

ADDENDUM #1

To: All Bidders

Project Name: Renovations to the Owen J. Roberts
District Services Center

Prepared for: Owen J. Roberts School District
901 Ridge Road
Pottstown, PA 19465

Date: 08/07/2026

Notice to all Contractors bidding the Renovations to the Owen J. Roberts District Services Center. This Addendum is to amend or clarify the Contract documents as follows:

GENERAL:

PRIME CONTRACTORS can REGISTER and obtain Contract Documents by contacting BLUEEDGE, 1015 Chestnut Street, Philadelphia, PA. 19107 (phone: 215 627 6493 or by downloading from the link below).

- 1. Contract Documents can be downloaded in .pdf format for a non-refundable cost of One Hundred Dollars (\$100.00) (payment can be made via American Express, Visa, or MasterCard) by accessing the following link:*

<https://www.bluedgebuild.com/projects/8/details/owen-j-roberts-school-district>

In order to ensure REGISTERED BIDDERS receive addenda and bid related correspondence, requests for Bid Documents, shall include the following information:

- 1. Telephone number*
 - 2. Contact person*
 - 3. E-mail address for addenda*
- A. This Addendum constitutes part of the Project Manual and Contract. Should conflict occur between the Project Manual and items in this Addendum or between Drawings and this Addendum, the Addendum shall govern.
- B. Work described in this Addendum shall be in accordance with Specifications for like items in remainder of building and complete with all labor and materials required.
- C. Bidders are requested to attach a copy of this Addendum to the Project Manual in their possession.
- D. Work affected by items in this Addendum shall be appropriately adjusted to accommodate these changes.

- E. Acknowledge receipt of this Addendum by inserting its number and date in the space provided in the Bid Form. Failure to do so may subject Bidder to disqualification.
- F. Bids shall only be based on the products specified. No pre-bid substitutions shall be considered. Products that meet or exceed the product specifications will be considered for use during the Shop Drawing Submittal Phase.
- G. STANDARD OF QUALITY: The various materials and products specified in the specifications by name or description are given to establish a standard of quality and of cost for bid purposes. **In general**, it is not the intent to limit the bidder, the bid or the evaluation of the bid to any one material or product specified but rather to describe the minimum standard, **except where listed without the following clause**. When proprietary names are used, they shall generally be followed by the words "or alternatives of the quality necessary to meet the specifications". Where proprietary names are used and are not followed by a clause similar to that listed above, the contractor is limited to providing that specified product to keep a standard product already established by the School District. A bid containing an alternative which does not meet the specifications may not be accepted, but, if an award is made to the bidder, the bidder will be required to replace any alternatives which do not meet the specifications at no additional cost. The intent of the bid documents is based on this STANDARD OF QUALITY and not to be proprietary in nature in any way.

SPECIFICATIONS

- 1.01 Specification Section 087100 – Door Hardware; **ADD** in its entirety per the attached specification section.
- 1.01 21 2220 - CLEAN-AGENT FIRE SUPPRESSION SYSTEMS
 - Added entire Specification Section. Refer to attached document
- 1.02 264113 – LIGHTNING PROTECTION FOR STRUCTURES
 - Added entire Specification Section. Refer to attached document.
- 1.03 230923 – DIRECT DIGITAL CONTROL (DDC) SYSTEM
 - Added following to section 1.2 – D,
 - D. The controllers for mechanical equipment shall be located adjacent to the unit either above ceiling or within the room, if a ceiling is not present. Remote mounted controllers are not acceptable. The ATC contractor shall field verify exact location prior to ATC submittal review and approval.***
- 1.04 230993 – HVAC CONTROL SEQUENCE
 - Replace section 2.13 – SITE LIGHTING CONTROLS as indicated below,

- A. *Provide interface to site lighting rib relay. Refer to electrical drawings for more details. Coordinate exact location, quantities and scope with Electrical Contractor.*

DRAWINGS

Mechanical:

- 2.01 M101.1 – FIRST FLOOR PLAN - MECHANICAL
- Revised locations of ATC panels and controllers.
 - Refer to revised sheet attached.

Electrical:

- 2.02 E401.A – FIRST FLOOR PLAN – AREA A - POWER
- Revised locations for ATC panel as per revised drawings.
 - Add power to new ATC panel location as per revised drawings.
 - Add power to clean agent control panel as per revised drawings.
- 2.03 E501 – DETAILS AND DIAGRAMS - ELECTRICAL
- Add detail #6 EXTERIOR LIGHTING CONTROL DETAIL as per revised drawings.
 - Add surge protection to single line diagram as per revised drawings.
- 2.04 E601 – SCHEDULES - ELECTRICAL
- Add power to ATC panel in panel LP1 as per revised drawings.

BIDDERS QUESTIONS (questions responded to in previous addenda will be highlighted in gray)

- 3.01 **Question:** What are the estimated values for bonding?
Response: *The estimated overall budget is \$6,200,000.*
- 3.02 **Question:** Is there a FPC prime contractor?
Response: *Fire protection is carried under the Plumbing Contract. Reference the Summary of Work and Multiple Contract Summary specifications sections.*
- 3.03 **Question:** Is this a multi-prime or single-prime project. If this is a multi-prime project; how many prime contractors and what are they?
Response: *This is a multi-prime project that includes a General Contractor, HVAC contractor, Electrical Contractor, and a Plumbing contractor.*
- 3.04 **Question:** The specifications state the GC is responsible for hoisting and scaffolding for all trades – please confirm.
Response: *This will be addressed in a future addendum.*
- 3.05 **Question:** Please clarify if Roman Mosaic is the only allowed terrazzo installer?

Response: *No, the specification is open per section 096623. Roman is noted in the finishes schedule due to them being the installer from the previous renovation project. New terrazzo installation must match the existing installation.*

3.06 **Question:** Confirm the electrical contractor is responsible for the installation of the lightning protection system.

Response: *This will be addressed in a future addendum.*

3.07 **Question:** There are new roof top mechanical units, is support steel to be provided.

Response: *Reference S141.A which indicated support steel for units.*

3.08 **Question:** Is the flushing of the existing roof drains by the plumbing contractor?

Response: *This will be addressed in a future addendum.*

3.09 **Question:** Where are trailers and lay down areas designated on site?

Response: *There are no prescribed areas at the moment. All trailer, staging, lay-down areas, etc. are to be coordinated with the owner once construction starts. OJR noted there is plenty of real-estate for this uses.*

ATTACHMENTS

General:

Pre-Bid Meeting Agenda
Pre-Bid Sign-in Sheet

Specifications:

087100	Door Hardware
212200	Clean-agent Fire Suppression Systems
264113	Lightning Protection for Structures

Drawings:

E001	OVERALL FIRST FLOOR REFERENCE PLAN - ELECTRICAL
E401.A	FIRST FLOOR PLAN – AREA A - POWER
E501	DETAILS AND DIAGRAMS - ELECTRICAL
E601	SCHEDULES – ELECTRICAL

END OF ADDENDUM

SCHRADERGROUP

PRE-BID MEETING AGENDA

CLIENT: Owen J. Roberts School District (OJRSD)

PROJECT: Renovations to the District Service Center

LOCATION: 932 Sanatoga Road, Pottstown, PA 19465

MEETING DATE: 08.06.2026

MEETING TIME: 11:00 AM—12:00 PM

1. WELCOME AND PROJECT TEAM INTRODUCTION
 - a. Introductions
 - Owner – Owen J. Roberts School District
 - Design Team Members
 - Architecture - Schradergroup Architecture
 - MEP – Snyder Hoffman Associates
 - b. Issues discussed during pre-bid ARE NOT CONTRACTUAL unless affirmed in a formal addendum.
 - c. Bid Due Date: Thursday, August 27, 2026 at 2:00PM
 - Location: OJR District Service Center: 932 Sanatoga Rd., Pottstown, PA 19465
2. BIDDING REQUIREMENTS
 - a. Multiple Prime Project with applicable Pennsylvania Prevailing Wage Rates:
 - Contract 1 – General Construction
 - Contract 2 – HVAC Construction
 - Contract 3 – Electrical Construction
 - Contract 4 – Plumbing Construction (includes Fire Protection)
 - b. Submission Requirements:
 - Sealed, fixed-price bids, clearly marked with bid invitation name and number.
 - Reference Specification Section 004200 for Bid Attachment information.
 - Submit two (2) copies of Bid forms.
 - Bid Bond: 10% of contract amount.
 - Bid Form must include acknowledgement of all addenda.
 - Insurance requirements listed in Instructions to Bidders.
3. BID OPENING AND SCHEDULE
 - a. Bids shall be submitted in a sealed envelope and are due Thursday, August 27, 2026 at 2:00PM at the OJR District Service Center: 932 Sanatoga Rd., Pottstown, PA 19465.
 - b. Bids will be opened and read aloud in the Library Conference space of the District Service Center shortly after bids are received.
 - c. Basis for award is lowest responsible/responsive bidder.

- d. Bids will be reviewed and a Notice to Proceed will be issued in September at the School District's discretion.
- e. Performance/Payment Bond (100% of contract with A- or better rating) – to be submitted by accepted bidder in each Prime contract prior to bid award.
- f. Construction to be completed as follows:
 - Substantial completion March 1, 2027.
 - Final project completion April 1, 2027.
- g. Liquidated Damages are \$1,000.00 per day
- h. The General Contractor is responsible for overall construction schedule and coordination with the other prime contractors.

4. ADDENDA

- a. Issuance of addenda will occur electronically through BluEdge., Philadelphia location 215.627.6493. All interested bidders MUST BE REGISTERED with BluEdge to receive issued Addenda.
- b. Pre-bid RFI process: submit all questions in written format, via e-mail, to Dan D'Amico at ddamico@sgarc.com.
 - Questions will be accepted through Wednesday August 19, at 5:00 p.m., EST.
 - The final addendum will be issued Friday August 21.

5. REVIEW OF PROJECT SCOPE OF WORK

- a. The owner will secure the building permits.
 - ***Contractors are responsible for any trade-specific inspections required by the local AHJ or Pennsylvania Department of Labor & Industry (L&I).***
- b. All bidders are required to familiarize themselves with the project site and all bidding documents, including General Requirements, Summary of Work, etc. Submission of Bid acknowledges that bidder has done so.
- c. The building is partially occupied by the Owen J. Roberts School District Administration. Access to these areas must be maintained during construction.
- d. This project is subject to the Pennsylvania Prevailing Wage Act, approved August 15, 1961, P.L. 987 (Act No. 442), as amended and supplemented, and reference is made to the prevailing minimum wage rates applicable to this project which have been promulgated by the Secretary of Labor and Industry.
- e. Refer to Section 002110 Background Checks (Criminal, Child Abuse, FBI). All clearances for submission must have been procured within the last year prior to their submission to UMASD. Please note the specific code listed in Section 002110, Page 2 subsection 2 for the FBI Clearance. Other incorrectly coded FBI reports are not acceptable.
- f. *General Construction*
 - Demolition and alterations for approximately 12,300 square feet of interior classroom space for new offices, conference rooms, and toilet facilities.
 - The renovated areas will receive new finishes, and new mechanical, electrical, and plumbing systems as noted below.
 - Renovation to the entire roof system which is approximately 79,100 sf.

- Approximately 46,200sf of roof includes removing the existing asphalt shingles and replacing with a standing-seam metal roofing system
 - The remainder is a flat roof area that will receive a liquid roofing system.
 - Exterior expansion & control joints to be cleaned and resealed.
 - Site work will consist of striping the existing paved parking areas.
- g. *HVAC Construction*
 - Replace existing unit ventilators with Packaged RTU with VAVs.
 - Replace existing indoor AHUs with RTUs.
 - Replace hot water pumps with VFDs.
 - New hot water terminal heaters.
 - New exhaust fans.
 - BAS – JCI base bid and Alternate bids for two other manufacturers.
- h. *Electrical Construction*
 - Remove existing wiring devices, connections to equipment, and lighting fixtures in scope of work area.
 - New wiring devices, access control, fire alarm, and connections to equipment in scope of work area.
 - New LED interior and lighting controls.
 - New exterior parking lot lighting head replacement
- i. *Plumbing Construction*
 - Replace Existing Roof Drains with new roof drains in same location.
 - Rework existing rainwater inside building as required.
 - New Single Use Toilet rooms and fixtures.
 - Connect new supply piping to existing supply piping and extend to new fixtures as required.
 - Fire Protection:
 - Connect into existing fire protection piping and provide new sprinkler heads and piping.
 - Clean agent system provided within Records Room 119
- 6. Post Meeting Site Tour
 - a. Building tours can be scheduled, contact Michael Shelgren at mshelgren@ojrsd.net
- 7. QUESTIONS (all scope questions must be submitted in writing).

END OF PRE-BID MEETING AGENDA

SECTION 087100 DOOR HARDWARE - ADDENDUM 1

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hardware for wood, aluminum, and hollow metal doors.
- B. Hardware for fire-rated doors.
- C. Electrically operated and controlled hardware.
- D. Lock cylinders for doors with balance of hardware specified in other sections.
- E. Thresholds.
- F. Smoke and draft control seals.
- G. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS

- A. Section 081113 - Hollow Metal Doors and Frames.
- B. Section 081116 - Aluminum Doors and Frames.
- C. Section 081213 - Hollow Metal Frames.
- D. Section 081416 - Flush Wood Doors.
- E. Section 281000 - Access Control: Electronic access control devices.

1.03 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.
- B. BHMA A156.1 - Standard for Butts and Hinges 2021.
- C. BHMA A156.2 - Bored and Preassembled Locks and Latches 2017.
- D. BHMA A156.3 - Exit Devices 2020.
- E. BHMA A156.4 - Door Controls - Closers 2019.
- F. BHMA A156.8 - Door Controls - Overhead Stops and Holders 2021.
- G. BHMA A156.13 - Mortise Locks & Latches Series 1000 2017.
- H. BHMA A156.16 - Auxiliary Hardware 2018.
- I. BHMA A156.18 - Materials and Finishes 2020.
- J. BHMA A156.21 - Thresholds 2019.
- K. BHMA A156.25 - Electrified Locking Devices 2018.
- L. BHMA A156.26 - Standard for Continuous Hinges 2021.
- M. BHMA A156.28 - Recommended Practices For Mechanical Keying Systems 2018.
- N. BHMA A156.115 - Hardware Preparation In Steel Doors And Steel Frames 2016.
- O. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames 2006.
- P. DHI (H&S) - Sequence and Format for the Hardware Schedule 2019.
- Q. DHI (KSN) - Keying Systems and Nomenclature 2019.

- R. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- S. NFPA 80 - Standard for Fire Doors and Other Opening Protectives 2022.
- T. NFPA 101 - Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- U. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives 2022.
- V. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies 2022.
- W. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.
- B. Sequence installation to ensure facility services connections are achieved in an orderly and expeditious manner.
- C. Preinstallation Meeting: Convene a preinstallation meeting four weeks prior to commencing work of this section; require attendance by affected installers and the following:
 - 1. Architect.
 - 2. Installer's Architectural Hardware Consultant (AHC).
 - 3. Hardware Installer.
 - 4. Owner's Security Consultant.
- D. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
- E. Keying Requirements Meeting: Arrange meeting with Owner, Architect and finish hardware supplier to determine keying requirements immediately upon receipt of finishing hardware schedule.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
- C. Shop Drawings - Door Hardware Schedule: A detailed listing that includes each item of hardware to be installed on each door.
 - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
 - 2. Comply with DHI (H&S) using door numbering scheme and hardware set numbers as indicated in Contract Documents.
 - a. Submit in vertical format.
 - 3. List groups and suffixes in proper sequence.
 - 4. Include complete description for each door listed.
 - 5. Include manufacturer's and product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
 - 6. Include account of abbreviations and symbols used in schedule.

- D. Shop Drawings - Electrified Door Hardware: Include diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:
 - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC).
 - 2. Elevations: Include front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
 - 3. Diagrams: Include point-to-point wiring diagrams that show each device in door opening system with related colored wire connections to each device.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Manufacturer's qualification statement.
- G. Installer's qualification statement.
- H. Supplier's qualification statement.
- I. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
 - 1. Include manufacturer's parts lists and templates.
 - 2. Bitting List: List of combinations as furnished.
- J. Keying Schedule:
 - 1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.
- K. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- L. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.
- M. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 016000 - Product Requirements, for additional provisions.
 - 2. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.06 QUALITY ASSURANCE

- A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Architect and Contractor.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.
- D. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC) to assist in work of this section.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide manufacturer warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion. Complete forms in Owner's name and register with manufacturer.
 - 1. Closers: Ten years, minimum.
 - 2. Exit Devices: Five years, minimum.
 - 3. Locksets and Cylinders: Ten years, minimum.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
- B. Provide individual items of single type, of same model, and by same manufacturer.
- C. Locks: Provide a lock for each door, unless it's indicated that lock is not required.
 - 1. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's Series. As indicated in hardware sets.
 - 2. Trim: Provide lever handle or pull trim on outside of each lock, unless otherwise indicated.
 - 3. Strikes:
 - a. Finish: To match lock or latch.
 - b. Curved-Lip Strikes: Provide as standard, with extended lip to protect frame, unless otherwise indicated.
 - c. Center Strike At Pairs of Doors: 7/8 inch (22.2 mm) lip.
- D. Closers:
 - 1. Provide door closer on each exterior door, unless otherwise indicated.
 - 2. Provide door closer on each fire-rated and smoke-rated door.
 - 3. Spring hinges are not an acceptable self-closing device, unless otherwise indicated.
- E. Overhead Stops and Holders (Door Checks).
 - 1. Provide stop for every swinging door, unless otherwise indicated.
 - 2. Overhead Stop is not required if positive stop feature is specified for door closer; positive stop feature of door closer is not an acceptable substitute for a stop, unless otherwise indicated.
 - 3. Overhead stop is not required if a floor or wall stop has been specified for the door.
- F. Drip Guards: Provide at head of outswinging exterior doors unless protected by roof or canopy directly overhead.

- G. Thresholds:
 - 1. Exterior Applications: Provide at each exterior door, unless otherwise indicated.
- H. Smoke and Draft Control Seals:
 - 1. Provide gasketing for smoke and draft control doors that complies with local codes, requirements of assemblies tested in accordance with UL 1784.
- I. Weatherstripping and Gasketing:
 - 1. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.
 - 2. Provide door bottom sweep on each exterior door, unless otherwise indicated.
- J. Electrically Operated and/or Controlled Hardware: Provide necessary power supplies, power transfer hinges, relays, and interfaces as required for proper operation; provide wiring between hardware and control components and to building power connection in compliance with NFPA 70.
- K. See Section 281000 for additional access control system requirements.
- L. Fasteners:
 - 1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
 - a. Aluminum fasteners are not permitted.
 - b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
 - 2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
 - a. Self-drilling (Tek) type screws are not permitted.
 - 3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
 - 4. Provide wall grip inserts for hollow wall construction.
 - 5. Fire-Resistance-Rated Applications: Comply with NFPA 80.
 - a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
 - b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.

2.02 PERFORMANCE REQUIREMENTS

- A. Provide door hardware products that comply with the following requirements:
 - 1. Applicable provisions of federal, state, and local codes.
 - a. NFPA 101.
 - 2. Accessibility: ADA Standards and ICC A117.1.
 - 3. Fire-Resistance-Rated Doors: NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
 - 4. Hardware on Fire-Resistance-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for application indicated.
 - 5. Hardware for Smoke and Draft Control Doors: Provide door hardware that complies with local codes, and requirements of assemblies tested in accordance with UL 1784.

6. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
7. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
8. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.

2.03 HINGES

- A. Manufacturers: Conventional butt hinges.
 1. BEST; dormakaba Group.
 2. Mckinney.
 3. Ives Hardware.
- B. Properties:
 1. Butt Hinges: As applicable to each item specified.
 - a. Standard Weight Hinges: Minimum of two (2) permanently lubricated non-detachable bearings.
 - b. Heavy Weight Hinges: Minimum of four (4) permanently lubricated bearings on heavy weight hinges.
 - c. Template screw hole locations.
 - d. Bearings: Concealed fully hardened bearings.
 - e. UL 10C listed for fire-resistance-rated doors.
- C. Sizes: See Door Hardware Schedule.
 1. Hinge Widths: As required to clear surrounding trim.
 2. Sufficient size to allow 180 degree swing of door.
- D. Finishes: See Door Hardware Schedule.
 1. Fully polish hinges; front, back, and barrel.
- E. Grades:
 1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
 2. Comply with BHMA A156.18 Materials and Finishes.
- F. Material: Base metal as indicated for each item by BHMA material and finish designation.
- G. Types:
 1. Butt Hinges: Include full mortise hinges.
- H. Options: As applicable to each item specified.
- I. Quantities:
 1. Butt Hinges: Three (3) hinges per leaves up to 90 inches (2286 mm) in height. Add one (1) for each additional 30 inches (762 mm) in height or fraction thereof.
 - a. Hinge weight and size unless otherwise indicated in hardware sets:
 - 1) For doors up to 36 inches (914 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.134 inch (3.4 mm) and a minimum of 4-1/2 inches (114 mm) in height.
 - 2) For doors from 36 inches (914 mm) wide up to 42 inches (1067 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.145 inch (3.7 mm) and a minimum of 4-1/2 inches (114 mm) in height.
 - 3) For doors from 42 inches (1067 mm) wide up to 48 inches (1219 mm) wide and up to 1-3/4 inches (44.5 mm) thick provide hinges with a

minimum thickness of 0.180 inch (4.6 mm) and a minimum of 5 inches (127 mm) in height.

- 4) For doors greater than 1-3/4 inches (44.5 mm) thick provide hinges with a minimum thickness of 0.180 inch (4.6 mm) and a minimum of 5 inches (127 mm) in height.

J. Applications: At swinging doors.

1. Provide non-removable pins at out-swinging doors with locking hardware and all exterior doors.

K. Products:

1. Butt Hinges:
 - a. Ball Bearing, Five (5) Knuckle.

2.04 CONTINUOUS HINGES

A. Manufacturers:

1. Best Access
2. Roton
3. Select Hardware

Geared Continuous Hinges: As applicable to each item specified.

- 1) Non-handed.
- 2) Anti-spinning through-fastener.
- 3) UL 10C listed for fire-resistance-rated doors.
 - (a) Metal Door Installation: Rated up to 90 minutes.
 - (b) Wood Door Installation: Rated up to 60 minutes.
- 4) Sufficient size to permit door to swing 180 degrees

B. Finishes: See Door Hardware Schedule.

2.05 BOLTS

A. Manufacturers:

1. ABH.
2. Burns.
3. Trimco.

B. Properties:

1. Dustproof Strikes: For bolting into floor, provide except at metal thresholds.

C. Options:

1. Extension Bolts: In leading edge of door, one bolt into floor, one bolt into top of frame.
2. Lever extensions: Provide for top bolt at oversized doors.

2.06 EXIT DEVICES

A. Manufacturers:

1. Precision Apex 2000 Series.
2. Sargent 19GL80 Series.

B. Properties:

1. Actuation: Crossbar.
2. Touchpads: 'T' style metal touchpads and rail assemblies with matching chassis covers end caps.

3. Latch Bolts: Stainless steel deadlocking with 3/4 inch (19 mm) projection using latch bolt.
 4. Lever Design: Match project standard lockset trims.
 5. Cylinder: Include where cylinder dogging or locking trim is indicated.
 6. Strike as recommended by manufacturer for application indicated.
 7. Dogging:
 - a. Non-Fire-Resistance-Rated Devices: Cylinder 1/4 inch (6 mm) hex key dogging.
 - b. Fire-Resistance-Rated Devices: Manual dogging not permitted.
 8. Touch bar assembly on wide style exit devices to have a 1/4 inch (6.3 mm) clearance to allow for vision frames.
 9. All exposed exit device components to be of architectural metals and "true" architectural finishes.
 10. Handing: Field-reversible.
 11. Fasteners on Back Side of Device Channel: Concealed - exposed fasteners not allowed.
 12. Vertical Latch Assemblies' Operation: Gravity, without use of springs.
- C. Grades: Complying with BHMA A156.3, Grade 1.
1. Provide exit devices tested and certified by UL or by a recognized independent laboratory for mechanical operational testing to 10 million cycles minimum with inspection confirming Grade 1 Loaded Forces have been maintained.
- D. Standards Compliance:
1. UL Listed for Panic and Fire for Class II Circuitry.
 2. Provide UL (DIR) listed exit device assemblies for fire-resistance-rated doors.
 3. Comply with UL 10C.
- E. Code Compliance: As required by authorities having jurisdiction in the State in which the Project is located.
1. Listed by UL as a Controlled Exit Device (FULA) and Special Locking Arrangements (FWAX) category.
- F. Options:
1. Electrified Devices:
 2. Delayed Egress Devices: Manufacturer's standard for the application.
 3. Internally mounted switch used to signal other components.
 4. Internally mounted switch that monitors the position of the latchbolt.
 5. MLR: Motorized latch retraction.
- G. Products:
1. 2000.

2.07 ELECTRIC STRIKES

- A. Manufacturers:
1. RCI
 2. HES.
 3. Allegion.
- B. Properties:
1. Provide UL 1034 compliant devices.
 2. Provide UL 10C compliant devices.

3. Include transformer and rectifier as necessary for complete installation.
- C. Installation: Connect electric strikes into fire alarm where non-rated doors are scheduled to release with fire or sprinkler alarm condition.

2.08 LOCK CYLINDERS

- A. Manufacturers:
 1. BEST (No substitutions)
- B. Material:
 1. Manufacturer's standard corrosion-resistant brass alloy.
- C. Types: As applicable to each item specified.
 1. Patented small format interchangeable core (SFIC) type cylinders, with seven pin cores.

2.09 MORTISE LOCKS

- A. Manufacturers:
 1. BEST, 45H Series, (No substitutions)
- B. Properties:
 1. Mechanical Locks: Manufacturer's standard.
 - a. Fitting modified ANSI A115.1 door preparation.
 - b. Door Thickness Coordination Fitting 1-3/4 inch (44 mm) to 2-1/4 inch (57 mm) thick doors.
 - c. Latch: Solid, one-piece, anti-friction, self-lubricating stainless steel.
 - 1) Latchbolt Throw: 3/4 inch (19 mm), minimum.
 - d. Auxiliary Deadlatch: One piece stainless steel, permanently lubricated.
 - e. Backset: 2-3/4 inch (70 mm).
 - f. Lever Trim:
 - 1) Functionality: Allow the lever handle to move up to 45 degrees from horizontal position prior to engaging the latchbolt assembly.
 - 2) Strength: Locksets outside locked lever designed to withstand minimum 1,400 inch-lbs (158.2 Nm) of torque. In excess of that, a replaceable part will shear. Key from outside and/or inside lever will still operate lockset.
 - 3) Spindle: Designed to prevent forced entry from attacking of lever.
 - 4) Independent spring mechanism for each lever.
 - (a) Trim to be self-aligning and thru-bolted.
 2. Electrified Locks: Same properties as standard locks, and as follows:
 - a. Function: Electrically locked (Fail Safe) or unlocked (Fail Secure), as indicated for each lock in Door Hardware Schedule.
- C. Finishes: See Door Hardware Schedule.
 1. Core Faces: Match finish of lockset.
- D. Grades:
- E. Products: Mortise locks, including standard and electrified types.
 1. 45H.

2.10 CYLINDRICAL LOCKS

- A. Manufacturers:
 - 1. BEST 9K Series, (No substitutions)
- B. Properties:
 - 1. Mechanical Locks:
 - a. Fitting modified ANSI A115.2 door preparation.
 - b. Door Thickness Fit: 1-3/8 inches (35 mm) to 2-1/4 inches (57 mm) thick doors.
 - c. Construction: Hub, side plate, shrouded rose, locking pin to be a one-piece casting with a shrouded locking lug.
 - 1) Through-bolted anti-rotational studs.
 - d. Cast stainless steel latch retractor with roller bearings for exceptionally smooth operation and superior strength and durability.
 - e. Bored Hole: 2-1/8 inch (54 mm) diameter.
 - f. Backset: 2-3/4 inches (70 mm) unless otherwise indicated.
 - g. Latch: Single piece tail-piece construction.
 - 1) Latchbolt Throw: 9/16 inch (14.3 mm), minimum.
 - h. Cylinders:
 - 1) Cylinder Core Types: Locks capable of supporting manufacturers' cores, as applicable.
 - i. Lever Trim:
 - 1) Style: See Door Hardware Schedule.
 - 2) Outside Lever Sleeve: Seamless one-piece construction.
 - 2. Electrified Locks: Same properties as standard locks, and as follows:
 - a. Function: Electrically locked (Fail Safe) or unlocked (Fail Secure), as indicated for each lock in Door Hardware Schedule.
- C. Finishes: See Door Hardware Schedule.
 - 1. Core Faces: Match finish of lockset.
- D. Grades: Comply with BHMA A156.2, Grade 1, Series 4000, Operational Grade 1, Extra Heavy Duty.
- E. Material: Manufacturer's standard for specified lock.
- F. Products: Cylindrical locks, including mechanical and electrified types.
 - 1. 9K (Grade 1).

2.11 DOOR PULLS AND PUSH PLATES

- A. Manufacturers:
 - 1. ABH.
 - 2. Burns.
 - 3. Trimco.
- B. Material: Stainless steel, unless otherwise indicated.

2.12 CLOSERS

- A. Manufacturers:
 - 1. Dorma 8900 Series
 - 2. Sargent 351 Series
- B. Grades:

1. Closers: Comply with BHMA A156.4, Grade 1.
 - a. Underwriters Laboratories Compliance:
 - 1) Product Listing: UL (DIR) and ULC for use on fire-resistance-rated doors.
 - (a) UL 228 - Door Closers-Holders, With or Without Integral Smoke Detectors.
- C. Installation:
 1. Mounting: Includes surface mounted installations.
 2. Mount closers on non-public side of door and stair side of stair doors unless otherwise noted in hardware sets.
 3. At outswinging exterior doors, mount closer on interior side of door.
 4. Provide adapter plates, shim spacers, and blade stop spacers as required by frame and door conditions.
 5. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.

2.13 OVERHEAD STOPS AND HOLDERS

- A. Manufacturers:
 1. Architectural Builders Hardware Mfg (ABH)
 2. Glynn Johnson
 3. Rixson
- B. Sizes: Manufacturer's standard for the application.
- C. Finishes:
 1. Arms and Brackets: Zinc-plated.
- D. Grades: As applicable to item specified.
 1. Comply with BHMA A156.8, Grade 1.
- E. Types:
 1. Surface-applied.
 2. Concealed.

2.14 PROTECTION PLATES

- A. Manufacturers:
 1. ABH.
 2. Burns.
 3. Trimco.
- B. Properties:
 1. Plates:
 - a. Kick Plates: Provide along bottom edge of push side of every wood door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
 - 1) Size: 10 inches (254 mm) high by 2 inch (51 mm) less door width (LDW) on push side of door.
 - b. Mop Plates: Provide along bottom edge of push side of doors to provide protection from cleaning liquids and equipment damage to door surface.
 - c. Edges: Beveled, on four (4) unless otherwise indicated. CSK Screws.
- C. Grades: Comply with BHMA A156.6.

- D. Material: As indicated for each item by BHMA material and finish designation.
 - 1. Metal Properties: Stainless steel.
 - a. Metal, Standard Duty: Thickness 0.050 inch (1.27 mm), minimum.

- E. Installation:
 - 1. Fasteners: Countersunk screw fasteners

2.15 STOPS AND HOLDERS

- A. Manufacturers:
 - 1. ABH.
 - 2. Burns.
 - 3. Trimco.
- B. General: Provide overhead stop/holder when wall or floor stop is not feasible.
- C. Grades:
 - 1. Door Holders, Wall Bumpers, and Floor Stops: Comply with BHMA A156.16 and Resilient Material Retention Test as described in this standard.
- D. Types:

2.16 THRESHOLDS

- A. Manufacturers:
 - 1. National Guard Products
 - 2. Pemko.
 - 3. Reese.
- B. Properties:
 - 1. Threshold Surface: Fluted horizontal grooves across full width.
- C. Grades: Thresholds: Comply with BHMA A156.21.
- D. Material: Base metal as indicated for each item by BHMA material and finish designation.
- E. Types: As applicable to project conditions. Provide barrier-free type at every location where specified.
 - 1. Saddle Thresholds: Without thermal break.
 - 2. Bumper Seal Thresholds with Gasket: Use silicone gaskets.

2.17 WEATHERSTRIPPING AND GASKETING

- A. Manufacturers:
 - 1. National Guard Products, Inc: www.ngpinc.com/#sle.
 - 2. Pemko .
 - 3. Reese.
- B. Products:
 - 1. Weatherstripping: See Door Hardware Schedule.
 - 2. Smoke Seals: See Door Hardware Schedule.
 - 3. Meeting Stile Seals: See Door Hardware Schedule.
 - 4. Door Bottom Seals:
 - a. Door Sweeps: See Door Hardware Schedule.

2.18 ELECTRIFIED HARDWARE

- A. Manufacturers: Door Position Switch

1. Dorma MC4
2. Securitron DPS
3. SDC MC-4

B. Properties:

1. Door Position Switches: Recessed devices with magnetic contacts.
 - a. SPDT configuration.

2.19 KEYS AND CORES

A. Manufacturers:

1. BEST, No Substitution, Existing System.

B. Properties: Complying with guidelines of BHMA A156.28.

1. Provide small format interchangeable core.
2. Provide interchangeable cores for all locks listed in the hardware spec by one supplier even if door supplied by different manufacturer.
3. Provide Standard keys and cores.
4. Provide keying information in compliance with DHI (KSN) standards.
5. Keying Schedule: Arrange for a keying meeting, with Architect, Owner and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying complies with project requirements.
6. Keying: Master keyed.
7. Include construction keying and control keying with Brass removable core cylinders.
8. Supply keys in following quantities:
 - a. Grand Master Keys: 2 each.
 - b. Master Keys: 4 each each group.
 - c. Construction Master Keys: 4 each.
 - d. Construction Control Keys: 2 each.
 - e. Perm Core Control Keys: 4 each.
 - f. Change Keys: 2 each change keys for each keyed core.
9. Deliver keys with identifying tags to Owner by security shipment direct from manufacturer.
10. Include installation of permanent cores and return construction cores to hardware supplier. Construction cores and keys to remain property of hardware supplier.

2.20 KEY CABINETS

A. Manufacturers:

1. Lund Equipment Company, Inc
2. Telkee

B. Properties:

1. Key Management System: For each keyed lock on project, provide one set of consecutively numbered duplicate key tags with hanging hole and snap catch.
2. Security Key Tags: For each keyed lock on project, provide one set of matching key tags for permanent attachment to one key of each set.
3. Provide key collection envelopes, receipt cards, and index cards in quantity suitable to manage number of keys.
4. Mounting: Wall surface mounted.
5. Capacity: Actual quantity of keys, plus 50 percent additional capacity.

- 6. Key cabinet lock to facility's keying system.
- C. Finishes: Baked enamel, manufacturer's standard color.
- D. Material: Sheet steel.

2.21 FINISHES

- A. Finishes: Identified in Hardware Sets.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.
- B. Correct all defects prior to proceeding with installation.
- C. Verify that electric power is available to power operated devices and of correct characteristics.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Install hardware using the manufacturer's fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use "Riv-Nuts" or similar products.
- C. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.
- D. Install hardware for smoke and draft control doors in accordance with NFPA 105.
- E. Use templates provided by hardware item manufacturer.
- F. Do not install surface mounted items until application of finishes to substrate are fully completed.
- G. Wash down masonry walls and complete painting or staining of doors and frames.
- H. Complete finish flooring prior to installation of thresholds.
- I. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Section 014000 - Quality Requirements.

3.04 CLEANING

- A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
- B. Clean adjacent surfaces soiled by hardware installation activities.

3.05 PROTECTION

- A. Protect finished Work under provisions of Section 017000 - Execution and Closeout Requirements.
- B. Do not permit adjacent work to damage hardware or finish.

Manufacturer list

ABH Architectural Builders Hardware
BES BEST
PRE BEST (Precision)
BRN Burns Manufacturing
DKA dormakaba Architectural
NGP National Guard Products

Finish list

Code:	Name:
US27	Mill Aluminum
689	689 Aluminum
A	Anodized Aluminum
US26D	Satin Chrome
26D	26D>CHROMIUM PLATED SATIN
Gray	#N/A
630	Satin Stainless Steel
CL	Clear
C	Charcoal
626	Satin chromium plated
AL	AL>ALUM CLEAR COATED

Specification Report

Set #1 - Ext Alum - Card Access - Remote Release

Doors: V101A

1.0 Hinge	673HD EPT12C	AL	BES
1.0 Hinge	673HD	AL	BES
1.0 Exit Device	C MLR 2803 C03	630	PRE
1.0 Exit Device	2801 LD	630	PRE
1.0 Rim Cylinder	12E 7 2 CORMAX	626	BES
1.0 Pull	AB201 12HD	US32D	ABH
2.0 Door Closer	HD80 16 SPA PC SNDTPK DP80 BSHD90 NFHD	689	BES
2.0 Overhead Concealed Stop	1020SL Series	US32D	ABH
1.0 Power Transfer	EPT-12C		PRE
1.0 Wire Harness	WH-6E		BES
1.0 Wire Harness	WH-192P		BES
1.0 Power Supply	RPSMLR2BB		PRE
1.0 Card Reader	CARD READER BY SECURITY VENDOR		
1.0 Wiring Diagram	FURNISHED BY HWDE SUPPLIER		
2.0 Door Position Switch	MC4		DKA
2.0 Door Sweep	1015V LAR	US27	NGP
1.0 Threshold	8533V LAR (1/4-20 SS MS/EA)	A	NGP

NOTE: Balance of weather-stripping by Aluminum Frame / Door manufacturer. Coordinate and verify hardware with Aluminum Frame / Door manufacturer. Operation: Presentation of valid credential to card reader or Remote Release (by others) retracts active leaf exit device latchbolt, allowing authorized entry. Request to Exit by Security Vendor. Mechanical key override. Egress always allowed. All wiring and conduit by electrical contractor. Coordinate wiring and installation with GC / EC / Security Vendor.

Set #2 – Not Used

Set #3 - Vest Alum - Card Access

Doors: V101B

1.0 Hinge	673HD EPT12C	AL	BES
1.0 Hinge	673HD	AL	BES
1.0 Exit Device	C MLR 2803 LBR C03	630	PRE
1.0 Exit Device	2801 LD LBR	630	PRE
1.0 Rim Cylinder	12E 7 2 CORMAX	626	BES
1.0 Pull	AB201 12HD	US32D	ABH
2.0 Door Closer	HD80 16 SPA PC SNDTPK DP80 BSHD90 NFHD	689	BES
2.0 Overhead Concealed Stop	1020SL Series	US32D	ABH
1.0 Power Transfer	EPT-12C		PRE
1.0 Wire Harness	WH-6E		BES
1.0 Wire Harness	WH-192P		BES
1.0 Power Supply	RPSMLR2BB		PRE
1.0 Card Reader	CARD READER BY SECURITY VENDOR		

1.0 Wiring Diagram	FURNISHED BY HWDE SUPPLIER	
2.0 Door Position Switch	MC4	DKA

NOTE: Balance of weather-stripping by Aluminum Frame / Door manufacturer. Coordinate and verify hardware with Aluminum Frame / Door manufacturer. Operation: Presentation of valid credential to card reader retracts active leaf exit device latchbolt, allowing authorized entry. Request to Exit by Security Vendor. Mechanical key override. Egress always allowed. All wiring and conduit by electrical contractor. Coordinate wiring and installation with GC / EC / Security Vendor.

Set #4 – Not Used

Set #5 - Office, Food Services

Doors: 110.1, 111, 112, 115.1, 115.2, 117.1, 117.2, 122, 123, 124

3.0 Hinge	FBB179 45X45	26D	BES
1.0 Cylindrical Lock	9K 3 7 AB 15 D S3 CORMAX	626	BES
1.0 Wall Stop	AB403	US26D	ABH
3.0 Silencers	500	Gray	BRN

Set #6 - Media Center - WD x Exist Fr

Doors: 109.1

3.0 Hinge	FBB168 NRP 45X45	26D	BES
1.0 Exit Device	2108 LD A 4908	630	PRE
1.0 Rim Cylinder	12E 7 2 CORMAX	626	BES
1.0 Door Closer	HD80 16 SDS PC SNDTPK	689	BES
1.0 Protection Plate	PP0050 10" x 2" LDW B4E CSK	US32D	ABH
1.0 Gasketing	2525 Head & Jambs (2)	C	NGP

NOTE: Verify new hardware with existing frame. Patch, Prep and modify existing frame as required by Gc. Fill or patch all remaining holes or preps to code compliant conditions.

Set #7 - Toilet - VIBEO Indicator

Doors: T103, T104, T105

3.0 Hinge	FBB179 45X45	26D	BES
1.0 Mortise Lock	45H 0 LT 15 H VIBE x O indicator	626	BES
1.0 Door Closer	HD80 16 AF80P PC SNDTPK (Reg Arm)	689	BES
1.0 Protection Plate	PP0050 10" x 2" LDW B4E CSK	US32D	ABH
1.0 Protection Plate	PP0050 6" x 1" LDW B4E CSK	US32D	ABH
1.0 Wall Stop	AB400	626	ABH
1.0 Gasketing	2525 Head & Jambs (2)	C	NGP

Set #8 - Conference
Doors: 116A, 116B

3.0 Hinge	FBB179 45X45	26D	BES
1.0 Cylindrical Lock	9K 3 7 R 15 D S3 CORMAX	626	BES
1.0 Wall Stop	AB400	626	ABH
1.0 Gasketing	2525 Head & Jambs (2)	C	NGP

Set #9 - Compliance
Doors: 115

3.0 Hinge	FBB179 45X45	26D	BES
1.0 Cylindrical Lock	9K 3 7 R 15 D S3 CORMAX	626	BES
1.0 Overhead Concealed Stop	1020SL Series	US32D	ABH
3.0 Silencers	500	Gray	BRN

Set #10 - Files
Doors: 115.3

3.0 Hinge	FBB179 45X45	26D	BES
1.0 Cylindrical Lock	9K 3 7 R 15 D S3 CORMAX	626	BES
1.0 Overhead Stop	9020 Series x 90541 Pull Side Mtg Brk	US32D	ABH
3.0 Silencers	500	Gray	BRN

Set #11 - Storage
Doors: 113.1

3.0 Hinge	FBB179 45X45	26D	BES
1.0 Cylindrical Lock	9K 3 7 D 15 D S3 CORMAX	626	BES
1.0 Wall Stop	AB400	626	ABH
3.0 Silencers	500	Gray	BRN

Set #12 - Kitchenette / Break Rm
Doors: 114

3.0 Hinge	FBB179 45X45	26D	BES
1.0 Cylindrical Lock	9K 3 0 N 15 D S3	626	BES
1.0 Door Closer	HD80 16 SPA PC SNDTPK	689	BES
1.0 Protection Plate	PP0050 10" x 2" LDW B4E CSK	US32D	ABH
1.0 Wall Stop	AB400	626	ABH
1.0 Gasketing	2525 Head & Jambs (2)	C	NGP

Set #13 - Transportation
Doors: 110

3.0 Hinge	FBB179 45X45	26D	BES
1.0 Cylindrical Lock	9K 3 7 R 15 D S3 CORMAX	626	BES
1.0 Wall Stop	AB400	626	ABH
3.0 Silencers	500	Gray	BRN

Set #14 - Food Serv, Odessey of Mind
Doors: 112A, 120

3.0 Hinge	FBB179 NRP 45X45	26D	BES
1.0 Cylindrical Lock	9K 3 7 R 15 D S3 CORMAX	626	BES
1.0 Wall Stop	AB400	626	ABH
3.0 Silencers	500	Gray	BRN

Set #15 - Elec
Doors: E108

6.0 Hinge	FBB179 NRP 45X45	26D	BES
1.0 Flushbolt	1855S	US26D	ABH
1.0 Cylindrical Lock	9K 3 7 D 15 D STK 7/8" CORMAX	626	BES
1.0 Overhead Stop	9020 Series	US32D	ABH
1.0 Wall Stop	AB400	626	ABH
1.0 Gasketing	5070 Meeting Stile Astragal	CL	NGP
1.0 Gasketing	2525 Head & Jambs (2)	C	NGP

NOTE: 9020 OH Stop @ active leaf.

Set #16 - Records, Fac Archives
Doors: 118, 119

3.0 Hinge	FBB179 NRP 45X45	26D	BES
1.0 Cylindrical Lock	9K 3 7 D 15 D S3 CORMAX	626	BES
1.0 Door Closer	HD80 16 SPA PC SNDTPK	689	BES
1.0 Protection Plate	PP0050 10" x 2" LDW B4E CSK	US32D	ABH
1.0 Wall Stop	AB400	626	ABH
3.0 Silencers	500	Gray	BRN

Set #17 - Storage
Doors: 121, 125

3.0 Hinge	FBB179 NRP 45X45	26D	BES
1.0 Cylindrical Lock	9K 3 7 D 15 D S3 CORMAX	626	BES

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1.0 Wall Stop	AB400	626	ABH
3.0 Silencers	500	Gray	BRN

Set #18 - Tech Storage
Doors: 117A

6.0 Hinge	FBB179 NRP 45X45	26D	BES
1.0 Flushbolt	1855S	US26D	ABH
1.0 Cylindrical Lock	9K 3 7 R 15 D STK 7/8" CORMAX	626	BES
2.0 Overhead Stop	9020 Series x 90541 Pull Side Mtg Brk	US32D	ABH
1.0 Astragal	139SP LAR		NGP
2.0 Silencers	500	Gray	BRN

Set #19 - Exter Tech Storage
Doors: 117.3

2.0 Hinge	662HDUL	AL	BES
1.0 Flushbolt	1855P	US26D	ABH
1.0 Cylindrical Lock	9K 3 7 D 15 D STK 7/8" 3/4" CORMAX	626	BES
1.0 Door Closer	HD80 16 SDST PC SNDTPK	689	BES
1.0 Overhead Hold Open	9010 Series	US32D	ABH
2.0 Protection Plate	PP0050 10" x 1" LDW B4E CSK	US32D	ABH
1.0 Dust Proof Strike	1870	US32D	ABH
1.0 Astragal	139SP LAR		NGP
2.0 Door Position Switch	MC4		DKA
1.0 Gasketing	700N	A	NGP
1.0 Drip Cap	16A 4" ODW	A	NGP
2.0 Door Sweep	1015V LAR	US27	NGP
1.0 Threshold	425 LAR (1/4-20 SS MS/EA) HD	A	NGP

Set #20 - Technology
Doors: 117

3.0 Hinge	FBB179 45X45	26D	BES
1.0 Cylindrical Lock	9K 3 7 R 15 D S3 CORMAX	626	BES
1.0 Door Closer	HD80 16 IS PC SNDTPK	689	BES
1.0 Protection Plate	PP0050 10" x 2" LDW B4E CSK	US32D	ABH
3.0 Silencers	500	Gray	BRN

Set #21 - Corridor
Doors: C101

6.0 Hinge	FBB168 NRP 45X45	26D	BES
1.0 Exit Device	2203 CD LBR 4903 A	630	PRE
1.0 Exit Device	2201 LBR	630	PRE
1.0 Rim Cylinder	12E 7 2 CORMAX	626	BES

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1.0	Mortise Cylinder	1E 7 4 CORMAX	626	BES
2.0	Door Closer	HD80 16 SDST PC SNDTPK	689	BES
2.0	Protection Plate	PP0050 10" x 1" LDW B4E CSK	US32D	ABH
1.0	Gasketing	5070 Meeting Stile Astragal	CL	NGP
1.0	Gasketing	2525 Head & Jambs (2)	C	NGP

NOTE: Verify Operation.

Set #22 - Corridor - UL

Doors: C108

6.0	Hinge	FBB168 NRP 45X45	26D	BES
1.0	Exit Device	FL 2208 LBR 4908 A	630	PRE
1.0	Exit Device	FL 2201 LBR	630	PRE
1.0	Rim Cylinder	12E 7 2 CORMAX	626	BES
2.0	Door Closer	HD80 16 SPA PC SNDTPK	689	BES
2.0	Protection Plate	PP0050 10" x 1" LDW B4E CSK	US32D	ABH
2.0	Wall Stop	AB400	626	ABH
1.0	Gasketing	5070 Meeting Stile Astragal	CL	NGP
1.0	Gasketing	2525 Head & Jambs (2)	C	NGP

Set #23 - Recept / Corr - New Door x Exist Frame

Doors: 100.2

NOTE: Verify existing hardware with new door.

S

et #24 - Corridor

Doors: C109

6.0	Hinge	FBB168 NRP 45X45	26D	BES
1.0	Exit Device	2208 LD LBR 4908 A	630	PRE
1.0	Exit Device	2201 LD LBR	630	PRE
1.0	Rim Cylinder	12E 7 2 CORMAX	626	BES
2.0	Door Closer	HD80 16 SDST PC SNDTPK	689	BES
2.0	Protection Plate	PP0050 10" x 1" LDW B4E CSK	US32D	ABH
1.0	Gasketing	5070 Meeting Stile Astragal	CL	NGP
1.0	Gasketing	2525 Head & Jambs (2)	C	NGP

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SECTION 21 2220 - CLEAN-AGENT FIRE SUPPRESSION SYSTEMS – ADDENDUM #1

PART 1 - GENERAL

1.1 SCOPE

- A. This specification outlines the requirements for a “Total Flood” Clean Agent Fire Suppression System utilizing FK-5-1-12 as the fire extinguishing agent and with a SHP PRO™ detection and control system. The work described in this specification includes all engineering, labor, materials, equipment and services necessary, and required, to complete and test the suppression and detection system. The system shall be supplied and installed by the local authorized distributor: Suppression Systems, Inc., 155 Nestle Way, Suite 104, Breinigsville, PA, 18031. Contact: Jerry Krouse, phone # 800-360-0687.

1.2 APPLICABLE STANDARDS AND PUBLICATIONS:

The design, equipment, installation, testing and maintenance of the clean agent System shall be in compliance and accordance with the applicable requirements set forth in the latest edition of the following codes, standards, and third party approval agencies:

- A. NFPA No. 2001 - Clean Agent Fire Extinguishing Systems
- B. NFPA No. 70 - National Electrical Code
- C. NFPA No. 72 - National Fire Alarm Code
- D. Factory Mutual Approval Guide
- E. Underwriters Laboratory
- F. Requirements of the Authority Having Jurisdiction (AHJ)

The standards listed, as well as all other applicable codes and standards shall be used as "minimum" design standards. Also to be considered are the requirements of the "Authority Having Jurisdiction" and good engineering practices.

1.3 REQUIREMENTS

- A. The Clean Agent Fire Suppression System installation shall be made in accordance with the drawings, specifications and applicable standards. Should a conflict occur between the drawings and specifications, the specifications shall prevail.

1.4 EXCLUSIONS:

- A. The work listed below shall be provided by other trades, or under other sections of this specification:
1. 120 VAC or 240 VAC power supply to the system control panel.
 2. Interlock wiring and conduit for shutdown of HVAC, dampers and/or electric power supplies, relays or shunt trip breakers.
 3. Connection to local/remote fire alarm systems, listed central alarm station(s).

1.5 QUALITY ASSURANCE:

A. Manufacturer:

1. The manufacturer of the clean agent system hardware and detection components shall have a minimum of 10 year's experience in the design and manufacture of similar types of suppression systems and who refer to similar installations providing satisfactory service.
2. The name of the manufacturer, part numbers and serial numbers shall appear on all major components.
3. All devices, components and equipment shall be the products of the same manufacturer.
4. All devices, components and equipment shall be new, standard products of the manufacturer's latest design and suitable to perform the functions intended.
5. All devices and equipment shall be U.L listed or FM approved.
6. Locks for all cabinets shall be keyed alike.

B. INSTALLER:

1. The installing contractor shall be trained by the supplier to design, install, test and maintain a clean agent system.
2. The installing contractor shall employ a NICET certified special hazard designer, level 3 or above, who will be responsible for this project.
3. The installing contractor shall be an experienced firm regularly engaged in the installation of automatic clean agent, or similar, fire suppression systems in strict accordance with all applicable standards.
4. The installing contractor must have a minimum of five (5) year's experience in the design, installation and testing of clean agent, or similar fire suppression systems. A list of systems of a similar nature and scope shall be provided on request.

5. The installing contractor shall show evidence that his company carries a minimum \$2,000,000.00 liability and completed operations insurance policy. These limits shall supersede limits required in the general conditions of the specifications.
6. The installing contractor shall maintain, or have access to, a clean agent recharging station. The installing contractor shall provide proof of his ability to recharge the largest clean agent system within 24 hours after a discharge. Include the amount of bulk agent storage available.
7. The installing contractor shall be an authorized stocking distributor of the clean agent system equipment so that immediate replacement parts are available from inventory.
8. The installing contractor shall show proof of emergency service available on a twenty-four hour, seven-day-a-week basis

C. SUBMITTALS:

1. The installing contractor shall submit the following design information and drawings for approval prior to starting work on this project:
 - a. Field installation layout drawings having a scale of not less than 1:1000m detailing the location of all agent storage tanks, pipe runs including pipe sizes and lengths, control panel(s), detectors, manual pull stations, abort stations, audible and visual alarms, etc.
 - b. Auxiliary details and information such as maintenance panels, door holders, special sealing requirements and equipment shutdowns.
 - c. Separate layouts, or drawings, shall be provided for each level, (i.e., room, underfloor, and above ceiling) and for mechanical and electrical work.
 - d. A separate layout or drawing shall show isometric details of agent storage containers, mounting details and proposed pipe runs and sizes.
 - e. Electrical layout drawings shall show the location of all devices and include point-to-point conduit runs and a description of the method(s) used for detector mounting.
 - f. Provide an internal control panel wiring diagram which shall include power supply requirements and field wiring termination points.
 - g. Graphic Annunciator wiring schematics and dimensioned display panel illustration shall be provided.
 - h. Complete hydraulic flow calculations, from Fike's UL/FM Approved Flow Calculation Program, shall be provided for all engineered Clean Agent systems. The individual sections of pipe to be used, as shown on the isometrics, must be identified and included in the calculation. Total agent discharge time must be shown and detailed by zone.

- i. Provide calculations for the battery stand-by power supply taking into consideration the power requirements of all alarms, initiating devices and auxiliary components under full load conditions.
 - j. A complete sequence of operation shall be submitted detailing all alarm devices, shutdown functions, remote signaling, damper operation, time delay and agent discharge for each zone or system.
2. Submit drawings, calculations and system component data sheets for approval to the local Fire Prevention Agency, owners Insurance Underwriter and all other Authorities Having Jurisdiction before starting installation. Submit approved plans to the Architect/Engineer for record.
- a. Refer to Division 1 - General Requirements for additional submittal provisions.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION AND OPERATION:

- A. The system shall be a Clean Agent Fire Suppression System utilizing FK-5-1-12 as the fire extinguishing agent supplied by:
 - 1. Suppression Systems Inc., 155 Nestle Way, Suite 104, Breinigsville, PA 18031. Contact: Jerry Krouse (800)-360-0687
- B. The Clean Agent Fire Suppression System shall provide a minimum design concentration of 4.5%, by volume, in all areas and/or protected spaces, at the minimum anticipated temperature within the protected area. Per NFPA 2001, the system design shall not exceed a maximum exposure limit concentration level of 10%, by volume, unless provisions for room evacuation, before agent release, are provided. All personnel should be able to leave the protected space prior to the discharge or at least within 5 minutes of the commencement of discharge.
- C. The system shall be complete in all ways. It shall include all mechanical and electrical installation, all detection and control equipment, agent storage containers, suppression agent, system actuation equipment, discharge nozzles, pipe and fittings, manual release and abort stations, audible and visual alarm devices, auxiliary devices and controls, shutdowns, alarm interface, caution/ advisory signs, functional checkout and testing, training and all other operations necessary for a functional U.L. Listed and/or F.M. Approved Clean Agent Fire Suppression System.
- D. Provide two (2) inspections during the first year of service. Inspections shall be made at 6 month intervals commencing when the system is first placed into normal service.
- E. The general contractor shall be responsible for sealing and securing the protected spaces against agent loss and/or leakage during the 10 minute "hold" period.

- F. The system(s) shall be actuated by a combination of ionization and/or photoelectric detectors installed in accordance with the guidelines stated in NFPA 72.
- G. Detectors shall be wired in Sequential Detection method of operation, standard Cross-Zoned detection, or single detector release. No other detection / wiring arrangements will be acceptable.
- H. Automatic operation of each protected area shall be as follows:
 - 1. Actuation of one (1) detector, within the system, shall:
 - a. Illuminate the "ALARM" lamp on the control panel face.
 - b. Energize an alarm bell and/or an optional visual indicator.
 - c. Transfer sets of 5 Amp rated auxiliary contacts which can perform auxiliary system functions such as:
 - 1) Operate door holder/closures on access doors.
 - 2) Transmit a signal to a fire alarm system.
 - 3) Shutdown HVAC equipment
 - d. Light an individual lamp on an optional graphic annunciator.
 - 2. Actuation of a 2nd detector, within the system, shall:
 - a. Illuminate the "PRE-DISCHARGE" lamp on the control panel face.
 - b. Energize a pre-discharge horn or horn/strobe device.
 - c. Shut down the HVAC system and/or close dampers.
 - d. Start time-delay sequence (not to exceed 60 seconds).
 - e. System abort sequence is enabled at this time.
 - f. Light an individual lamp on an optional graphic annunciator.
 - 3. After completion of the time-delay sequence, the Clean Agent Fire Suppression System shall activate and the following shall occur:
 - a. Illuminate a "RELEASE" lamp on the control panel face.
 - b. Shutdown of all power to high-voltage equipment
 - c. Energize a visual indicator(s) outside the hazard in which the discharge occurred.
 - d. Energize a "System Release" audible device.

4. The system shall be capable of being actuated by manual discharge devices located at each hazard exit. Operation of a manual device shall duplicate the sequence description above except that the time delay and abort functions SHALL be bypassed. The manual discharge station shall be of the electrical actuation type and shall be supervised at the main control panel.
5. The system shall be capable of providing a "PRE-ALARM" feature that can give advanced warning of a possible alarm condition.

2.2 SYSTEM COMPONENTS

A. GENERAL REQUIREMENTS:

1. The Clean Agent Fire Suppression System materials and equipment shall be standard products of the supplier's latest design and suitable to perform the functions intended. When one or more pieces of equipment must perform the same function(s), they shall be duplicates produced by one Manufacturer.
2. All devices and equipment shall be U.L. Listed and/or F.M. Approved.

B. AGENT STORAGE AND DISTRIBUTION:

Each system shall have its own supply of clean agent.

1. The system design can be modular, central storage, or a combination of both design criteria utilizing a fast acting rupture disc valve. The valve shall contain a scored, non-fragmenting, rupture disc to provide immediate total discharge of the suppression agent.
2. Systems shall be designed in accordance with the manufacturer's guidelines.
3. Each supply shall be located within the hazard area, or as near as possible, to reduce the amount of pipe and fittings required to install the system.
4. The clean agent shall be stored in FIKE P/N 70-XXX Series Agent Storage Containers. Containers shall be super-pressurized, with dry Nitrogen, to an operating pressure of 360 psi @ 70° F (25 bar @ 21° C). Containers shall be of high-strength alloy steel construction and conform to NFPA 2001.
5. Containers shall be actuated by the following methods:
 - a. Single container applications (Electric) – By an Impulse Valve Operator (IVO) wired through a Fike P/N 10-2748 Impulse Releasing Module (IRM). This method allows mechanical release.
 - b. Multiple container applications (Electric / Pneumatic) – The 1st container is operated by an Impulse Valve Operator (IVO) wired through a Fike P/N 10-2748 Impulse Releasing Module (IRM). 6 additional containers equipped with Impulse Valve Pneumatic Operator(s) (IVPO) can be operated by the pressure from the 1st container. This method allows mechanical release.

- c. Multiple container applications (Electric) – By Impulse Valve Operators (IVO) wired through a Fike P/N 10-2748 Impulse Releasing Modules (IRM), located at each agent storage container. (maximum 6 container system). This method does not allow mechanical release.
- 6. Each container shall have a pressure gauge and low pressure switch to provide visual and electrical supervision of the container pressure. The low pressure switch shall be wired to the control panel to provide an audible and visual "Trouble" alarm in the event the container pressure drops below 288 psi (19 bar). The pressure gauge shall be color coded to provide an easy, visual indication of container pressure.
- 7. Each container shall have a pressure relief provision that automatically operates when the internal temperature exceed 150° F (66° C).
- 8. Engineered discharge nozzles shall be provided, within the manufacturer's guidelines, to distribute the suppression agent throughout the protected spaces. The nozzles shall be FIKE P/N 85-XXX designed to provide proper agent quantity and distribution.
 - a. Nozzles shall be available in NPT sizes ¼" – 2.0" (8mm- 50mm). Each size shall be available in 180° and 360° distribution patterns.
- 9. Distribution piping and fittings shall be installed in accordance with the manufacturer's requirements, NFPA 2001 and approved piping standards and guidelines. All distribution piping shall be installed by qualified individuals using good, accepted practices and quality procedures. All piping shall be adequately supported and anchored at all directional changes and nozzle locations.
 - a. All piping shall be reamed, blown clear and swabbed with suitable solvents to remove burrs, mill varnish and cutting oils before assembly.
 - b. All pipe threads shall be sealed with Teflon tape pipe sealant applied to the male thread ONLY.

C. CONTROL PANEL:

The control panel shall be a SHP PRO Conventional Control Panel, P/N 10-063-M-C-P, manufactured by Fike Corporation, Blue Springs, MO.

- 1. The SHP PRO Control System, and its components, shall be UL listed and FM approved for releasing service and be suitable for Deluge/Pre-action sprinkler service.
- 2. The SHP PRO Control System shall perform all functions necessary to operate the system detection, actuation and auxiliary functions, as outlined..
- 3. The SHP PRO Control System shall be capable of providing 7AH or 40AH battery standby power supplies.
- 4. The SHP PRO Control System shall be microprocessor based with hardware and software integration designed to guarantee reliability.

5. The SHP PRO Control System shall support Cross Zoned, Sequential, Single Detector Release and Manual Release detection/actuation methods.
6. The SHP PRO Control System shall provide the following capabilities and functions:
 - a. Three (3) Class B (Style Y) notification appliance circuits rated for 2.0 amps @ 24 VDC.
 - b. Up to two (2) Style B initiating device circuits capable of sequential alarm, cross-zone, or single detector release operation with an overall system capacity of 50 detectors maximum.
 - c. Three (3) Style B initiating device circuits capable of monitoring closed contact devices.
 - d. Optional Class A module that converts all five initiating device circuits to Style D wiring and operation.
 - e. Optional Class A module that converts all five output circuits to Style Z (3 NAC, 2 Releasing)
 - f. Eight (10) Status LEDs plus alpha-numeric display for troubleshooting: AC normal; alarm; pre-discharge; release; supervisory; trouble; panel silenced; abort; release disabled; and ground fault.
 - g. Programmable pre-discharge and discharge timers
 - h. Resettable and continuous auxiliary output power
 - i. Five (5) optional Abort types
 - j. Intelligent Transistor protection to prevent noise spikes and microprocessor failure from inadvertently activating release outputs
 - k. A dedicated Disarm switch for release outputs
 - l. Dedicated alarm and trouble contacts programmable for alarm, trouble, pre-discharge, discharge, abort, supervisory or water flow functions, depending on panel configuration.
 - m. Two (3) Form "C" relays, rated at 2 amps, are provided on the SHP PRO? panel board. Installation of up to two (2) optional CRM4 Relay Module (P/N 10-2204) will provide up to eight (8) additional 2 amp relays.
 - n. Multiple input power source - 120 VAC or 240 VAC
 - o. 4.0 amp @ 24 VDC power supply to operate high current draw horns and strobes.
 - p. Available in either Red or Gray finish

D. DETECTORS:

The detectors shall be spaced and installed in accordance with the manufacturer's specifications and the guidelines of NFPA No. 72 - current edition.

1. The Photoelectric detector shall be a Fike P/N 63-1024.

E. DETECTOR BASES:

The detector bases shall be selected according to their operational characteristics and size of base.

1. 430 ohm bases are used to provide Sequential or Cross Zone detection on the SHP PRO initiating circuits. The bases shall be Fike P/N 67-1034 (6"/15mm) base, or P/N 67-1036 (4"/10mm) base.*
2. 220 ohm bases are used to provide Cross Zone or Single Detector Release detection on the SHP PRO initiating circuits. The bases shall be Fike P/N 67-1035 (6"/15mm) base, or P/N 67-1037 (4"/10mm) base.*
3. When using the SHP PRO in conjunction with a Graphic Annunciator panel, the following old style bases must be used.
 - a. Fike P/N 67-1034 (6"/15 cm) 430 ohm base.
 - b. Fike P/N 67-1036 (4"/10 cm) 430 ohm base.
 - c. Fike P/N 67-1035 (6"/15 cm) 220 ohm base.
 - d. Fike P/N 67-1037 (4"/10 cm) 220 ohm base.

* Additional bases are available from Fike Corporation.

F. MANUAL RELEASE (Electric):

The electric manual release switch shall be a dual action device which provides a means of manually discharging the Clean Agent Fire Suppression System when used in conjunction with the Fike SHP PRO Control System.

1. The Manual Release switch shall be a Fike P/N 10-1638 or a Manual Pull station, P/N 02-3710.
2. The Manual Release switch or Manual Pull station shall be a dual action device requiring two distinct operations to initiate a system actuation.
3. Manual actuation shall bypass the time delay and abort functions, shall cause the system to discharge and shall cause all release and shutdown devices to operate in the same manner as if the system had operated automatically.
4. A Manual Release or Manual Pull switch shall be located at each exit from the protected hazard and shall have an advisory sign, Fike P/N 02-10312, provided at each location.

5. The Manual Release or Manual Pull station shall be connected to a FRCM which is programmed for the intended function.

G. MANUAL RELEASE (Mechanical):

1. Mechanical Manual Release shall be made available in the event all battery back-up and commercial power is lost. The Impulse Valve Operator (IVO) is equipped with a manual strike button for mechanical manual release for actuation methods a and b in paragraph 5 on page 4. Consideration should be given for convenience of operation and egress from the hazard area(s).

H. ABORT STATION:

The optional Abort Station shall be the "Dead Man" type and shall be located next to each manual switch.

1. "Locking" or "Keyed" abort stations shall not be permitted.
2. The Abort Station shall be a Fike P/N 10-1639.
3. The Abort Station shall be supervised and shall indicate a trouble condition at the SHP PRO Control Panel, if depressed, and no alarm condition exists.
4. The Abort Station shall be located adjacent to each manual station and furnished in combination with a Manual Release Switch or in combination with a Manual Release Switch and Digital Countdown Timer (Fike P/N 20-046).
5. The Abort Station shall be connected to a FRCM which is programmed for the intended function.

I. AUDIBLE and VISUAL ALARMS:

Alarm audible and visual signal devices shall operate from the SHP PRO Control Panel.

1. The Horn/Strobe device shall be Fike P/N 20-123-48, or equal in quality, performance and features. An "Agent" label shall be attached to the strobe lens when required
2. The visual alarm unit shall be a Fike P/N 20-123-01 Vertical Strobe device, or equal in quality, performance and features. An "Agent" label shall be attached to the strobe lens when required.
3. A Strobe device shall be placed outside, and above each exit door from the protected space. Provide an advisory sign at each light location.

J. CAUTION and ADVISORY SIGNS:

Provide signs, as required, to comply with NFPA 2001 and the recommendations of the equipment supplier:

1. Entrance sign: One (1) required at each entrance into a protected space. (Fike P/N 02-10139)
2. Manual Discharge sign: One (1) required at each manual discharge station. (Fike P/N 02-10317)
3. Flashing Light sign: One (1) required at each flashing light over each exit from a protected space.

K. SYSTEM and CONTROL WIRING:

All system wiring shall be furnished and installed by the contractor.

1. All wiring shall be installed in electrical metallic tubing (EMT), or conduit, and must be installed and kept separate from all other building wiring.
2. All system components shall be securely supported independent of the wiring. Runs of conduit and wiring shall be straight, neatly arranged, properly supported, installed parallel and perpendicular to walls and partitions.
3. The sizes of the conductors shall be those specified by the manufacturer. Color coded wire shall be used. All wires shall be tagged at all junction points and shall be free from shorts, earth connections (unless so noted on the system drawings), and crosses between conductors. Final terminations between the SHP PRO control panel and the system field wiring shall be made under the direct supervision of a factory trained representative.
4. All wiring shall be installed by qualified individuals, in a neat and workmanlike manner, to conform to the National Electrical Code, Article 725, and Article 760, except as otherwise permitted for limited energy circuits, as described in NFPA 72 -1993 edition. Wiring installation shall meet all local, state, province and/or country codes.
5. The complete system electrical installation, and all auxiliary components, shall be connected to earth ground in accordance with the National Electrical Code.

PART 3 - EXECUTION

3.1 SYSTEM INSPECTION AND CHECKOUT

- A. After the system installation has been completed, the entire system shall be checked out, inspected and functionally tested by qualified, trained personnel, in accordance with the manufacturer's recommended procedures and NFPA standards.
 - 1. All containers and distribution piping shall be checked for proper mounting and installation.
 - 2. All electrical wiring shall be tested for proper connection, continuity and resistance to earth.
 - 3. The complete system shall be functionally tested, in the presence of the owner or his representative, and all functions, including system and equipment interlocks, must be operational at least five (5) days prior to the final acceptance tests.
 - a. Each detector shall be tested in accordance with the manufacturers recommended procedures, and test values recorded.
 - b. All system and equipment interlocks, such as door release devices, audible and visual devices, equipment shutdowns, local and remote alarms, etc. shall function as required and designed.
 - c. Each SHP PRO control panel circuit shall be tested for trouble by inducing a trouble condition into the system.

3.2 TRAINING REQUIREMENTS

- A. Prior to final acceptance, the installing contractor shall provide operational training to each shift of the owners personnel. Each training session shall include Control Panel operation, manual and abort functions, trouble procedures, supervisory procedures, auxiliary functions and emergency procedures.

3.3 OPERATION AND MAINTENANCE

- A. Prior to final acceptance, the installing contractor shall provide complete operation and maintenance instruction manuals, four (4) copies for each system, to the owner. All aspects of system operation and maintenance shall be detailed, including piping isometrics, wiring Diagrams of all circuits, a written description of the system design, sequence of operation and drawing(s) illustrating control logic and equipment used in the system. Checklists and procedures for emergency situations, troubleshooting techniques, maintenance operations and procedures shall be included in the manual.

3.4 AS-BUILT DRAWINGS

- A. Upon completion of each system, the installing contractor shall provide four (4) copies of system "As-Built" drawings to the owner. The drawings shall show actual installation details including all equipment locations (i.e.: control panel(s), agent container(s), detectors, alarms, manuals and aborts, etc.) as well as piping and conduit routing details. Show all room or facilities modifications, including door and/or damper installations completed. One (1) copy of reproducible engineering drawings shall be provided reflecting all actual installation details.

3.5 ACCEPTANCE TESTS

- A. At the time "As-Built" drawings and maintenance/operations manuals are submitted, the installing contractor shall submit a "Test Plan" describing procedures to be used to test the control system(s). The Test Plan shall include a step-by-step description of all tests to be performed and shall indicate the type and location of test apparatus to be employed. The tests shall demonstrate that the operational and installation requirements of this specification have been met. All tests shall be conducted in the presence of the owner and shall not be conducted until the Test Plan has been approved.
- B. The tests shall demonstrate that the entire control system functions as designed and intended. All circuits shall be tested: automatic actuation, solenoid and manual actuation, HVAC and power shutdowns, audible and visual alarm devices and manual override of abort functions. Supervision of all panel circuits, including AC power and battery power supplies, shall be tested and qualified.
- C. A room pressurization test shall be conducted, in each protected space, to determine the presence of openings, which would affect the agent system concentration levels. The test(s) shall be conducted using the Retro-Tec Corp. Door Fan system, or equivalent, with integrated computer program. All testing shall be in accordance with NFPA 2001, current edition.
- D. If room pressurization testing indicates that openings exist which would result in leakage and/or loss of the extinguishing agent, the installing contractor shall be responsible for coordinating the proper sealing of the protected space(s) by the general contractor or his sub-contractor or agent. The general contractor shall be responsible for adequately sealing all protected space(s) against agent loss or leakage. The installing contractor shall inspect all work to ascertain that the protected space(s) have been adequately and properly sealed. THE SUPPRESSION SYSTEM INSTALLING CONTRACTOR SHALL NOT BE RESPONSIBLE FOR THE SUCCESS OF THE ROOM PRESSURIZATION TESTS. If the first room pressurization test is not successful, in accordance with these specifications, the installing contractor shall direct the General Contractor to determine, and correct, the cause of the test failure. The installing contractor shall conduct additional room pressurization tests, at no additional cost to the owner, until a successful test is obtained. Copies of successful test results shall be submitted to the owner for record.
- E. Upon acceptance by the owner, the completed system(s) shall be placed into service.

3.6 SYSTEM INSPECTIONS

- A. The installing contractor shall provide two (2) inspections of each system, installed under this contract, during the one-year warranty period. The first inspection shall be at the six month interval, and the second inspection at the 12 month interval, after system acceptance. Inspections shall be conducted in accordance with the manufacturer's guidelines, and the recommendations of NFPA 2001.
- B. Documents certifying satisfactory system(s) operation shall be submitted to the owner upon completion of each inspection.

3.7 WARRANTY

- A. All FIKE system components furnished and installed under this contract shall be guaranteed against defects in design, materials and workmanship for the full warranty period, which is standard with the manufacturer, but in no case less than one (1) year from the date of system acceptance.

END OF SECTION 21 2220

SECTION 264113 - LIGHTNING PROTECTION FOR STRUCTURES

PART 1 GENERAL

1.1 SUMMARY

- A. The existing lightning protection system shall be removed and reused to the greatest extent possible. The bidder shall provide infrastructure, cable, hardware, and equipment, as defined, to provide a complete and operational lightning protection system.
- B. Where applicable visit the site, verify all existing items shown on plans, or specified, and be familiar with the working conditions, hazards, and local requirements involved; submission of bids shall be deemed evidence of such visit. All proposals shall take these existing conditions into consideration before bidding.
- C. All materials, unless otherwise specified, shall be new, free from any defects, and of the best quality of their respective kinds. All like materials shall be of the same manufacture, model, and quality, unless otherwise specified.
- D. Contractor shall do all necessary cutting and drilling of present walls, floors, ceilings, etc., for the installation of new work; but no structural work shall be cut, unless specifically shown on drawings and/or approved by the Owner. All exposed building surfaces damaged by installation or removal of electrical work shall be patched and finished in the same materials and manner as adjacent areas by this Contractor.
- E. If, applicable, contractor shall co-ordinate his work with the Owner for times which changeover, removal of existing equipment, and new connections of existing systems can be completed.
- F. The lightning protection system shall be recertified by the installing contractor.

1.2 SECTION INCLUDES

- A. Strike (air) terminals and interconnecting conductors.
- B. Grounding and bonding for lightning protection.

1.2 RELATED REQUIREMENTS

- A. Section 260526 - Grounding and Bonding for Electrical Systems: Electrical system grounds.
- B. Surge Protection for Wiring Systems: Specified in individual system requirements.

1.3 REFERENCE STANDARDS

- A. NFPA 780 - Standard for the Installation of Lightning Protection Systems; National Fire Protection Association; 2011.
- B. UL 96 - Lightning Protection Components; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination with Concrete Work: Coordinate the embedding of lightning protection components in concrete.
- B. Coordination with Roofing Work: Ensure adequate attachment of strike terminals and conductors without damage to roofing.
- C. Preinstallation Meeting: Convene a meeting at least at least two weeks prior to commencement of any work affected by lightning protection system requirements to discuss prerequisites and coordination required by other installers; require attendance by representatives of installers whose work will be affected.

1.5 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate location and layout of air terminals, grounding electrodes, and bonding connections to structure and other metal objects. Include terminal, electrode, and conductor sizes, and connection and termination details.
 - 1. Where conductors or grounds are to be embedded or concealed in other construction, submit shop drawings at least 30 days prior to start of construction.
 - 2. If concrete-encased grounds are to be used and are not shown in the contract documents, provide sufficient data to determine concrete encasement dimensions and location.
 - 3. Include data on actual ground resistance determined by field measurement in accordance with NFPA 780.
 - 4. Include engineering analysis of equalization of potential to metal bodies within the structure.
 - 5. Include access panels, test holes, and disconnecting means for maintenance.
- C. Product Data: Provide dimensions and materials of each component, indication of testing agency listing, and installation instructions.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Installation Certification: Submit copy of certification agency's approval.

- F. Operation and Maintenance Data: Provide recommended inspection and testing plan, including recommended intervals, to achieve periodic maintenance as recommended in NFPA 780; provide customized plan reflecting actual installation configuration with specific installed components identified.
- G. Project Record Documents: Record actual locations of air terminals, grounding electrodes, bonding connections, and routing of system conductors in project record documents.

1.6 QUALITY ASSURANCE

- A. Maintain one copy of each referenced system design standard on site.
- B. Manufacturer Qualifications: Company specializing in lightning protection equipment with minimum three years documented experience.
- C. Designer Qualifications: Person or entity, employed by installer, who specializes in lightning protection system design with minimum three years documented experience.
- D. Installer Qualifications: Capable of providing the specified certification of the installed system.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Lightning Protection Components:
 - 1. Robbins Lightning, Inc: www.robbsinlightning.com.
 - 2. VFC Lightning Protection Systems, LLC.
 - 3. Warren Lightning Rod Co..
 - 4. Substitutions: See Section 016000 - Product Requirements.

2.2 LIGHTNING PROTECTION SYSTEM

- A. Lightning Protection System: Provide complete system complying with NFPA 780, including air terminals, bonding, interconnecting conductors and grounding electrodes.
 - 1. Provide system that protects:
 - a. The entire structure.
 - b. Open air areas within 100 feet of exterior walls at grade level.
 - c. Open air areas within building footprint.
 - 2. Coordinate with other grounding and bonding systems specified.
 - 3. Provide copper, bronze, or stainless steel components, as applicable; no aluminum.
 - 4. Provide disconnecting means and access panels or similar devices to allow complete periodic inspection and testing as described by NFPA 780 Annex D.
 - 5. Provide system certified by Underwriters Laboratories or the Lightning Protection Institute.

- B. Strike Terminals: Provide strike (air) terminals on the following
 - 1. Roofs.
 - 2. Penthouse roofs.
 - 3. Parapets.
 - 4. Roof mounted equipment.
 - 5. Stacks.
 - 6. Chimneys.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as indicated on shop drawings.
- B. Coordinate work with installation of roofing and exterior and interior finishes.

3.2 INSTALLATION

- A. Install in accordance with referenced system standards and as required for specified certification.
- B. Connect conductors using mechanical connectors or exothermic welding process; protect adjacent construction elements and finishes from damage.

3.3 FIELD QUALITY CONTROL

- A. Perform field inspection in accordance with Section 014000.
- B. Perform visual inspection as specified in NFPA 780 as if this were a periodic follow-up inspection.
- C. Perform continuity testing as specified in NFPA 780 as if this were testing for periodic maintenance.
- D. Obtain the services of the specified certification agency to provide inspection and certification of the lightning protection system, including performance of any other testing required by that agency.

END OF SECTION 264113

Civil

MEP

610.694.8020

Schradergroup

610.694.8020

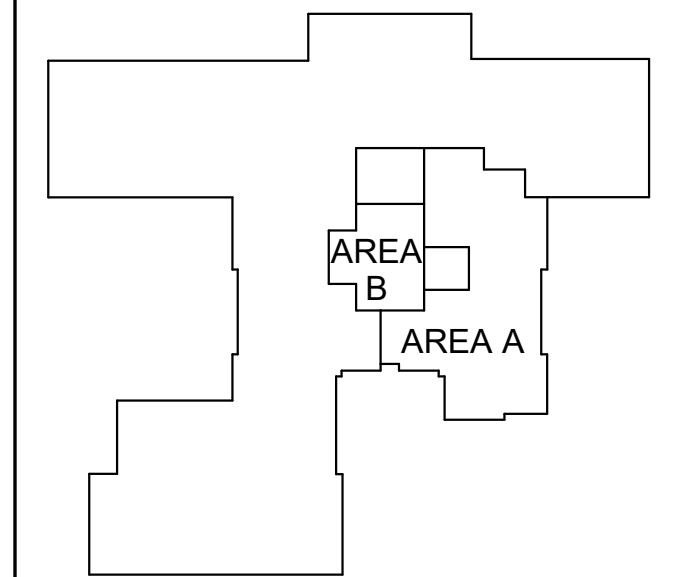
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Owner Address

OUR DISTRICT SERVICES
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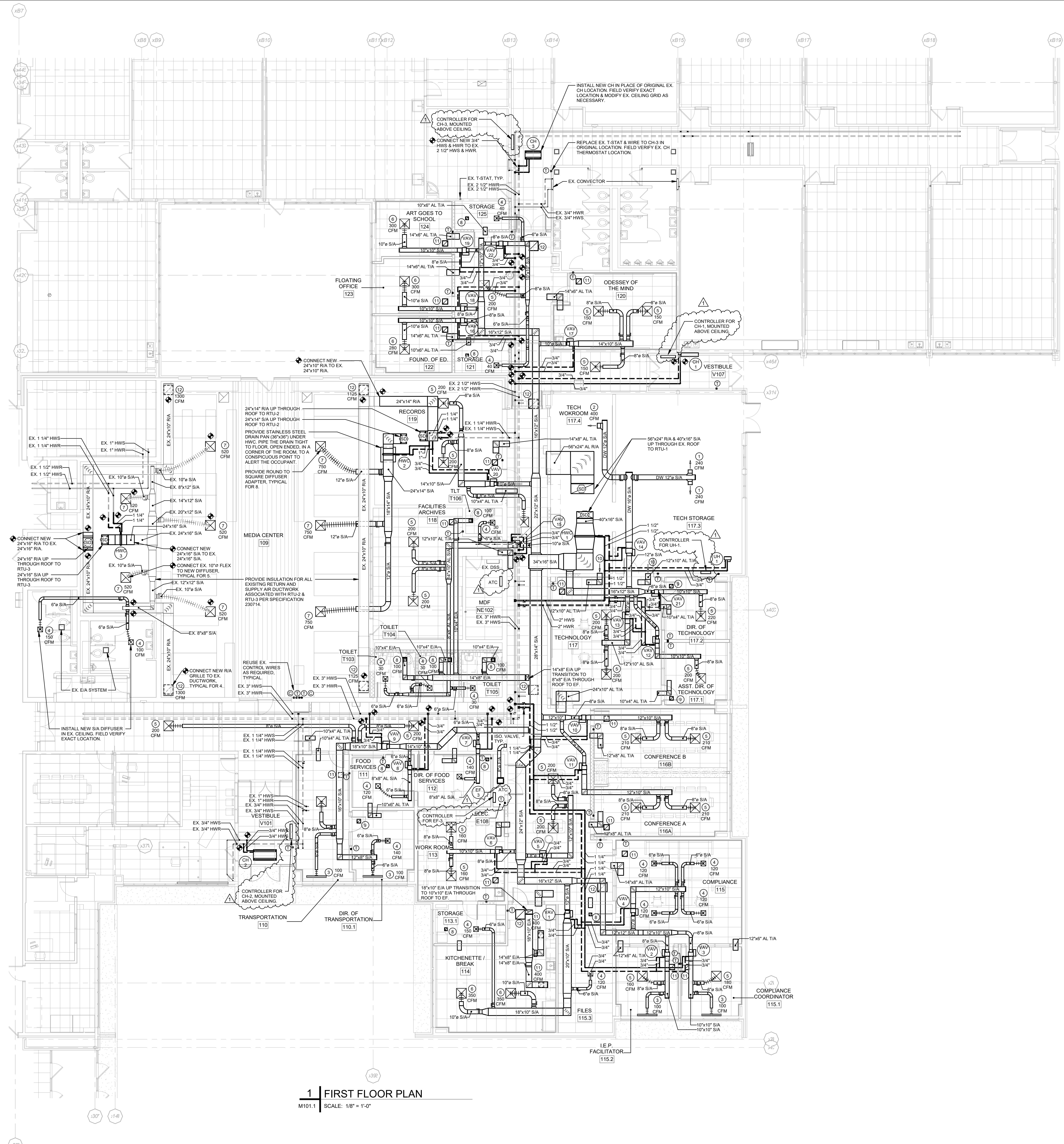
M101.1

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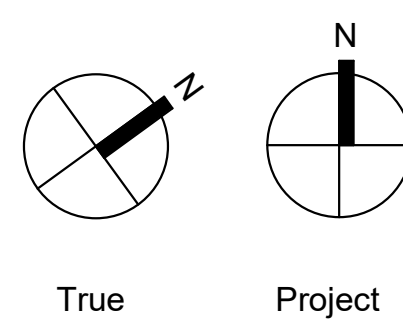


FIRST FLOOR PLAN - MECHANICAL

M101.1



1 FIRST FLOOR PLAN
M101.1 SCALE: 1/8" = 1'-0"



Civil:

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Professional Seal:

Owner:
OWEN J. ROBERTS
SCHOOL DISTRICT
Owner Address

Additions and Renovations to:

OUR DISTRICT SERVICES
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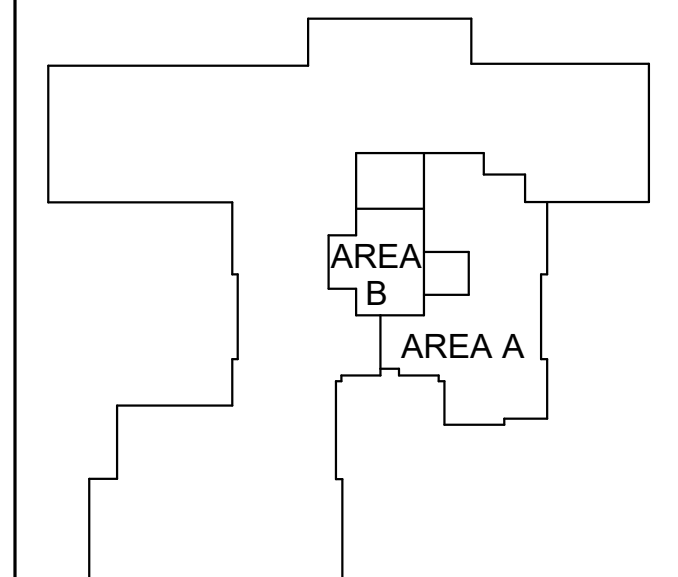
ISSUED FOR:

[illegible]

DATE:	07/24/2026
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SG PROJECT NUMBER: 225180.00

Key Plan:

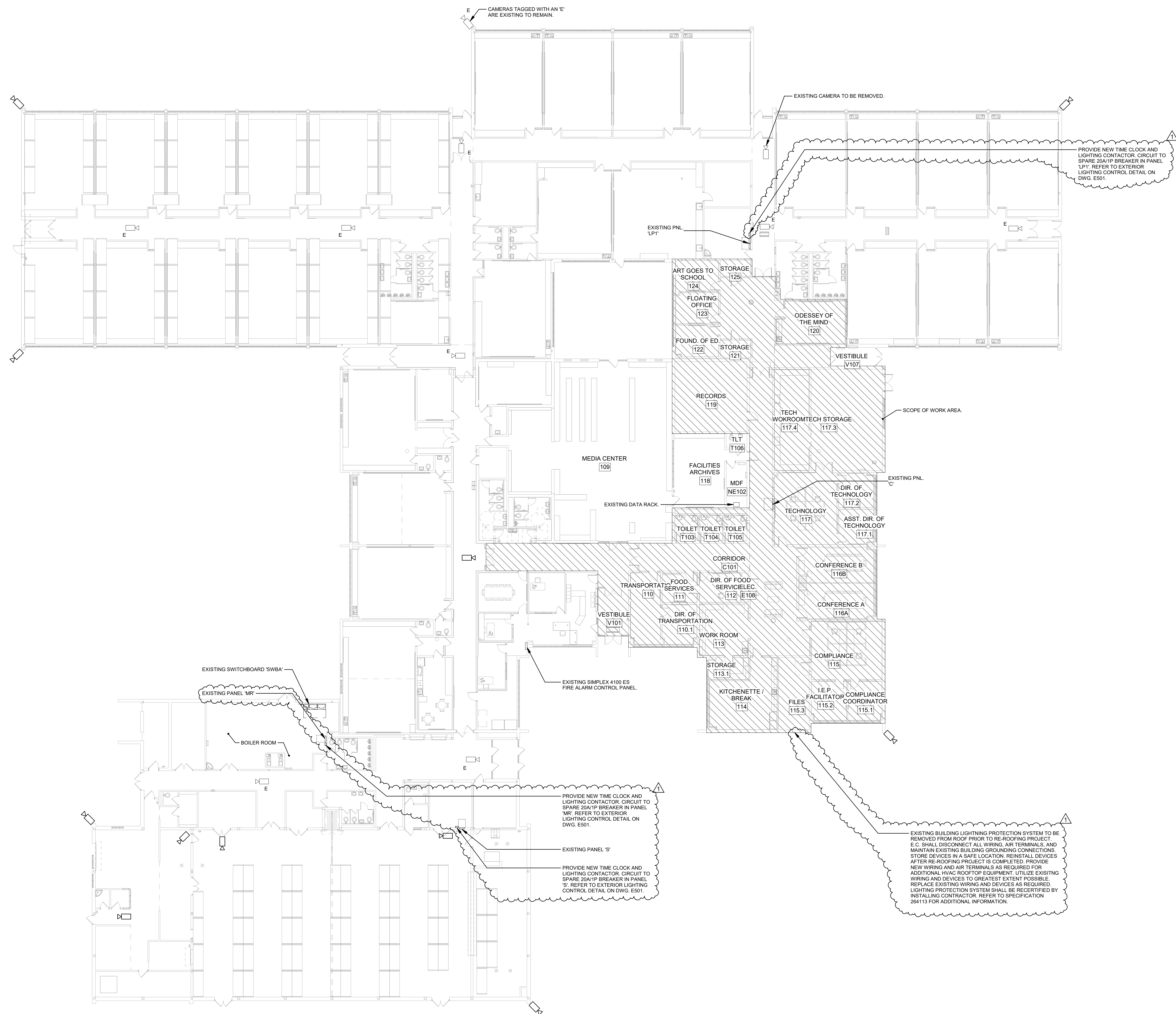


Drawing Title:

OVERALL FIRST FLOOR
REFERENCE PLAN -
ELECTRICAL

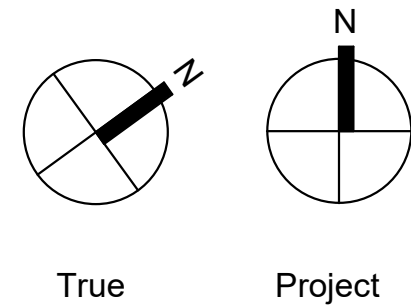
Drawing Number:

E001



1 | OVERALL FIRST FLOOR REFERENCE PLAN - ELECTRICAL

E001 SCALE: 1/16" = 1'-0"



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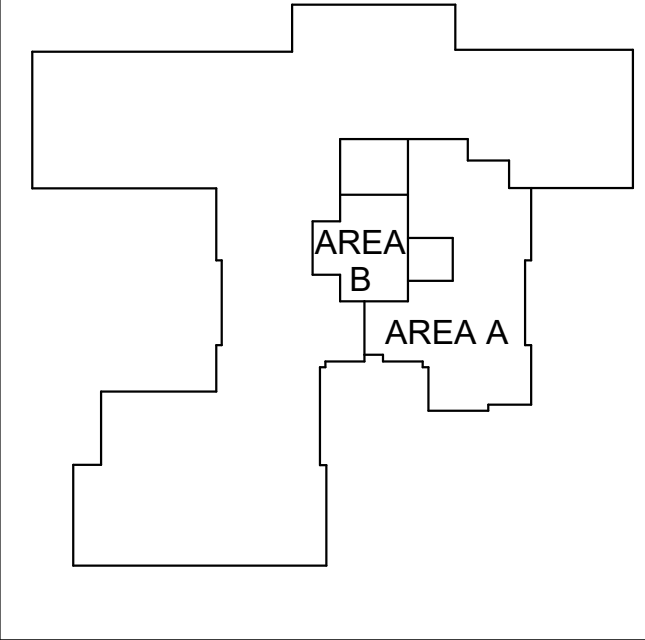
ISSUED FOR:

NO.	DESCRIPTION	DATE
1	ISSUED FOR BIDDING	07/27/2026
1	ADDENDUM 1	08/07/2026

DATE: 07/24/2026

SG PROJECT NUMBER: 225180.00

Key Plan:

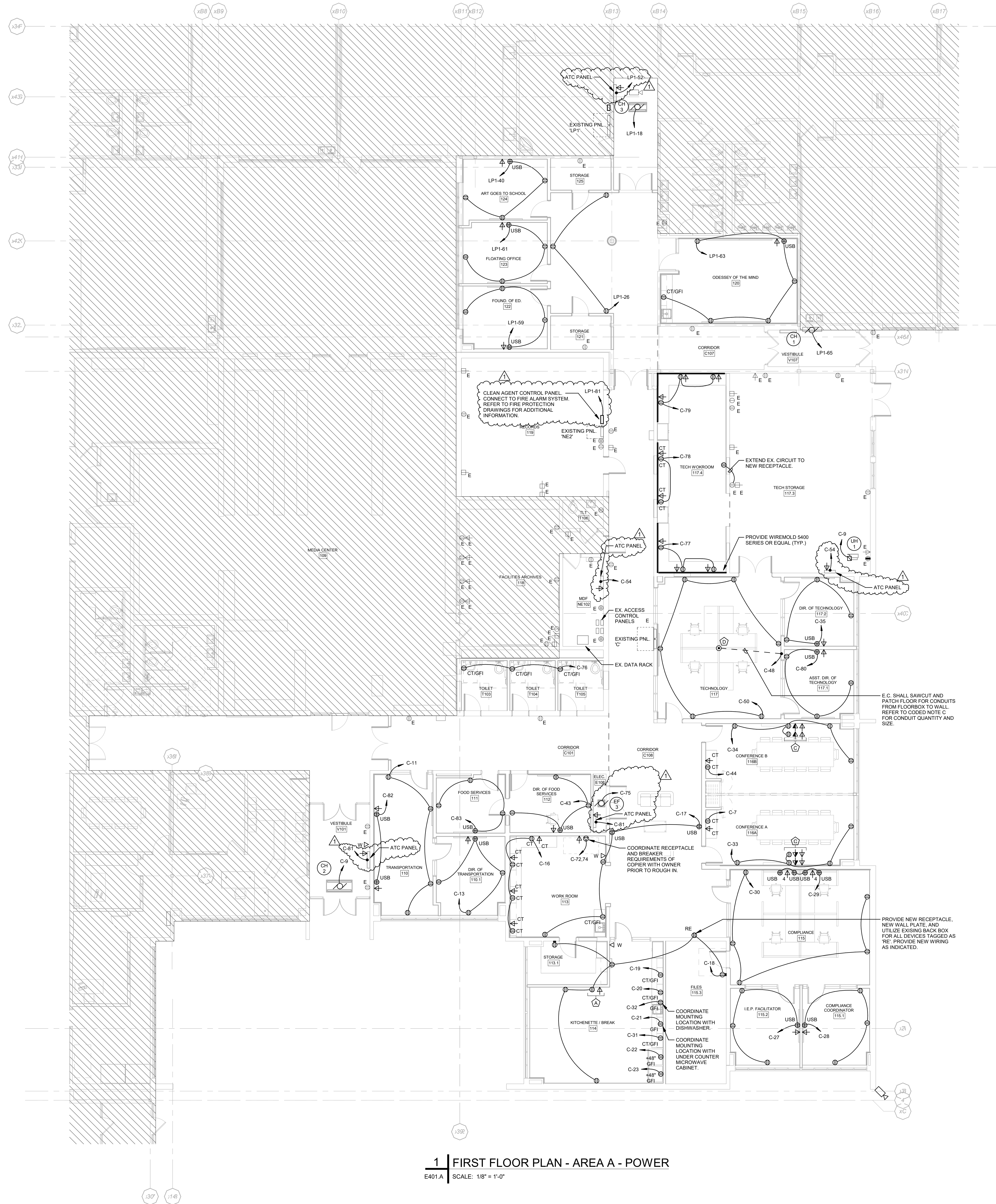


Drawing Title:

FIRST FLOOR PLAN -
AREA A - POWER

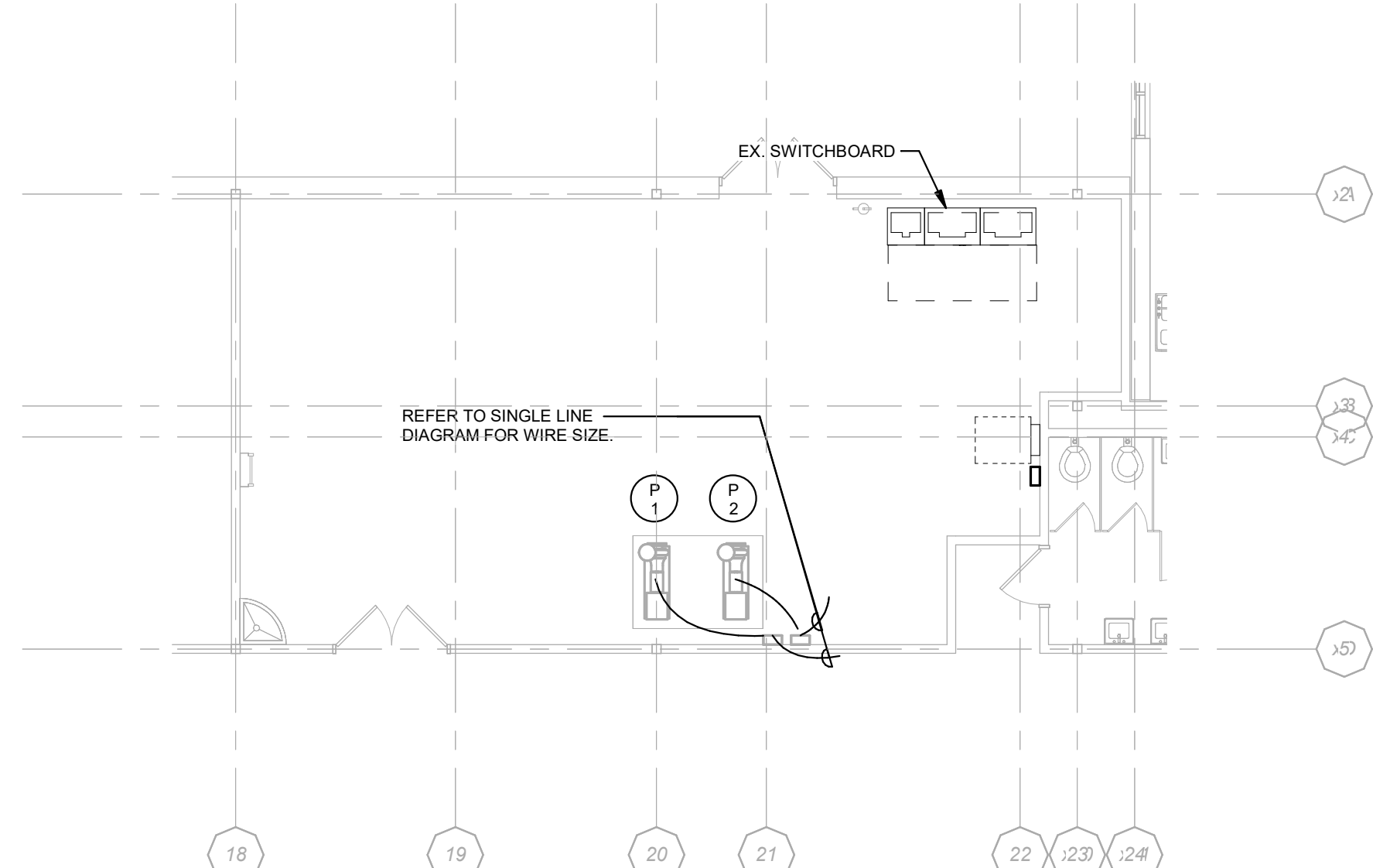
Drawing Number:

E401.A



1 FIRST FLOOR PLAN - AREA A - POWER

E401.A SCALE: 1/8" = 1'-0"



2 BOILER ROOM PLAN - POWER

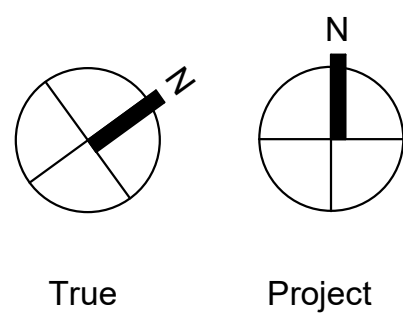
E401.A SCALE: 1/8" = 1'-0"

CODED POWER NOTES:

- PROVIDE (1) DUPLEX RECEPTACLE AND (2) DATA DROPS BEHIND WALL MOUNTED DISPLAY. COORDINATE LOCATION WITH ARCHITECTURAL ELEVATIONS PRIOR TO ROUGH-IN.
- PROVIDE (2) DUPLEX RECEPTACLES AND (2) DATA DROPS IN WIREMOLD EVOLUTION 8-GANG EFBF FLOOR BOX OR EQUAL. PROVIDE 1-1/4" CONDUIT FOR DATA TO ABOVE ACCESSIBLE CEILING. PROVIDE 1" CONDUIT FOR POWER CIRCUIT.
- PROVIDE (1) DUPLEX RECEPTACLE, (2) DATA DROPS, AND (2) HDMI OUTPUTS BEHIND WALL MOUNTED TELEVISION. PROVIDE (1) DUPLEX RECEPTACLES, (2) DATA DROPS, AND (2) HDMI INPUTS AT 1' BELOW TELEVISION. PROVIDE (2) RRAMER FLEXUM RATED HDMI CABLES CAT 80P-MMWETH OR EQUAL. COORDINATE LOCATION WITH ARCHITECTURAL ELEVATIONS PRIOR TO ROUGH-IN.
- PROVIDE (8) DUPLEX RECEPTACLES AND (8) DATA DROPS IN WIREMOLD EVOLUTION 10-GANG FLOOR BOX EFBF10 OR EQUAL. PROVIDE 1-1/4" CONDUIT FOR DATA TO ABOVE ACCESSIBLE CEILING. PROVIDE 1" CONDUIT FOR POWER CIRCUIT.

GENERAL POWER NOTES:

- REFER TO E000 FOR LEGEND AND GENERAL NOTES.
- E.C. SHALL REFER TO ARCHITECTURAL INTERIOR AND EXTERIOR ELEVATIONS TO COORDINATE THE ELECTRICAL DEVICE LOCATIONS. WHERE CONFLICTS OCCUR, CONTACT THE ARCHITECT FOR A MOUNTING HEIGHT AND LOCATION PRIOR TO ROUGHING IN.
- MECHANICAL EQUIPMENT DISCONNECT SWITCHES FURNISHED BY H.C. INSTALLED AND WIRED BY E.C. TYPICAL FOR ALL UNLESS OTHERWISE INDICATED ON DRAWINGS.
- PROVIDE XHHN-2XHHN-2 CONDUCTORS FOR ALL CIRCUITS FED FROM GFCI BREAKERS.
- HATCHED AREA NOT IN SCOPE OF WORK.



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ISSUED FOR:

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DATE: 07/24/2026

SG PROJECT NUMBER: 225180.00

Key Plan:

Drawing Title:

DETAILS AND DIAGRAMS - ELECTRICAL

Drawing Number:

E501



RESPONSIBILITY MATRIX FOR DOOR CONTROL SYSTEMS			
ITEM	FURNISHED BY	INSTALLED BY	WIRED BY
CARD READER: READER POWER SUPPLY & READER CONTROLLER	E.C.	E.C.	E.C.
ADA ELECTRIC DOOR CLOSERS & ACTUATORS	G.C.	G.C.	E.C.
DOOR POWER SUPPLIES	G.C.	E.C.	E.C.
ELECTRIC EXIT DEVICES (E.L.R.) & ELECTRIC POWER TRANSFER	G.C.	G.C.	E.C.
DOOR POSITION & SECURITY SWITCHES	E.C.	E.C.	E.C.
REQUEST TO EXIT (REX) SWITCHES	E.C.	E.C.	E.C.
MAGNETIC LOOKS & POWER SUPPLIES	E.C.	E.C.	E.C.
JUNCTION BOXES, CONDUIT	E.C.	E.C.	

