILER-3			12.0	480	3	MP-7		3	30	25	1	4.7
PUMP-1 (PRIMARY CHW)		15		480	3	DPM-1						1
PUMP-2		15		480	3	DPM-2						1
PUMP-3 (SECONDARY CHW)		50		480	3	DPM-3						1
PUMP-4		50		480	3	DPM-4						1
PUMP-5 (PRIMARY HW)		5		480	3	DPM-5						1
PUMP-6		5		480	3	DPM-6						1
PUMP-7		5		480	3	DPM-7						1
PUMP-8 (SECONDARY HW)		25		480	3	DPM-8						1
PUMP-9		25		480	3	DPM-9						1
PUMP-10		3/4		480	3	MP-20	0	3	30		1	3
PUMP-11		3/4		480	3		0	3	30		1	3
PUMP-12		3/4		480	3		0	3	30		1	3
PUMP-13		3/4		480	3		0	3	30		1	3
PUMP-14		3/4		480	3	MP-20	0	3	30		1	3
PUMP-15		3/4		480	3		0	3	30		1	3
PUMP-16		3/4		480	3	MP-U1-8	0	3	30		1	3
PUMP-17		3/4		480	3		0	3	30		1	3
PUMP-18		3/4		480	3	MP-U2-2	0	3	30		1	3
PUMP-19		3/4		480	3		0	3	30		1	3
PUMP-20		3/4		480	3	MP-20	0	3	30		1	3
UH-1		1/8		120	1	MRP-3					1	5
UH-2		1/8		120	1						1	5
UH-3		1/8		120	1	RP-U3-74					1	5
UH-4		1/8		120	1						1	5
FAN-1		1/10		120	1	MRP-1					1	5
FAN-2	20W			120	1						1	5
FAN-3	20W			120	1	KITCHEN PANEL					4	5
KITCHEN FAN		1/4		120	1						3R	5
DSHP-1 (COND)			11	208	1	RP-L1A-40		2	30	25	3R	
DSHP-1 (EVAP)			1	208	1			3	30	15	1	6

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

EQUIPMENT NAME	LOAD			SERVICE		SOURCE CIRCUIT	STARTER SIZE	DISCONNECT (MOUNT AT UNIT UON)				NOTES	
	KW	HP	AMPS	VOLTS	PH			POLE	AMPS	FUSE (VERIFY W/ NAMEPLATE)	NEMA ENCLOSURE		
FCU-1-201		2 @ 1/6		277	1	MP-U1-1					1	5	
FCU-1-202		2 @ 1/6		277	1							1	5
FCU-1-203		2 @ 1/6		277	1							1	5
FCU-1-204		2 @ 1/6		277	1							1	5
FCU-1-205		2 @ 1/6		277	1	MP-U1-1					1	5	
FCU-1-206		2 @ 1/6		277	1							1	5
FCU-1-207		2 @ 1/6		277	1							1	5
FCU-1-208		1/6		277	1							1	5
FCU-1-209		1/6		277	1	MP-U1-1					1	5	
FCU-1-210		1/6		277	1							1	5
FCU-1-211		1/8		277	1							1	5
FCU-1-212		1/8		277	1							1	5
FCU-1-213		1/8		277	1	MP-U1-3					1	5	
FCU-1-214		1/8		277	1							1	5
FCU-1-215		1/6		277	1							1	5
FCU-1-216		1/6		277	1							1	5
FCU-1-217		1/6		277	1	MP-U1-3					1	5	
FCU-1-218		1/6		277	1							1	5
FCU-2-101		1/8		277	1	MP-L2-1					1	5	
FCU-2-102		2 @ 1/6		277	1							1	5
FCU-2-103		2 @ 1/6		277	1							1	5
FCU-2-104		2 @ 1/6		277	1							1	5
FCU-2-105		2 @ 1/6		277	1	MP-L2-1					1	5	
FCU-2-106		2 @ 1/6		277	1							1	5
FCU-2-107		2 @ 1/6		277	1							1	5
FCU-2-108		2 @ 1/6		277	1							1	5
FCU-2-109		2 @ 1/6		277	1	MP-L2-1					1	5	
FCU-2-110		1/8		277	1							1	5
FCU-2-111		1/8		277	1							1	5
FCU-2-112		1/8		277	1							1	5
FCU-2-113		1/8		277	1	MP-L2-2					1	5	
FCU-2-114		1/8		277	1							1	5
FCU-2-115		1/8		277	1							1	5
FCU-2-116		1/8		277	1							1	5
FCU-2-117		1/8		277	1	MP-L2-2					1	5	
FCU-2-118		1/8		277	1							1	5
FCU-2-201		1/8		277	1							1	5
FCU-2-202		2 @ 1/6		277	1							1	5
FCU-2-203		2 @ 1/6		277	1	MP-U1-2					1	5	
FCU-2-204		2 @ 1/6		277	1							1	5
FCU-2-205		2 @ 1/6		277	1							1	5
FCU-2-206		2 @ 1/6		277	1							1	5
FCU-2-207		2 @ 1/6		277	1	MP-U1-2					1	5	
FCU-2-208		2 @ 1/6		277	1							1	5
FCU-2-209		2 @ 1/6		277	1							1	5
FCU-2-210		1/8		277	1							1	5
FCU-2-211		1/8		277	1	MP-U1-4					1	5	
FCU-2-212		1/8		277	1							1	5
FCU-2-213		1/8		277	1							1	5
FCU-2-214		1/8		277	1							1	5
FCU-2-215		1/8		277	1	MP-U1-4					1	5	
FCU-2-216		1/8		277	1							1	5
FCU-2-217		1/8		277	1							1	5
FCU-3-101		2 @ 1/6		277	1	MP-L2-2					1	5	
FCU-3-102		2 @ 1/6		277	1							1	5
FCU-3-103		2 @ 1/6		277	1							1	5
FCU-3-104		2 @ 1/6		277	1							1	5
FCU-3-105		2 @ 1/6		277	1	MP-L2-2					1	5	
FCU-3-106		2 @ 1/6		277	1							1	5
FCU-3-107		2 @ 1/6		277	1							1	5
FCU-3-108		2 @ 1/6		277	1							1	5
FCU-3-109		1/6		277	1	MP-L2-4					1	5	
FCU-3-110		1/8		277	1							1	5
FCU-3-111		1/6		277	1							1	5
FCU-3-112		1/6		277	1							1	5
FCU-3-113		1/8		277	1	MP-L2-4					1	5	
FCU-3-114		1/8		277	1							1	5
FCU-3-115		1/6		277	1							1	5
FCU-3-116		1/8		277	1							1	5

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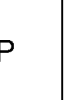
MECHANICAL SCHEDULE NOTES:

1. INSTALL VFD (FURNISHED UNDER MECHANICAL DIVISION) MAKE ALL CONNECTIONS TO EQUIPMENT.
2. MAKE CONNECTION TO VFD.
3. PROVIDE COMBINATION STARTER/DISCONNECT.
4. PROVIDE KINDORF SUPPORTS FOR MOUNTING.
5. PROVIDE SINGLE POLE MANUAL MOTOR STARTING SWITCH WITH HOA SWITCH.
6. PROVIDE CONNECTION AT OUTDOOR UNIT AND EXTEND CONNECTION TO INDOOR UNIT AS RECOMMENDED BY MFR.
7. ROUTE HOMERUN VIA CONTACTOR CB.
8. MAKE CONNECTION TO CONTROLLER FURNISHED WITH UNIT AS REQUIRED BY SYSTEM MANUFACTURER.
9. PROVIDE L15-R RECEPTACLE ADJACENT TO UNIT.
10. MAKE CONNECTION TO REMOTE DIGITAL CONTROLLER FURNISHED WITH UNIT AS REQUIRED BY MFR.
11. PROVIDE RECEPTACLE ADJACENT TO UNIT.
12. PROVIDE WEATHERPROOF WIRE TROUGH FOR SPLICING LOAD-SIDE CONDUCTORS FOR INDIVIDUAL CONNECTION INDICATED (VFD/CIRCUIT BREAKER) AS REQUIRED.
13. MAKE CONNECTION TO DISCONNECT PROVIDED WITH UNIT.

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

EQUIPMENT NAME	LOAD			SERVICE		SOURCE CIRCUIT	STARTER SIZE	DISCONNECT (MOUNT AT UNIT UON)				NOTES
	KW	HP	AMPS	VOLTS	PH			POLE	AMPS	FUSE (VERIFY W/ NAMEPLATE)	NEMA ENCLOSURE	
FCU-3-201		2 @ 1/6		277	1	MP-U2-1					1	5
FCU-3-202		2 @ 1/6		277	1	MP-U2-1					1	5
FCU-3-203		2 @ 1/6		277	1	MP-U2-1					1	5
FCU-3-204		2 @ 1/6		277	1	MP-U2-1					1	5
FCU-3-205		2 @ 1/6		277	1	MP-U2-1					1	5
FCU-3-206		2 @ 1/6		277	1	MP-U2-1					1	5
FCU-3-207		2 @ 1/6		277	1	MP-U2-1					1	5
FCU-3-208		1/6		277	1	MP-U2-1					1	5
FCU-3-209		1/8		277	1	MP-U2-3					1	5
FCU-3-210		1/6		277	1	MP-U2-3					1	5
FCU-3-211		1/6		277	1	MP-U2-3					1	5
FCU-3-212		1/8		277	1	MP-U2-3					1	5
FCU-3-213		1/6		277	1	MP-U2-3					1	5
FCU-3-214		1/8		277	1	MP-U2-3					1	5
FCU-3-215		1/6		277	1	MP-U2-3					1	5
FCU-3-216		1/6		277	1	MP-U2-3					1	5
FCU-4-101		1/6		277	1	MP-L2-5					1	5
FCU-4-102		1/8		277	1	MP-L2-5					1	5
FCU-4-103		1/6		277	1	MP-L2-5					1	5
FCU-4-104		1/8		277	1	MP-L2-5					1	5
FCU-4-105		2 @ 1/6		277	1	MP-L2-5					1	5
FCU-4-106		1/6		277	1	MP-L2-5					1	5
FCU-4-107		1/6		277	1	MP-L2-5					1	5
FCU-4-108		2 @ 1/6		277	1	MP-L2-7					1	5
FCU-4-109		1/6		277	1	MP-L2-7					1	5
FCU-4-110		1/6		277	1	MP-L2-7					1	5
FCU-4-111		1/6		277	1	MP-L2-7					1	5
FCU-4-112		1/6		277	1	MP-L2-7					1	5
FCU-4-113		1/6		277	1	MP-L2-7					1	5
FCU-4-114		1/6		277	1	MP-L2-7					1	5
FCU-4-115		1/6		277	1	MP-L2-9					1	5
FCU-4-116		2 @ 1/6		277	1	MP-L2-9					1	5
FCU-4-117		1/8		277	1	MP-L2-9					1	5
FCU-4-118		1/6		277	1	MP-L2-9					1	5
FCU-4-119		1/6		277	1	MP-L2-9					1	5
FCU-4-120		1/8		277	1	MP-L2-9					1	5
FCU-4-121		1/8		277	1	MP-L2-9					1	5
FCU-4-122		1/6		277	1	MP-L2-9					1	5
FCU-4-123		1/6		277	1	MP-L2-9					1	5
FCU-4-124		1/8		277	1	MP-L2-11					1	5
FCU-4-125		1/6		277	1	MP-L2-11					1	5
FCU-4-126		1/6		277	1	MP-L2-11					1	5
FCU-4-127		1/6		277	1	MP-L2-11					1	5
FCU-4-128		1/6		277	1	MP-L2-11					1	5
FCU-4-201		2 @ 1/6		277	1	MP-U1-5					1	5
FCU-4-202		1/6		277	1	MP-U1-5					1	5
FCU-4-203		1/6		277	1	MP-U1-5					1	5
FCU-4-204		1/6		277	1	MP-U1-5					1	5
FCU-4-205		1/8		277	1	MP-U1-5					1	5
FCU-4-206		1/8		277	1	MP-U1-5					1	5
FCU-4-207		1/8		277	1	MP-U1-5					1	5
FCU-4-208		1/8		277	1	MP-U1-7					1	5
FCU-4-209		1/8		277	1	MP-U1-7					1	5
FCU-4-210		1/8		277	1	MP-U1-7					1	5
FCU-4-211		1/8		277	1	MP-U1-7					1	5
FCU-4-212		1/8		277	1	MP-U1-7					1	5
FCU-4-213		1/6		277	1	MP-U1-7					1	5
FCU-4-214		1/8		277	1	MP-U2-5					1	5
FCU-4-215		1/8		277	1	MP-U2-5					1	5
FCU-4-216		1/8		277	1	MP-U2-5					1	5
FCU-4-217		1/8		277	1	MP-U2-5					1	5
FCU-4-218		1/8		277	1	MP-U2-5					1	5
FCU-4-219		1/8		277	1	MP-U2-5					1	5
FCU-4-220		1/8		277	1	MP-U2-7					1	5
FCU-4-221		1/8		277	1	MP-U2-7					1	5
FCU-4-222		1/8		277	1	MP-U2-7					1	5
FCU-4-223		1/8		277	1	MP-U2-7					1	5
FCU-4-224		1/8		277	1	MP-U2-7					1	5
FCU-4-225		1/8		277	1	MP-U2-7					1	5
FCU-4-226		1/8		277	1	MP-U2-7					1	5
FCU-4-227		1/8		277	1	MP-U2-9					1	5
FCU-4-228		1/6		277	1	MP-U2-9					1	5
FCU-4-229		1/8		277	1	MP-U2-9					1	5
FCU-4-230		1/6		277	1	MP-U2-9					1	5
FCU-4-231		1/6		277	1	MP-U2-9					1	5
FCU-4-232		1/6		277	1	MP-U2-9					1	5
FCU-4-233		1/6		277	1	MP-U2-9					1	5
FCU-4-234		1/6		277	1	MP-U2-11					1	5
FCU-4-235		1/6		277	1	MP-U2-11					1	5
FCU-4-236		1/6		277	1	MP-U2-11					1	5
FCU-4-237		1/6		277	1	MP-U2-11					1	5
FCU-4-238		1/6		277	1	MP-U2-11					1	5
FCU-4-239		1/6		277	1	MP-U1-7					1	5
FCU-4-240		1/6		277	1	MP-U2-11					1	5

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

EQUIPMENT NAME	LOAD			SERVICE		SOURCE CIRCUIT 	STARTER SIZE	DISCONNECT (MOUNT AT UNIT UON)				NOTES
	KW	HP	AMPS	VOLTS	PH			POLE	AMPS	FUSE (VERIFY W/ NAMEPLATE)	NEMA ENCLOSURE	
FCU-5-101		1/6		277	1	MP-25					1	5
FCU-5-102		2 @ 1/6		277	1	MP-25					1	5
FCU-5-106		1/8		277	1	MP-25					1	5
FCU-5-107		2 @ 1/6		277	1	MP-25					1	5
FCU-5-108		1/6		277	1	MP-25					1	5
FCU-5-109		1/8		277	1	MP-25					1	5
FCU-5-110		1/8		277	1	MP-25					1	5
FCU-5-111		1/8		277	1	MP-27					1	5
FCU-5-112		1/8		277	1	MP-27					1	5
FCU-5-113		1/8		277	1	MP-27					1	5
FCU-5-114		1/8		277	1	MP-27					1	5
FCU-5-115		1/8		277	1	MP-27					1	5
FCU-5-116		1/8		277	1	MP-27					1	5
FCU-5-117		1/6		277	1	MP-27					1	5
FCU-5-118		1/8		277	1	MP-27					1	5
FCU-5-119		1/6		277	1	MP-27					1	5
FCU-5-120		1/8		277	1	MP-27					1	5
FCU-5-121		1/6		277	1	MP-29					1	5
FCU-5-122		1/6		277	1	MP-29					1	5
FCU-5-123		1/8		277	1	MP-29					1	5
FCU-5-124		2 @ 1/6		277	1	MP-29					1	5
FCU-5-125		1/6		277	1	MP-29					1	5
FCU-5-126		1/6		277	1	MP-29					1	5
FCU-5-127		1/8		277	1	MP-29					1	5
FCU-5-128		1/8		277	1	MP-29					1	5
FCU-5-129		1/8		277	1	MP-29					1	5
FCU-5-130		1/8		277	1	MP-31					1	5
FCU-5-131		1/8		277	1	MP-31					1	5
FCU-5-132		1/8		277	1	MP-31					1	5
FCU-5-133		1/8		277	1	MP-31					1	5
FCU-5-134		1/8		277	1	MP-31					1	5
FCU-5-135		1/8		277	1	MP-31					1	5
FCU-5-136		1/8		277	1	MP-31					1	5
FCU-5-201		1/6		277	1	MP-26					1	5
FCU-5-202		2 @ 1/6		277	1	MP-26					1	5
FCU-5-203		1/8		277	1	MP-26					1	5
FCU-5-204		1/8		277	1	MP-26					1	5
FCU-5-205		1/8		277	1	MP-26					1	5
FCU-5-206		1/8		277	1	MP-26					1	5
FCU-5-207		1/8		277	1	MP-26					1	5
FCU-5-208		1/8		277	1	MP-26					1	5
FCU-5-209		1/8		277	1	MP-26					1	5
FCU-5-210		2 @ 1/6		277	1	MP-26					1	5
FCU-5-211		2 @ 1/6		277	1	MP-28					1	5
FCU-5-212		2 @ 1/6		277	1	MP-28					1	5
FCU-5-213		2 @ 1/6		277	1	MP-28					1	5
FCU-5-214		2 @ 1/6		277	1	MP-28					1	5
FCU-5-215		2 @ 1/6		277	1	MP-28					1	5
FCU-5-216		1/6		277	1	MP-28					1	5
FCU-5-217		1/8		277	1	MP-28					1	5
FCU-5-218		1/8		277	1	MP-28					1	5
FCU-5-219		1/8		277	1	MP-28					1	5
FCU-5-220		1/8		277	1	MP-28					1	5
FCU-5-221		2 @ 1/6		277	1	MP-30					1	5
FCU-5-222		2 @ 1/6		277	1	MP-30					1	5
FCU-5-223		1/6		277	1	MP-30					1	5
FCU-5-224		1/6		277	1	MP-30					1	5
FCU-5-225		1/6		277	1	MP-30					1	5
FCU-5-226		1/6		277	1	MP-30					1	5
FCU-5-227		1/8		277	1	MP-30					1	5
FCU-5-228		1/8		277	1	MP-30					1	5
FCU-5-229		1/8		277	1	MP-30					1	5
FCU-5-230		1/8		277	1	MP-32					1	5
FCU-5-231		1/8		277	1	MP-32					1	5
FCU-5-232		1/8		277	1	MP-32					1	5
FCU-5-233		1/8		277	1	MP-32					1	5
FCU-5-234		1/8		277	1	MP-32					1	5
FCU-5-235		1/8		277	1	MP-32					1	5
FCU-5-236		1/8		277	1	MP-32					1	5

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SCHEDULES