

ADDENDUM NO. 2

PROJECT NAME: BRACE HALL REMODEL PROJECT
UNL PROJECT NUMBER: C008P098
BID INVITATION NUMBER: 2205-13-7200

CONSULTANT: LEO A DALY
ADDRESS: 8600 Indian Hills Drive
Omaha, NE 68114-4039

DATE OF ISSUANCE: September 13, 2013
DATE OF BID OPENING: September 19, 2013

The bid documents dated August 19, 2013 for the above referenced project are amended by this addendum.

NOTICE: This Addendum is issued to all interested prospective bidders as an amendment to the project manual or other parts of the bidding (contract) documents for the above named project. Reference to this Addendum must be included in the Bid proposal. The information contained herein shall be fully incorporated into the contract documents as though originally included therein.

RFI QUESTIONS AND RESPONSES:

1. RFI Responses are ISSUED with this Addendum.

MODIFICATIONS TO THE PROJECT MANUAL:

SECTION 01 5000 – TEMPORARY FACILITIES

1. Paragraph 3.2, TEMPORARY UTILITY INSTALLATION, Section A is revised as follows:
 - A. UTILITY SHUTDOWNS - See Section 01 10 00 Summary of Work, 1.3 Work Restrictions, for Owner notification requirements for utility shutdowns.
 1. Unless otherwise specified, the Contractor shall determine the locations and availability of water and electrical power within the work area. The Contractor shall make all the necessary connections to make water and electric power available for construction purposes. The Contractor shall be responsible for any damage done to water or electrical connection devices. The Contractor shall be responsible for heating & cooling utility costs until Substantial Completion of the Work. UNL steam service will not be available. When utilities are provided by UNL, metering will be provided by UNL. The Contractor shall install all equipment required for the installation, except UNL provided meter. All installed equipment shall be compatible with UNL equipment. The equipment shall be installed under the direction of Utility Division Personnel.
 2. Utility rates are as follows: 0.054 per kWh
 3. Utility charges will be billed to the Contactor on a quarterly basis.

SECTION 085200 – WOOD WINDOWS

1. Paragraph 2.2: Delete Item 2.2.G in its entirety.
2. Paragraph 2.3, Item 2.3.B.1.b is revised as follows: "Kind: Float glass except where fully tempered glass and acid etched glass, to produce a translucent appearance, are indicated on Drawings."

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SECTION 087100 – DOOR HARDWARE

1. This Section is REVISED and REISSUED with this Addendum.

SECTION 089119 – FIXED LOUVERS

1. Paragraph 2.3: Add Item "f. Louvers and Dampers, Inc.," and Item "g. United Enertech"

SECTION 096519 – RESILIENT FLOORING

1. This Section is REVISED and REISSUED with this Addendum.

SECTION 096813 – TILE CARPETING

1. This Section is REVISED and REISSUED with this Addendum.

SECTION 123553 – LABATORY CASEWORK

1. This Section is REVISED and REISSUED with this Addendum.

SECTION 224000 - PLUMBING FIXTURES

1. Paragraph 2.1.A.1, Lavatory faucets, add: "h. Moen"
2. Paragraph 2.2.A.1, Shower faucets, add: "e. Moen"
3. Paragraph 2.14.B, Electric water coolers, add: "5. Oasis"

SECTION 230993 - SEQUENCE OF OPERATION FOR HVAC CONTROLS

1. This Section is ISSUED with this Addendum.

SECTION 230516 - EXPANSION FITTINGS AND LOOPS FOR HVAC PIPING

1. Paragraph 2.1.A.1, Alignment Guides, add: "k. Twin City Hose"

SECTION 232113 - HYDRONIC PIPING

1. Paragraph 2.5.C.1, Cast-Iron or Steel, Calibrated-Orifice, Balancing Valves, add, "h. Pro Hydronic Specialties"
2. Paragraph 2.5.F.1, Automatic Flow Control Valves, add: "e. Pro Hydronic Specialties"
3. Paragraph 2.6.A, Air Control Devices, add: "5. Patterson"

SECTION 232213 - STEAM AND CONDENSATE HEATING PIPING

1. Paragraph 2.7.A, Pressure Reducing Valves, add: "4. Hoffman"

SECTION 232223 - STEAM CONDENSATE PUMPS

1. Paragraph 2.2.B.1, add: "k. Russell Pump"

SECTION 233300 - AIR DUCT ACCESSORIES

1. Paragraph 2.2.A.1, Manual Volume Dampers, add: "l. NCA Manufacturing"
2. Paragraph 2.4.A, Smoke Dampers, add: "8. Leader Industries" and "9. NCA Manufacturing"
3. Paragraph 2.5.A, Combination Fire/Smoke Dampers, add: "6. Leader Industries" and "7. NCA Manufacturing"
4. Paragraph 2.13.A, Duct Silencers, add: "9. Aerosonics"

SECTION 233423 - HVAC POWER VENTILATORS

1. Paragraph 2.1.A, In-line Centrifugal Fans, add: "8. Captive Aire"

SECTION 238219 - FAN COIL UNITS

1. This Section is ISSUED with this Addendum.

SECTION 238239 - UNIT HEATERS

1. Paragraph 2.1.A, Cabinet Unit Heaters, add: "9. Vulcan", "10. Rittling" and "11. Sterling"
2. Paragraph 2.2.A, Propeller Unit Heaters, add: "8. Vulcan" and "9. Rittling"

SECTION 238233 - CONVECTORS

1. Paragraph 2.1.A, add: "9. Vulcan"

SECTION 270000 – COMMUNICATOINS

1. This Section is REVISED and REISSUED with this Addendum.

SECTION 270536 – CABLE TRAY FOR COMMUNICATOINS

2. This Section is ISSUED with this Addendum.

MODIFICATIONS TO THE DRAWINGS:

SHEET AD102 – DEMOLITION FLOOR PLANS LEVEL 2 AND ATTIC LEVEL

1. Change Key Note at east entry to 1, in lieu of 4.
2. Remove, "Salvage for Owner," from Key Notes 1, 4, and 7.

SHEET AD103 – DEMOLITION FLOOR PLANS LEVEL 3 AND ATTIC LEVEL

1. This Sheet is REVISED and REISSUED with this Addendum.

SHEET AE101 - FLOOR PLAN LEVEL 1

1. Partial Sheet AE101a is ISSUED with this Addendum.

SHEET AE102 – FLOOR PLAN LEVEL 2

1. This Sheet is REVISED and REISSUED with this Addendum.

SHEET AE103 – FLOOR PLAN LEVEL 3

1. This Sheet is REVISED and REISSUED with this Addendum.

SHEET AE104 – FLOOR PLAN ATTIC

1. This Sheet is REVISED and REISSUED with this Addendum.

SHEET AE111 – REFLECTED CEILING PLAN LEVEL 1

1. This Sheet is REVISED and REISSUED with this Addendum.

SHEET AE112 – REFLECTED CEILING PLAN LEVEL 1

1. Ceiling Revised at Door 201.1, in same manner as ceiling at Doors 101.1 and 301.1. Refer to Sheets AE111 and AE113 for condition.

SHEET AE113 – REFLECTED CEILING PLAN LEVEL 3

1. This Sheet is REVISED and REISSUED with this Addendum.

SHEET AE303 – STRUCTURAL BUILDING SECTION CORRIDOR AND STAIRWAYS

1. Partial Sheet AE303a is ISSUED with this Addendum.

SHEET AE501 – CASEWORK SECTIONS AND DETAILS

1. Detail No. 5 and 6 where note reads ¼" backing; note to read as ¼" plywood.
2. All instances where note reads 1" particle board adjustable shelf; note to read as ¾" hardwood/plywood adjustable shelf, finish to be either PLAM-1 or plain sliced red oak veneer core as previous stated.
3. All instances where note reads particle board; composite core can be used.

SHEET AE502 – INTERIOR DETAILS

1. Detail 2/AE502 is REVISED to indicate a 12" PVC chase, in lieu of a 4" PVC chase.

SHEET AF602 – DOOR SCHEDULE, DOOR AND FRAME TYPES AND DETAILS

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1. This sheet is REVISED AND REISSUED with this Addendum.

SHEET AF601 – ROOM FINISH SCHEDULE

1. This sheet is REVISED AND REISSUED with this Addendum.

SHEET AF602 – DOOR SCHEDULE, DOOR AND FRAME TYPES AND DETAILS

1. This sheet is REVISED AND REISSUED with this Addendum.

SHEET AF801 – FINISH FLOOR PLAN, FURNITURE AND FIXTURE PLAN – LEVEL 1

1. This sheet is REVISED and REISSUED with this Addendum.

SHEET AF802 – FINISH FLOOR PLAN, FURNITURE AND FIXTURE PLAN – LEVEL 2

1. This sheet is REVISED and REISSUED with this Addendum.

SHEET AF803 – FINISH FLOOR PLAN, FURNITURE AND FIXTURE PLAN – LEVEL 3

1. This sheet is REVISED and REISSUED with this Addendum.

SHEET FL101 – LIFE SAFETY PLAN LEVEL 1

1. Partial Sheet FL101a is ISSUED with this Addendum.

SHEET FL102 – LIFE SAFETY PLAN LEVEL 2

1. Partial Sheet FL102a is ISSUED with this Addendum.

SHEET PP101 FLOOR PLAN LEVEL 1 - PLUMBING

1. Add General Notes and Keyed Note 2 and indicate where eye wash EW-2 is to be provided as shown on REISSUED drawing PP100 indicating these modifications.

SHEET PP302 PLUMBING RISER DIAGRAMS

1. Change PVC sleeve containing a single gas pipe to lab tables from 12" to 4" as shown on REISSUED drawing PP302 indicating this modification.

SHEET PP501 PLUMBING DETAILS AND SCHEDULES

1. Plumbing Fixture Schedule, delete HB-2, add eye wash EW-2, modify model numbers for EW-1 and RO-1.
2. RO Water System diagram, modify note.
3. Replace detail 7, Submersible Sump Pump Detail
4. REISSUE drawing indicating the modifications described above.

SHEET MH301 MECHANICAL DETAILS AND SCHEMATICS

1. REISSUE drawing indicating control sensor locations.

SHEET MP101 FLOOR PLAN LEVEL 1 – HVAC PIPING

1. Delete ¾" GWS piping in Entry 100A. Serve fin tube in Rooms 203 and 204 from ¾" GWS up in the southeast corner of Classroom 105.

SHEET EL100 – LIGHTING PLAN BASEMENT

1. Partial Sheet EL100a is ISSUED with this Addendum.

SHEET EL101 – LIGHTING PLAN LEVEL 1

1. Partial Sheet EL101a is ISSUED with this Addendum.

SHEETS EL102 – LIGHTING PLAN LEVEL 2 AND SHEET EL103 – LIGHTING PLAN LEVEL 3

1. Change Keyed Note 6 to read as follows:

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FOR FIXTURES DESIGNATED AS 'E' (EMERGENCY) PROVIDE EMERGENCY BATTERY PACK (SEE LIGHTING FIXTURE SCHEDULE, SHEET EL501, FOR DETAILS) AND PROVIDE UN-SWITCHED POWER FROM SAME CIRCUIT TO BATTERY PACK.

SHEET EL104 – LIGHTING PLAN ATTIC

1. Partial Sheet EL104a is ISSUED with this Addendum.

SHEET EL501 – LIGHTING SCHEDULE AND DETAILS

1. Partial Sheet EL501a is ISSUED with this Addendum.

SHEET EP100 – POWER AND SYSTEMS PLAN BASEMENT LEVEL

1. Partial Sheet EP100a is ISSUED with this Addendum.

SHEET EP501 – PANEL SCHEDULES AND ONE-LINE DIAGRAM

1. Partial Sheet EP501a is ISSUED with this Addendum.

SHEET EP502 – PANEL SCHEDULES AND DETAILS

1. Partial Sheet EP502a is ISSUED with this Addendum.

END OF ADDENDUM NO. 2

RECORD MEMORANDUM: RFI Responses
SUBJECT:

University of Nebraska-Lincoln Brace Laboratory Renovation

Month Day Year
September 13, 2013Meeting Held At:
NACopies To:
BiddersProject No.:
003-10126-004

Participants:

Erin Froschheiser – Leo A Daly
David Carey – Leo A Daly
Michael Brady – Leo A Daly

TOPIC:

UNL Brace Laboratory Renovation Pre-Bid RFI Responses

1. Details 1 & 2 on AE502 call for a 4" PVC chase for the flexible natural gas lines. Note 7 on PP100, and PP302 show a 12" PVC sleeve for the natural gas lines. Please advise what size the natural gas sleeves should be.

DESIGN TEAM RESPONSE: Refer to Revised Drawings AE502, PP100 and PP302.

2. Specification section 270000 – COMMUNICATIONS refers to a Systimax Structured Cabling System. It also states that the acceptance of substitutions is at the Architect's and UNK ITS Project Manager's discretion. Drawing pages EP101 (note9), EP102 (note 8), & EP103 (note 14) call for rough-in only for the telecommunications per detail, drawing 1/EP502. That detail shows rough-in only and no cabling. Please clarify whether or not the cabling is to be included in this bid. Is the communications cabling to be included in the electrical bid? Is Panduit an acceptable substitute to the Systimax? Who needs to approve the substitute communications solution? Can Panduit be bid for this project?

DESIGN TEAM RESPONSE: Cabling is not part of this project. Panduit is an acceptable substitute to Systimax. Specification section 27000 has been revised and will be resubmitted. Specification Section 270536 – CABLE TRAYS FOR COMMUNICATIONS has been added.

3. I see Submittal Exchange is specified for use on this project. Is the fee paid by UNL or is the GC to include the fee in our bid?

DESIGN TEAM RESPONSE: The fee for Submittal Exchange will be covered by UNL.

4. The owner is providing the temp electrical and water but I see the steam will not be available for heating. Can we utilize the electrical service for temp heating?

DESIGN TEAM RESPONSE: Refer to Revised Specification Section 01 50 00.

5. Could you clarify the wood wall base for this project? There are a number of areas where walls get furred or filled in. The finish schedule states to use the existing base. Is the intent to remove existing base from other areas and re-install? Or are we to provide new base to match existing? If we are to provide new, please provide a profile for the base.

DESIGN TEAM RESPONSE: Existing wood base is to be re-used per General Notes on Sheet AF601.

6. Is there any concern of lead paint on the windows that are to be demoed, and if so, what is required for demo?

DESIGN TEAM RESPONSE: Refer to Specification General Conditions. Owner will provide report prior to start of construction.

7. What FFE will not be removed from the building that will have to be protected?

DESIGN TEAM RESPONSE: UNL has removed FFE requiring protection, for reuse. Remaining freestanding FFE, such as shelving, in the building is minimal, and becomes the property of the GC.

8. Wall type S20 shown at the exterior walls does not call for any insulation in the partition schedule on AE601, details 3 & 4 on AE502 show 2" (1/2" + 1 1/2") of Poly Iso insulation. Please advise if rigid insulation is required at wall type S20.

DESIGN TEAM RESPONSE: Rigid insulation is not required at all instances of Wall Type S20. Rigid insulation is required at all exterior walls per details 3/AE502 & 4/AE502.

9. 100A.1 Demo plan indicates frame to remain. Schedule indicates new frame. Is this intended to be a wood clad system or wood for field finish?

DESIGN TEAM RESPONSE: Provide new frame per Door Schedule. Wood for field finish.

10. 100.1 Schedule for frame is "exist". This is a new opening. Is intent to relocate adjacent frame with demo Note 1?

DESIGN TEAM RESPONSE: There is not a Door 100.1.

11. 113.1 Scheduled for new door and frame. 1/AD101 does not indicate removal of existing. Please verify intent.

DESIGN TEAM RESPONSE: Sheet AE602 has been Revised.

12. 117.1 Please verify remarks column should be empty.

DESIGN TEAM RESPONSE: Concur, Sheet AE602 has been Revised

13. 206.4 Schedule indicates new door in existing frame. Demo plan is bold but not noted. Please verify intent.

DESIGN TEAM RESPONSE: Refer to Revised Drawings.

14. 217.1 Cannot locate opening on plan.

DESIGN TEAM RESPONSE: Refer to Revised Drawings.

15. 300.1 Schedule indicates pair of doors in Type B frame with sidelights and transom. Plan appears to depict single door and frame. Please verify intent.

DESIGN TEAM RESPONSE: Refer to Revised Drawings.

16. 303.1 Schedule indicates "exist" frame. Demo plan indicates frame removal. Please verify intent.

DESIGN TEAM RESPONSE: Refer to Revised Drawings

17. 306.1 Schedule indicates new door in "exist" frame. Demo plan is bold but not noted. Please verify intent.

DESIGN TEAM RESPONSE: Refer to Revised Drawings

18. 319.1 Schedule indicates new door and frame. Demo plan does not indicate removal. Please verify intent.

DESIGN TEAM RESPONSE: Refer to Revised Drawings

19. Addendum #1 Item M1-10, a., has changed Detail 6, Single Stage Steam Pressure Reducing Station. It states to delete one of the pressure reducing valves and associated piping. But in the schematic on MH304, Heating Water Piping Schematic, there is a pressure reducing station shown on each Heat Exchanger (HE-1 & HE-2). There are two different sizes shown on this schematic for the pressure reducing valve. Which size is to be deleted, the 2" valve and associated piping or the 2.5" valve and associated piping?

DESIGN TEAM RESPONSE: Refer to Revised Drawings.

20. SP-1 (Sump Pump-1), there is no sump pump scheduled.

DESIGN TEAM RESPONSE: Refer to Revised Drawings.

21. HB-2 (Hose Bibb-2), is scheduled to be placed under the lavatories in toilet rooms. None are shown on plan or in the riser diagram.

DESIGN TEAM RESPONSE: Refer to Revised Drawings.

22. RO Water System (Reverse Osmosis-1) On Sheet PP 501, Detail 8, states to have a turnkey system with all components from one supplier. Is there a preferred supplier for this system.

DESIGN TEAM RESPONSE: Refer to Revised Drawings.

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware, power supplies, back-ups and surge protection.
 - 3. Automatic operators.
 - 4. Cylinders specified for doors in other Sections.
- C. Related Sections:
 - 1. Section 064023 "Interior Architectural Woodwork" for cabinet door hardware provided as part of architectural woodwork.
 - 2. Section 081113 "Hollow Metal Doors and Frames" for door silencers provided as part of hollow metal frames.
 - 3. Section 081416 "Flush Wood Doors" for astragals provided as part of labeled fire-rated assemblies.
 - 4. Section 081433 "Stile and Rail Wood Doors" for astragals provided as part of labeled fire-rated assemblies.
 - 5. Section 083113 "Access Doors and Frames" for access door hardware, including cylinders.
 - 6. Section 281300 "Access Control" for access control devices installed at door openings and provided as part of a security system.

1.3 ACTION SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Shop Drawings: Details of electrified access control hardware indicating the following:
 - 1. Wiring Diagrams: For power, signal, and control wiring and including the following:
 - a. Details of interface of electrified door hardware and building safety and security systems.
 - b. Schematic diagram of systems that interface with electrified door hardware.
 - c. Point-to-point wiring.
 - d. Risers.
 - e. Elevations doors controlled by electrified door hardware.
 - 2. Operation Narrative: Describe the operation of doors controlled by electrified door hardware.
 - 3. Electrical Coordination: Coordinate with related Division 26 Electrical Sections the voltages and wiring details required at electrically controlled and operated hardware openings.
- C. Samples for Verification: For exposed door hardware of each type required, in each finish specified, prepared on Samples of size indicated below. Tag Samples with full description for coordination with the door hardware schedule. Submit Samples before, or concurrent with, submission of door hardware schedule.

1. Sample Size: Full-size units, or minimum 2-by-4-inch (51-by-10-mm) Samples for sheet and 4-inch (102-mm) long Samples for other products.

D. Other Action Submittals

1. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - a. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submissions of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
 - b. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule." Double space entries, and number and date each page.
 - c. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - d. Content: Include the following information:
 - 1) Identification number, location, hand fire rating, size and material of each door and frame.
 - 2) Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
 - 3) Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
 - 4) Description of electrified door hardware sequences of operation and interfaces with other building control systems.
 - 5) Fastenings and other pertinent information.
 - 6) Explanation of abbreviations, symbols, and codes contained in schedule.
 - 7) Mounting locations for door hardware.
2. Keying Schedule: Prepared by the Installer, under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: For electrified door hardware, from the manufacturer.
 1. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
- C. Product Test Reports: For compliance with accessibility requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.
- D. Warranty: Special warranty specified in this Section.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.

1.6 QUALITY ASSURANCE

- A. **Installer Qualifications:** Supplier of products and an employer of workers trained and approved by product manufacturers and an Architectural Hardware Consultant who is available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
 - 1. **Warehousing Facilities:** In Project's vicinity.
 - 2. **Scheduling Responsibility:** Preparation of door hardware and keying schedules.
 - 3. **Engineering Responsibility:** Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. **Architectural Hardware Consultant Qualifications:** A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as follows:
 - 1. For door hardware, an Architectural Hardware Consultant (AHC).
- C. **Source Limitations:** Obtain each type of door hardware from a single manufacturer.
 - 1. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.
- D. **Fire-Rated Door Assemblies:** Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.
- E. **Air Leakage Rate:** Maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at the tested pressure differential of 0.3-inch wg (75 Pa) of water.
- F. **Electrified Door Hardware:** Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.
- G. **Means of Egress Doors:** Latches do not require more than 15 lbf (67 N) to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- H. **Accessibility Requirements:** For door hardware on doors in an accessible route, comply with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines ICC/ANSI A117.1.
 - 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22.2 N).
 - 2. Comply with the following maximum opening-force requirements:
 - a. **Interior, Non-Fire-Rated Hinged Doors:** 5 lbf (22.2 N) applied perpendicular to door.
 - b. **Fire Doors:** Minimum opening force allowable by authorities having jurisdiction.
 - 3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
 - 4. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.
- I. **Keying Conference:** Conduct conference at Project site to comply with requirements in Section 013100 "Project Coordination." In addition to Owner, Contractor, and Architect, conference participants shall also include Installer's Architectural Hardware Consultant. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
2. Preliminary key system schematic diagram.
3. Requirements for access control.
4. Address for delivery of keys.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification coordinated to the final Door Hardware Schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.
- D. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.8 COORDINATION

- A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
- C. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.
- D. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Structural failures including excessive deflection, cracking, or breakage.
 - b. Faulty operation of doors and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
 2. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.
 - a. Exit Devices: Two years from date of Substantial Completion.
 - b. Manual Closers: 10 years from date of Substantial Completion.

1.10 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.
- B. Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door and door hardware operation. Provide parts and supplies that are the same as those used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. Provide door hardware for each door as scheduled in Part 3 "Door Hardware Schedule" Article to comply with requirements in this Section.
 - 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products
 - 2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.

2.2 HINGES

- A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule, or comparable product by one of the following:
 - a. Hager Companies.
 - b. Stanley Commercial Hardware; Div. of The Stanley Works.

2.3 CONTINUOUS HINGES

- A. Continuous Hinges: BHMA A156.26; minimum 0.120-inch- (3.0-mm-) thick, hinge leaves with minimum overall width of 4 inches (102 mm); fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete.
- B. Continuous, Gear-Type Hinges: Extruded-aluminum, pinless, geared hinge leaves joined by a continuous extruded-aluminum channel cap; with concealed, self-lubricating thrust bearings.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule, or comparable product by one of the following:
 - a. Hager Companies.
 - b. Stanley Commercial Hardware; Div. of The Stanley Works.

2.4 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: As indicated in door hardware schedule.

- B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
 - 1. Bored Locks: Minimum 1/2-inch (13-mm) latchbolt throw.
 - 2. Mortise Locks: Minimum 3/4-inch (19-mm) latchbolt throw.
 - 3. Deadbolts: Minimum 1-inch (25-mm) bolt throw.
- C. Lock Backset: 2-3/4 inches (70 mm), unless otherwise indicated.
- D. Lock Trim:
 - 1. Description: As indicated in door hardware schedule.
 - 2. Levers: Cast
 - a.
 - 3. Escutcheons (Roses): Wrought or Forged.
 - 4. Dummy Trim: Match lever lock trim and escutcheons.
 - 5. Operating Device: Lever with escutcheons (roses).
- E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
 - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 - 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
 - 3. Aluminum-Frame Strike Box: Manufacturer's special strike box fabricated for aluminum framing.
 - 4. Rabbet Front and Strike: Provide on locksets for rabbeted meeting stiles.
- F. Mortise Locks: BHMA A156.13; Operational Grade 1; stamped steel case with steel or brass parts; Series 1000.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule, or comparable product by one of the following:
 - a. ~~Best Access Systems; Div. of Stanley Security Solutions, Inc.~~
 - b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.
 - c. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
 - d. Yale Security Inc.; an ASSA ABLOY Group company.

2.5 EXIT DEVICES AND AUXILIARY ITEMS

- A. Exit Devices and Auxiliary Items: BHMA A156.3.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule .
 - a. ~~Precision Hardware, Inc.; Division of Stanley Security Solutions, Inc.~~
 - b. Von Duprin; an Ingersoll-Rand company.

2.6 LOCK CYLINDERS

- A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following. No substitutions will be allowed.
- B. Standard Lock Cylinders: BHMA A156.5; Grade 1; permanent cores that are interchangeable; face finished to match lockset.
- C. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.7 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference.
1. Existing System:
 - a. Master key or grand master key locks to Owner's existing system.
 2. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: "DO NOT DUPLICATE."
 3. Quantity: In addition to one extra key blank for each lock, provide the following:
 - a. Cylinder Change Keys: Three.
 - b. Master Keys: Five.
 - c. Grand Master Keys: Five.
 - d. Great-Grand Master Keys: Five.

2.8 OPERATING TRIM

- A. Operating Trim: BHMA A156.6; oil rubbed bronze, unless otherwise indicated.
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. IVES Hardware; an Ingersoll-Rand company.
 - b. Trimco.

2.9 SURFACE CLOSERS

- A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. ~~DORMA Architectural Hardware; Member of The DORMA Group North America;~~
 - b. LCN Closers; an Ingersoll-Rand company.
 - c. ~~Norton Door Controls; an ASSA ABLOY Group company;~~
 - d. Horton
 - e. Besam Swingmaster
 - f. Record

2.10 CLOSER HOLDER RELEASE DEVICES

- A. Closer Holder Release Devices: BHMA A156.15; Grade 1; closer connected with separate or integral releasing and fire- or smoke-detecting devices. Door shall become self-closing on interruption of signal to release device. Automatic release is activated by smoke detection system and loss of power.
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings schedule or comparable product by one of the following:
 - a. ~~DORMA Architectural Hardware; Member of The DORMA Group North America;~~
 - b. LCN Closers; an Ingersoll-Rand company.
 - c. ~~Rixson Specialty Door Controls; an ASSA ABLOY Group company;~~

2.11 MECHANICAL STOPS AND HOLDERS

- A. Wall- Mounted Stops: BHMA A156.16; polished cast brass, bronze, or aluminum base metal.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. IVES Hardware; an Ingersoll-Rand company.
 - b. ~~Trimco.~~

2.12 OVERHEAD STOPS AND HOLDERS

- A. Overhead Stops and Holders: BHMA A156.8.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Glynn-Johnson; an Ingersoll-Rand company.
 - b. Rockwood Manufacturing Company.

2.13 DOOR GASKETING

- A. Door Gasketing: BHMA A156.22; air leakage not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing, as tested according to ASTM E 283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. National Guard Products.
 - b. Reese Enterprises, Inc.
 - c. Zero International.

2.14 THRESHOLDS

- A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. National Guard Products.
 - b. Reese Enterprises, Inc.
 - c. Rixson Specialty Door Controls; an ASSA ABLOY Group company.
 - d. Zero International.

2.15 METAL PROTECTIVE TRIM UNITS

- A. Metal Protective Trim Units: BHMA A156.6; fabricated from 0.050-inch- (1.3-mm-) thick oil rubbed bronze with manufacturer's standard machine or self-tapping screw fasteners.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. IVES Hardware; an Ingersoll-Rand company.
 - b. Trimco.

2.16 AUXILIARY DOOR HARDWARE

- A. Auxiliary Hardware: BHMA A156.16.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Hager Companies.
 - b. Rockwood Manufacturing Company.
 - c. Stanley Commercial Hardware; Div. of The Stanley Works.

2.17 AUXILIARY ELECTRIFIED DOOR HARDWARE

- A. Auxiliary Electrified Door Hardware:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
 - b. Schlage Commercial Lock Division; an Ingersoll-Rand company.
 - c. Securitron Magnalock Corporation; an ASSA ABLOY Group company.
 - d. Security Door Controls.

2.18 FABRICATION

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.
 1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.
- C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.
 1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
 2. Fire-Rated Applications:
 - a. Wood or Machine Screws: For the following:
 - 1) Hinges mortised to doors or frames; use threaded-to-the-head wood screws for wood doors and frames.
 - 2) Strike plates to frames.
 - 3) Closers to doors and frames.
 - b. Steel Through Bolts: For the following unless door blocking is provided:
 - 1) Surface hinges to doors.
 - 2) Closers to doors and frames.
 - 3) Surface-mounted exit devices.
 3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
 4. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."
 5. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.19 FINISHES

- A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
- B. Wood Doors: Comply with DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following standards, except as specified below, and as otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 - 3. Locks 36 inches to centerline of lever above finish floor.
 - 4. Exit Devices 40 inches to centerline of pushpad above finish floor center on midrail of door.
 - 5. Push/Pull Bars 40 inches to centerline of push bar above finish floor center of midrail of door.
 - 6. Pull Bars/Plates 40 inches to centerline of pull bar/plate.
 - 7. Push Plates 40 inches to centerline of push plate.
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Lock Cylinders: Install construction cores to secure building and areas during construction period.
 - 1. Replace construction cores with permanent cores as directed by Owner.
 - 2. Furnish permanent cores to Owner for installation.
- E. Boxed Power Supplies: ~~Locate power supplies as indicated or, if not indicated, above accessible ceilings. Verify location with Architect. Not required.~~

1. Configuration: Provide least number of power supplies required to adequately serve doors with electrified door hardware.
- F. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."
- G. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- H. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- I. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.4 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 1. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 30 degrees.
 2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
 3. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

3.5 CLEANING AND PROTECTION

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

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to Section 017900 "Demonstration and Training."

3.7 DOOR HARDWARE SCHEDULE

1. MK - McKinney
2. MA - Marray
3. RO - Rockwood
4. SA - Sargent
5. SC - Schlage
6. NO - Norton
7. RF - Rixson
8. PE - Pemko
9. SU - Securitron
10. LCN - LCN

Hardware Schedule

Set: 1.0

Doors: 116.1, 216.1, 316.1, B16.1, SB16.1

3	Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1	Exit Device	12 8813 ETL	US32D	SA
1	Door Closer	281 P10	EN	SA
1	Kick Plate	K1050 10" x 2" LDW BE CSK	US32D	RO
1	Wall Stop	409	US32D	RO
1	Gasketing	S88D		PE

Notes: Remainder of existing hardware to remain

Set: 2.0

Doors: 100A.1

2	Continuous Hinge	MCK-14HD PT 95"	BZ	MK
1	Removable Mullion	L980A	US10B	SA
1	Exit Device	55 56 8804	US10B	SA
1	Exit Device	55 56 8810	US10B	SA
1	Cylinder (Rim Cylinder)	20-710 Primus C	613	SC
1	Cylinder (Mortise)	20-700 Primus CE	613	SC
2	Pull	RM221 Mtg-Type 1XHD	US10B	RO
1	Concealed Overhead Holder/Stop	698S	US10B	SA
1	Door Closer	281 PSH	EB	SA
1	Auto Operator	4642	690	LCN
2	Kick Plate	K1050 10" x 2" LDW BE CSK	US10B	RO
1	Threshold	171D		PE
1	Gasketing	294DV		PE
2	Sweep	3452DNB		PE
2	Electric Power Transfer	EL-CEPT	10B	SU
4	ElectroLynx Connectors	As Required		MK
2	Door Switch	501		NO

Notes: Unlocked/locked by prox reader or timer per owners instructions.
Prox reader, timer & power supply to be furnished by access control supplier
Secure side actuator only active when doors are electrically unlocked.
Non secure side actuator active @ all times, but latch to retract before door opens.

Wiring by electrical contractor

Set: 3.0

Doors: 200.1

6	Hinge	TA2714 4-1/2" x 4-1/2"	US10B	MK
1	Removable Mullion	12-L980	Sprayed to match hardware	SA
2	Exit Device	12 8813 ETL	US10B	SA
2	Door Closer	281 O	EB	SA
2	Kick Plate	K1050 10" x 2" LDW BE CSK	US10B	RO
2	Electromagnetic Holder	998	690	RF
4	Gasketing	S88D		PE

Notes: Wiring by electrical contractor

Set: 4.0

Doors: 100A.3

1	Exit Device	12 8813 ETL	US10B	SA
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Notes: Remainder of existing hardware to remain

Set: 5.0

Doors: 103.1, 107.1, 400.1, 419.1

3	Hinge	TA2714 4-1/2" x 4-1/2"	US10B	MK
1	Storeroom Lock	8204 WTL	US10B	SA
1	Wall Stop	409	US10B	RO

Set: 6.0

Doors: 102.1, 207.1

Description: Door w/ Prox Reader

3	Hinge (heavy weight)	TA3786 4-1/2" x 4-1/2"	US10B	MK
3	Electric Hinge	TEF 2+4C SW 4 1/2 x 4 1/2	US10B	MA
1	Fail Secure Electric Lock	RX 8271-24V WTL	US10B	SA
1	Cylinder (Mortise)	20-700 Primus CE	613	SC

1	Door Closer	281 P10	EB	SA
1	Kick Plate	K1050 10" x 2" LDW BE CSK	US10B	RO
1	Wall Stop	409	US10B	RO
1	Gasketing	S88D		PE

Notes: Prox Reader releases lock allowing entry.

Prox Reader and power supply to be furnished by access control supplier.

Door to have raceway with electrolynx connector installed at factory at time of door construction.

Set: 7.0

Doors: 105.1

6	Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US10B	MK
1	Removable Mullion	L980A	US10B	SA
2	Exit Device	8813 ETL	US10B	SA
2	Door Closer	281 PSH	EB	SA
2	Kick Plate	K1050 10" x 2" LDW BE CSK	US10B	RO

Set: 8.0

Doors: 104.1, 108.1, 110.1, 115.1, 117.1, 304.1

Description: Door w/ Prox Reader

1	Electric Hinge	TEF 2+4C SW 4 1/2 x 4 1/2	US10B	MA
1	Fail Secure Electric Lock	RX 8271-24V WTL	US10B	SA
1	Door Closer	281 PS	EB	SA
1	Kick Plate	K1050 10" x 2" LDW BE CSK	US10B	RO
1	Gasketing	S88D		PE
2	ElectroLynx Connectors	As Required		MK

Notes: Remainder of existing hardware to remain

Prox reader releases lock allowing entry.

Prox reader, electric lock & power supply to be furnished and installed by access control supplier

Door to have raceway with electrolynx connector.

Set: 9.0

Doors: 106.1, 401.1, 403.1, 319.1

Description: Door w/ Prox Reader

2	Hinge (heavy weight)	T4A3786 5" x 4- 1/2"	US10B	MK
1	Electric Hinge	TEF 2+4C HW 5 x 4 1/2	US10B	MA

1	Fail Secure Electric Lock	RX 8271-24V WTL	US10B	SA
1	Cylinder (Mortise)	20-700 Primus CE	613	SC
1	Door Closer	281 P10	EB	SA
1	Wall Stop	409	US10B	RO
1	Gasketing	S88D		PE
2	ElectroLynx Connectors	As Required		MK

Notes: Prox reader releases lock allowing entry.
Prox reader, electric lock & power supply to be furnished and installed by access control supplier
Door to have raceway with electrolynx connector installed in door at time door is built at factory.

Set: 10.0

Doors: 104A.1, 210.2, 217.1

3	Hinge	TA2714 4-1/2" x 4-1/2"	US10B	MK
1	Classroom Lock	8237 WTL	US10B	SA
1	Wall Stop	409	US10B	RO

Set: 11.0

Doors: ~~106.1~~, 303A.1

3	Hinge	TA2714 4-1/2" x 4-1/2"	US10B	MK
1	Office Lock	8205 WTL	US10B	SA
1	Wall Stop	409	US10B	RO

Set: 12.0

Doors: 109.1, 111.1

3	Hinge	TA2714 4-1/2" x 4-1/2"	US10B	MK
1	Push Plate	70F	US10B	RO
1	Pull Plate	110x70C	US10B	RO
1	Door Closer	281 O	EB	SA
1	Kick Plate	K1050 10" x 2" LDW BE CSK	US10B	RO
1	Wall Stop	409	US10B	RO

Set: 13.0

Doors: 000.1

Description: Door w/ Prox Reader

2	Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US10B	MK
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1	Electric Hinge	TEF 2+4C SW 4 1/2X41/2	US10B	MA
1	Fail Secure Electric Lock	RX8271-24V WTL	US10B	SA
1	Cylinder (Mortise)	20-700 Primus CE	613	SC
1	Door Closer	281 PS	EB	SA
2	ElectroLynx Connectors	As Required		MK

Set: 14.0

Doors: 213.1

3	Hinge	TA2714 4-1/2" x 4-1/2"	US10B	MK
1	Exit Device	12 8813 ETL	US10B	SA
1	Door Closer	281 P10	EB	SA
1	Kick Plate	K1050 10" x 2" LDW BE CSK	US10B	RO
1	Wall Stop	409	US10B	RO
1	Gasketing	S88D		PE

Set: 15.0

Doors: 100A.2

6	Hinge	TA2714 4-1/2" x 4-1/2"	US10B	MK
1	Removable Mullion	12-L980	Sprayed to match hardware	SA
2	Exit Device	12 8813 ETL	US10B	SA
2	Surface Overhead Holder/Stop	598S	US10B	SA
2	Door Closer (surface)	2468	EB	SA
2	Kick Plate	K1050 10" x 2" LDW BE CSK	US10B	RO
1	Gasketing	S88D		PE

Notes: Wiring by electrical contractor

Set: 16.0

Doors: 203.1, 204A.1, 204B.1, 204C.1, 204D.1, 204E.1, 302.1, 310.1, 310.2, 315.1, 317.1

3	Hinge	TA2714 4-1/2" x 4-1/2"	US10B	MK
3	Hinge (heavy weight)	T4A3786 5" x 4-1/2"	US10B	MK
1	Classroom Lock	8237 WTL	US10B	SA

Notes: Remainder of existing hardware to remain

Regular hinges on 3' doors

Heavy weight hinges on 3'-6" doors

Set: 17.0

Doors: 206.1, 206.3, 206.4, 306.1

3 Hinge	TA2714 4-1/2" x 4-1/2"	US10B	MK
1 Exit Device	8813 ETL	US10B	SA
1 Door Closer	281 PSH	EB	SA
1 Kick Plate	K1050 10" x 2" LDW BE CSK	US10B	RO

Notes: Remainder of existing hardware to remain

Set: 18.0

Doors: 203.2

3 Hinge (heavy weight)	T4A3786 5" x 4-1/2"	US10B	MK
1 Storeroom Lock	8204 WTL	US10B	SA
1 Surface Overhead Holder/Stop	598S	US10B	SA

Set: 19.0

Doors: 203.2

1 Exit Device (Exit Only)	12 8810	US10B	SA
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Notes: Remainder of existing hardware to remain

Set: 20.0

Doors: 206.2

1 Removable Mullion	L980A	US10B	SA
2 Exit Device	8813 ETL	US10B	SA

Notes: Remainder of existing hardware to remain

Set: 21.0

Doors: 209.1, 211.1, 309.1, 311.1

3 Hinge (heavy weight)	T4A3786 4-1/2" x 4-1/2"	US10B	MK
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1	Push Plate	70F	US10B	RO
1	Pull Plate	110x70C	US10B	RO
1	Door Closer	281 P10	EB	SA
1	Kick Plate	K1050 10" x 2" LDW BE CSK	US10B	RO
1	Wall Stop	409	US10B	RO

Set: 22.0

Doors: 208.1, 208.2, 210.1, 215.1, 308.1, 308.2

3	Hinge (heavy weight)	T4A3786 5" x 4- 1/2"	US10B	MK
1	Classroom Lock	8237 WTL	US10B	SA
1	Wall Stop	409	US10B	RO

Set: 23.0

Doors: 300.1

6	Hinge (heavy weight)	T4A3786 5" x 4- 1/2"	US10B	MK
2	Exit Device	12 8813 ETL	US10B	SA
2	Surface Overhead Holder/Stop	599S	US10B	SA
1	Door Closer (surface)	2468	EB	SA
2	Kick Plate	K1050 10" x 2" LDW BE CSK	US10B	RO
4	Gasketing	S88D		PE

Set: 24.0

Doors: 303.1

Description: Door w/ Prox Reader

2	Hinge (heavy weight)	T4A3786 5" x 4- 1/2"	US10B	MK
1	Electric Hinge	TEF 2+4C HW 5 x 4 1/2	US10B	MA
1	Fail Secure Electric Lock	RX 8271-24V WTL	US10B	SA
1	Cylinder (Mortise)	20-700 Primus CE	613	SC
1	Door Closer	281 PSH	EB	SA
1	Kick Plate	K1050 10" x 2" LDW BE CSK	US10B	RO
2	ElectroLynx Connectors	As Required		MK

Notes: Prox reader releases lock allowing entry.

Prox reader & power supply to be furnished and installed by access control supplier.

Door to have raceway with electrolynx connector installed in door at time door is built at factory.

Set: 25.0

Doors: 304.1, 319.1

1 Storeroom Lock 8204 WTL US10B SA

Notes: Remainder of existing hardware to remain

Set: 26.0

Doors: 205.1, 305.1

5 Hinge	TA2714 4-1/2" x 4-1/2"	US10B	MK
1 Electric Hinge	TEF 2 SW 4 1/2 x 4 1/2	US10B	OT
1 Flush Bolt	2845	US10B	RO
1 Dust Proof Strike	570	US10B	RO
1 Coordinator	1700	Black	RO
2 Door Closer	281 P10	EB	SA
1 Gasketing	S88D		PE
2 ElectroLynx Connectors	As Required		MK

Notes: Prox reader releases lock allowing entry.

Prox Reader, electric lock and power supply to be furnished by access control supplier.

Door to have raceway with electrolynx connector installed at factory at time of door construction.

Set 27.0

Doors: 401.2, 403.2

3 Hinge	TA2714 4-1/2"x 4-1/2"	US10B	MK
1 Passage Set		US10B	
1 Door Closer	281P10	EB	SA
1 Kick Plate	K1050 10" x 2" LDW BE CSK	US10B	RO

END OF SECTION 087100

SECTION 096519 - RESILIENT FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Rubber floor tile.
- B. Related Sections:
 - 1. Section 09 6513, RESILIENT BASE AND ACCESSORIES, for resilient base, reducer strips, and other accessories installed with resilient floor coverings.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
- C. Samples for Verification: Full-size units of each color and pattern of floor tile required.
- D. Product Schedule: For floor tile. Use same designations indicated on Drawings.
- E. Qualification Data: For qualified Installer.
- F. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor tile installation indicated.
 - 1. Engage an installer who employs workers for this Project who are trained or certified by manufacturer for installation techniques required.
- B. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store floor tiles on flat surfaces.

1.6 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive floor tile during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).
- C. Close spaces to traffic during floor tile installation.
- D. Close spaces to traffic for 48 hours after floor tile installation.
- E. Install floor tile after other finishing operations, including painting, have been completed.

1.7 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.
 - a. Solid Color Strips or feature Tiles: Furnish 5 percent of each type, color, and size of feature tile installed.

PART 2 - PRODUCTS

2.1 RUBBER FLOOR TILE RRF-1

- A. Basis-of-Design Product: Provide Nora Rubber, Norament Grano, or approved product by one of the following:
 - 1. Burke Mercer Flooring Products, Division of Burke Industries Inc.
 - 2. Endura Rubber Flooring, a division of Burke Industries Inc..
 - 3. Flexco.
 - 4. Roppe Corporation, USA.
- B. Tile Standard: ASTM F 1344, Class I-B, homogeneous rubber tile, through mottled.
- C. Hardness: Not less than 75 as required by ASTM F 1344, measured using Shore, Type A durometer per ASTM D 2240.
- D. Wearing Surface: Textured.
- E. Thickness: .14 inches (3.5 mm).
- F. Size: 39.53 inches by 39.53 inches and 24.6 inches by 24.6 inches.
- G. Seaming Method: Standard.
- H. Colors and Patterns: RRF-1: Banded Agate 4882, RRF-2: Blue Indicolite 4872, and RRF-3: Drusy 4880.

2.2 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.
 - 1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Rubber Floor Adhesives: Not more than 60 g/L.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. MAT BOND TEST
 - 1. Conducting Mat Bond Tests and water droplet tests to determine the compatibility of the flooring adhesive to the substrate surface, including the preparation and all other products.
 - 2. The responsible party must ensure that the tests are conducted only at a time when subfloor and jobsite conditions comply with those requirements which are outlined in the manufacturers installation guide and ASTM F710 – Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
 - 3. The areas to be tested shall be fully enclosed, weather tight and either permanent or temporary climate control at normal service ambient temperature and humidity (except walk-in freezers or similar) or 65°F ± 5°F and 50% ± 10% relative humidity (RH) for 48 hours before and for the duration of the testing. Store all bond test materials for 48 hours in advance of the bond tests in the area with the correct conditions to properly acclimate them.
 - 4. The correct adhesive selection will be determined based upon the usage and type of nora flooring along with the type of substrate being installed over(see attached NT158) . Select appropriate locations for the bond tests such as near walls or in light traffic areas. It is recommended that tests be spaced ~50 feet apart throughout the designated installation area and each test plot should be approximately 3 feet by 3 feet.
- C. Wood Substrates: Prepare according to ASTM F 1482
 - 1. Follow manufacturer recommendation, APA grade plywood.
 - 2. All existing wooden subfloors shall be a minimum thickness of 1-1/4 inches. Manufacturer recommends double sheeted with overlapping joints using APA (American Plywood Association) underlayment grade plywood, installed as per ASTM F1482 — Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring.”

3. Wooden substrates shall not be in direct contact with concrete subfloors, even if built on sleepers. All suspended wood floors shall have adequate under floor ventilation and a permanently effective vapor retarder or membrane placed directly on the ground beneath the air space.”

D. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform relative humidity test using in situ probes, ASTM F 2170 using WAGNER RAPID RH EX probes only per Manufacturers installation guide: It is essential that moisture testing shall be performed regardless of grade level or whether the concrete is freshly poured or classified as an older slab. Test following the protocol of ASTM F2170 — Standard Test Method for Determining Relative Humidity in Concrete Slabs Using in situ Probes, with Wagner Rapid RH probes only.
 - b. Maximum Allowable Moisture Results: The maximum allowable results (with effective vapor retarder as required) are as follows:
 - c. Membrane = must be surface dry (visually)
 - d. Adhesives = 85% RH
 - e. Dryfix, Stepfix and Quickfix tape adhesives = 75% RH
 - f. If the test results exceed the maximum percentage relative humidity (% RH) levels, the installation shall not proceed until either the moisture level drops to an acceptable level or the nora membrane has been installed per the following installation guide; or an effective epoxy surface moisture mitigation system with a perm rating of ≤ 0.1 perms (when tested according to ASTM E96) has been properly applied per that manufacturer’s instructions.
5. On and below grade concrete subfloors require a confirmed permanently effective vapor retarder with a low permeance (≤ 0.1) having a minimum thickness of 10 mils, or meets the requirements of ASTM E1745 — Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs. It shall be placed directly underneath the concrete, above the granular fill or either use the membrane following manufacturers installation guide, or an effective vapor epoxy surface moisture mitigation system with a perm rating ≤ 0.1 perms, when tested according to ASTM E96 - Standard Test Method for Water Vapor Transmission of Materials.
6. If the presence of an effective vapor retarder cannot be confirmed, an effective epoxy surface moisture mitigation system with a perm rating of ≤ 0.1 perms (when tested according to ASTM E96) must be applied per manufacturer’s instructions. (see manufacturer’s recommendations for moisture mitigation).

E. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

F. Do not install floor tiles until they are same temperature as space where they are to be installed.

1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

G. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 - 1. Lay tiles square with room axis.
- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
 - 1. Lay tiles with grain running in one direction.
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.
- G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.
- H. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile products from marks, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover floor tile until Substantial Completion.

END OF SECTION 09 6519

SECTION 096813 - TILE CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes modular, tufted carpet tile.
- B. Related Requirements:
 - 1. Section 096513, "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet tile.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
 - 2. Include installation recommendations for each type of substrate.
- B. Shop Drawings: Show the following:
 - 1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
 - 2. Carpet tile type, color, and dye lot.
 - 3. Type of subfloor.
 - 4. Type of installation.
 - 5. Pattern of installation.
 - 6. Pattern type, location, and direction.
 - 7. Pile direction.
 - 8. Type, color, and location of edge, transition, and other accessory strips.
 - 9. Transition details to other flooring materials.
- C. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
 - 1. Carpet Tile: Full-size Sample.
 - 2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch- (300-mm-) long Samples.
- D. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.
- C. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
 1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd. (8.3 sq. m).

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.
- B. Fire-Test-Response Ratings: Where indicated, provide carpet tile identical to those of assemblies tested for fire response according to NFPA 253 by a qualified testing agency.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Comply with CRI 104.

1.9 FIELD CONDITIONS

- A. Comply with CRI 104 for temperature, humidity, and ventilation limitations.
- B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at occupancy levels during the remainder of the construction period.
- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.
- D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.10 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
 1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
 2. Failures include, but are not limited to, more than 10 percent edge raveling, snags, runs, dimensional stability, excess static discharge, loss of tuft bind strength, loss of face fiber, and delamination.
 3. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE CPT-1

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Shaw Contract, or approved comparable product.
- B. Color: 59167 Blue Limit
- C. Pattern: Merge Tile Retain remainder of this article unless products are limited to those listed above.
- D. Fiber Type: Eco Solution Q Nylon.
- E. Pile Characteristic: Multi-Level-pattern loop pile.
- F. Pile Thickness: .238 inches (6.05 mm).
- G. Stitches: 11 stitches per inch.
- H. Gauge: 1/10 inch.
- I. Total Weight: 18 oz./sq. yd. for finished carpet tile.
- J. Primary Backing/Backcoating: Manufacturer's standard composite materials.
- K. Secondary Backing: Manufacturer's standard material.
- L. Backing System: Ecoworx.
- M. Size: 24 by 24 inches (610 by 610 mm).
- N. Applied Soil-Resistance Treatment: Manufacturer's standard material.
- O. Antimicrobial Treatment: Manufacturer's standard material.

2.2 CARPET TILE CPT-2 and CPT-4

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Shaw Contract, or approved comparable product.
- B. Color: (CPT-2) 95555 Pewter and (CPT-4) 59595 Saxony Blue
- C. Pattern: Colour Plank Tile
- D. Fiber Type: Eco Solution Q Nylon.
- E. Pile Characteristic: Multi-Level-pattern loop pile.
- F. Pile Thickness: .238 inches (6.05 mm).
- G. Stitches: 11 stitches per inch.
- H. Gauge: 1/10 inch.

- I. Total Weight: 18 oz./sq. yd. for finished carpet tile.
- J. Primary Backing/Backcoating: Manufacturer's standard composite materials.
- K. Secondary Backing: Manufacturer's standard material.
- L. Backing System: Ecoworx.
- M. Size: 24 by 24 inches (610 by 610 mm).
- N. Applied Soil-Resistance Treatment: Manufacturer's standard material.
- O. Antimicrobial Treatment: Manufacturer's standard material.

2.3 CARPET TILE CPT-3

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Waterhog Floor Mat Tiles, or approved comparable product.
- B. Color: Color to be selected from manufacturers standard color line.
- C. Pattern: Diagonal .
- D. Fiber Type: Solution Dyed Polypropylene, outstanding lightfastness.
- E. Pile Characteristic: Hair Type (Needlepunch).
- F. Pile Thickness: .25 inches (6.35 mm).
- G. Total Weight: 36 oz./sq. yd. for finished carpet tile.
- H. Backing/Backcoating: 100% SBR Rubber (20% Recycled Content).
- I. Size: 18 by 18 inches (45.7 cm by 45.7 cm).

2.4 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.
 - 1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Metal Edge/Transition Strips: Extruded aluminum with brushed stainless finish of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.
- B. For wood subfloors, verify the following:
- C. Underlayment over subfloor complies with requirements specified in Division 06 Section 061000, "Rough Carpentry."
- D. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider and protrusions more than 1/32 inch (0.8 mm) unless more stringent requirements are required by manufacturer's written instructions.
- C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.
- D. Clean metal substrates of grease, oil, soil and rust, and prime if directed by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.
- E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

- A. General: Comply with CRI 104, Section 14, "Carpet Modules," and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive and Lok Dots by Shaw, pressure sensitive installation system..
- C. Maintain dye lot integrity. Do not mix dye lots in same area.
- D. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.
- G. Install pattern parallel to walls and borders.
- H. Stagger joints of carpet tiles so carpet tile grid is offset from access flooring panel grid. Do not fill seams of access flooring panels with carpet adhesive; keep seams free of adhesive.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet tile:
 - 1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove yarns that protrude from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with CRI 104, Section 16, "Protecting Indoor Installations."
- C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

SECTION 123553 - LABORATORY CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Wood laboratory casework.
- B. Related Sections:
 - 1. Section 06 1000, ROUGH CARPENTRY, for wood blocking for anchoring laboratory casework.
 - 2. Section 09 6513, RESILIENT BASE AND ACCESSORIES, for resilient base applied to metal laboratory casework.
 - 3. Divisions 22 and 26 Sections for installing service fittings specified in this Section, including connecting service utilities.

1.3 DEFINITIONS

- A. MDF: Medium-density fiberboard.
- B. Exposed Surfaces of Casework: Surfaces visible when doors and drawers are closed, including bottoms of cabinets more than 48 inches (1200 mm) above floor, and visible surfaces in open cabinets or behind glass doors.
 - 1. Ends of cabinets, including those installed directly against walls or other cabinets, are defined as "exposed."
 - 2. Ends of cabinets indicated to be installed directly against and completely concealed by walls or other cabinets are defined as "concealed."
- C. Semi exposed Surfaces of Casework: Surfaces behind opaque doors, such as cabinet interiors, shelves, and dividers; interiors and sides of drawers; and interior faces of doors. Tops of cabinets 78 inches (1980 mm) or more above floor are defined as "semi exposed."
- D. Concealed Surfaces of Casework: Include sleepers, web frames, dust panels, and other surfaces not usually visible after installation.
- E. Hardwood Plywood: A panel product composed of layers or plies of veneer, or of veneers in combination with lumber core, hardboard core, MDF core, or particleboard core, joined with adhesive and faced both front and back with hardwood veneers.

1.4 PERFORMANCE REQUIREMENTS

- A. System Structural Performance: Laboratory casework and support framing system shall withstand the effects of the following gravity loads and stresses without permanent deformation, excessive deflection, or binding of drawers and doors:
 - 1. Support Framing System: 600 lb/ft. (900 kg/m).
 - 2. Suspended Base Cabinets (Internal Load): 160 lb/ft. (240 kg/m).
 - 3. Work Surfaces (Including Tops of Suspended Base Cabinets): 160 lb/ft. (240 kg/m).

- B. Delegated Design: Design laboratory casework, including comprehensive engineering analysis by a qualified professional engineer, using seismic performance requirements and design criteria indicated.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For laboratory casework. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Indicate locations of hardware.
 - 2. Indicate locations and types of service fittings.
 - 3. Indicate locations of blocking and reinforcements required for installing laboratory casework.
 - 4. Include details of utility spaces showing supports for conduits and piping.
 - 5. Include details of support framing system.
 - 6. Include details of exposed conduits, if required, for service fittings.
 - 7. Include coordinated dimensions for laboratory equipment specified in other Sections.
- C. Samples for Verification: For each type of cabinet finish and each type of countertop material indicated, in manufacturer's standard sizes.
- D. Qualification Data: For qualified manufacturer.
- E. Product Test Reports for Casework: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating compliance of laboratory casework with requirements of specified product standard.
- F. Product Test Reports for Countertop Surface Material: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating compliance of laboratory countertop surface materials with requirements specified for chemical and physical resistance.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that produces casework of types indicated for this Project that has been tested for compliance with SEFA 8.
- B. Source Limitations: Obtain laboratory casework from single source from single manufacturer unless otherwise indicated.
 - 1. Obtain countertops and sinks from casework manufacturer.
- C. Basis-of-Design Product: Subject to compliance with requirements, provide Innovative Laboratory Systems, Inc.: Drawings indicate sizes and configurations of laboratory casework. Other manufacturers' laboratory casework of similar sizes and similar door and drawer configurations and complying with the Specifications may be considered. Refer to Section 01 6000, PRODUCT REQUIREMENTS .
- D. Casework Product Standard: Comply with SEFA 8, "Laboratory Furniture - Casework, Shelving and Tables - Recommended Practices."
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- F. Preinstallation Conference: Conduct conference at Project site.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect finished surfaces during handling and installation with protective covering of polyethylene film or other suitable material.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install laboratory casework until building is enclosed, utility roughing-in and wet work are complete and dry, and temporary HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.9 COORDINATION

- A. Coordinate layout and installation of framing and reinforcements for support of laboratory casework.
- B. Coordinate installation of laboratory casework with installation of fume hoods and other laboratory equipment.

1.10 EXTRA MATERIALS

- A. Furnish complete touchup kit for each type and color of metal laboratory casework provided. Include fillers, primers, paints, and other materials necessary to perform permanent repairs to damaged laboratory casework finish.
- B. Furnish complete touchup kit for each type and color of wood laboratory casework provided. Include scratch fillers, stains, finishes, and other materials necessary to perform permanent repairs to damaged laboratory casework finish.

PART 2 - PRODUCTS

2.1 WOOD CABINET MATERIALS

A. General:

1. Adhesives: Do not use adhesives that contain urea formaldehyde.
2. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.
3. Hardwood Plywood: HPVA HP-1, either veneer core or particleboard core, unless otherwise indicated[, made without urea formaldehyde].
4. MDF: ANSI A208.2, Grade 130, made with binder containing no urea formaldehyde.
5. Particleboard: ANSI A208.1, Grade M-2, made with binder containing no urea formaldehyde or straw-based particleboard complying with ANSI A208.1, Grade M-2, except for density, made with binder containing no urea formaldehyde.
6. Hardboard: AHA A135.4, Class 1 Tempered.
7. Edgebanding for Wood-Veneered Construction: Minimum 1/8-inch- (3-mm-) thick, solid wood of same species as face veneer.
 - a. Colors: Custom stain to match existing architectural woodwork.

B. Exposed Materials:

1. General: Provide materials that are selected and arranged for compatible grain and color. Do not use materials adjacent to one another that are noticeably dissimilar in color, grain, figure, or natural character markings.
2. Wood Species: Red oak.
3. Plywood: Hardwood plywood with face veneer of species indicated, selected for compatible color and grain. Grade A exposed faces at least 1/50 inch (0.5 mm) thick, and Grade J crossbands. Provide backs of same species as faces.
 - a. Face Veneer Cut: Plain Sliced.

4. .

C. Semi exposed Materials:

1. Plywood: Hardwood plywood of same species as exposed plywood. Grade B faces and Grade J crossbands. Provide backs of same species as faces.
2. Metal for Steel Drawer Pans: Cold-rolled, carbon-steel sheet complying with ASTM A 1008/A 1008M; matte finish; suitable for exposed applications.

D. Concealed Materials:

1. Particleboard.
2. MDF.
3. Hardboard.

2.2 COUNTERTOP AND SINK MATERIALS

A. Epoxy: Factory-molded, modified epoxy-resin formulation with smooth, nonspecular finish.

1. Manufacturers: Basis-of-design, subject to compliance with requirements, provide Kemresin tops and sinks of comparable products by one of the following] :
 - a. Durcon Company (The).
 - b. Epoxyn Products.
 - c. Laboratory Tops, Inc.
2. Physical Properties:
 - a. Flexural Strength: Not less than 10,000 psi (70 MPa).
 - b. Modulus of Elasticity: Not less than 2,000,000 psi (1400 MPa).
 - c. Hardness (Rockwell M): Not less than 100.
 - d. Water Absorption (24 Hours): Not more than 0.02 percent.
 - e. Heat Distortion Point: Not less than 260 deg F (127 deg C).
3. Chemical Resistance: Epoxy-resin material has the following ratings when tested with indicated reagents according to NEMA LD 3, Test Procedure 3.4.5:
 - a. No Effect: Acetic acid (98 percent), acetone, ammonium hydroxide (28 percent), benzene, carbon tetrachloride, dimethyl formamide, ethyl acetate, ethyl alcohol, ethyl ether, methyl alcohol, nitric acid (70 percent), phenol, sulfuric acid (60 percent), and toluene.
 - b. Slight Effect: Chromic acid (60 percent) and sodium hydroxide (50 percent).
4. Color: Black.

2.3 WOOD CABINETS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Kewaunee Scientific Corporation by Innovative Laboratory System, Inc. Ashland, Nebraska 68003. Phone 402.944.2232. or comparable product by one of the following:

1. Campbell Rhea.
2. Fisher Hamilton L.L.C.
3. Kewaunee Scientific Corporation; Laboratory Products Group.
4. Sheldon Laboratory Systems.
5. Mott Manufacturing Ltd.
6. Diversified Casework

B. Design: Square-edged full overlay.

1. Provide 1/8-inch (3.2-mm) reveals between doors and drawers that are adjacent.

C. Grain Direction:

1. Vertical on both doors and drawer fronts, with continuous vertical matching.
2. Vertical on knee-space panels.
3. Horizontal on aprons and table frames.

- D. Veneer Matching:
1. Plywood faced veneers shall be grade A, plain-sliced slip matched.
 - a. Provide continuous matching of adjacent drawer fronts within each cabinet.
- E. Construction: Provide wood-faced laboratory casework of the following minimum construction:
1. Bottoms of Base Cabinets and Tall Cabinets: 3/4-inch- (19-mm-) thick veneer-core hardwood plywood.
 2. Shelves: 1-inch- (25-mm-) thick veneer-core hardwood plywood.
 3. Base Cabinet Top Frames: 3/4-by-2-inch (19-by-50-mm) solid wood with mortise and tenon or doweled connections, glued and pinned or screwed.
 4. Base Cabinet Stretchers: 3/4-by-4-1/2-inch (19-by-114-mm) panel product strips or solid wood boards at front and back of cabinet, glued and pinned or screwed.
 5. Doors or access panels 48 Inches (1200 mm) High or Less: 3/4 inch (19 mm) thick, with particleboard or MDF cores, and hardwood face veneers and crossbands.
- F. Filler and Closure Panels: Provide where indicated and as needed to close spaces between cabinets and walls, ceilings, and indicated equipment. Fabricate from same material and with same finish as adjacent exposed cabinet surfaces unless otherwise indicated.
1. Provide utility-space closure panels at spaces between base cabinets where utility space would otherwise be exposed, including spaces below countertops.
 2. Provide closure panels at ends of utility spaces where utility space would otherwise be exposed.

2.4 WOOD FINISH

- A. Preparation: Sand lumber and plywood before assembling. Sand edges of doors, drawer fronts, and molded shapes with profile-edge sander. Sand after assembling for uniform smoothness at least equivalent to that produced by 220-grit sanding and without machine marks, cross sanding, or other surface blemishes.
- B. Staining: Remove fibers and dust and apply stain to exposed and semiexposed surfaces as necessary to match approved Samples. Apply stain in a manner that will produce a consistent appearance. Apply wash-coat sealer before applying stain to closed-grain wood species.
1. Stain Color: Custom color to match existing architectural millwork.
- C. Chemical-Resistant Finish: Apply laboratory casework manufacturer's standard two-coat, chemical-resistant, transparent finish. Sand and wipe clean between coats. Topcoat(s) may be omitted on concealed surfaces.
1. Chemical and Physical Resistance of Finish System: Finish complies with acceptance levels of cabinet surface finish tests in SEFA 8. Acceptance level for chemical spot test shall be no more than four Level 3 conditions.

2.5 HARDWARE

- A. General: Provide laboratory casework manufacturer's standard, commercial-quality, heavy-duty hardware complying with requirements indicated for each type.
- B. Hinges: Stainless-steel, 5-knuckle hinges complying with BHMA A156.9, Grade 1, with antifriction bearings and rounded tips. Provide 2 for doors 48 inches (1200 mm) high or less and 3 for doors more than 48 inches (1200 mm) high.
- C. Door Catches: Dual, self-aligning, permanent magnet catches. Provide 2 catches on doors more than 48 inches (1200 mm) high.

2.6 COUNTERTOPS AND SINKS

- A. Countertops, General: Provide units with smooth surfaces in uniform plane free of defects. Make exposed edges and corners straight and uniformly beveled. Provide front and end overhang of 1 inch (25 mm), with continuous drip groove on underside 1/2 inch (13 mm) from edge.
- B. Sinks, General: Provide sizes indicated or laboratory casework manufacturer's closest standard size of equal or greater volume, as approved by Architect.
 - 1. Outlets: Provide with strainers and tailpieces, NPS 1-1/2 (DN 40), unless otherwise indicated.
 - 2. Overflows: provide overflow of standard beehive or open-top design with separate strainer. Height 2 inches (50 mm) less than sink depth. Provide in same material as strainer.
- C. Epoxy Countertops and Sinks:
 - 1. Countertop Fabrication: Fabricate with factory cutouts for sinks, holes for service fittings and accessories, and with butt joints assembled with epoxy adhesive and concealed metal splines.
 - a. Countertop Configuration: Flat, 1 inch (25 mm) thick, with rounded edge and corners, and with drip groove and applied backsplash.
 - b. Countertop Configuration: As indicated.
 - c. Countertop Construction: Uniform throughout full thickness.
- D. Troughs: Epoxy. Pitch to drains not less than 1/8 inch/foot (10 mm/m). Except where troughs empty into sinks, provide NPS 1-1/2 (DN 40) outlets with strainers and tailpieces.
 - 1. Epoxy Troughs: Molded in 1 piece with smooth surfaces and coved corners; 3/4-inch (19-mm) minimum thickness. Provide polypropylene strainers and tailpieces.

2.7 WATER AND LABORATORY GAS SERVICE FITTINGS

- A. Plumbing and Gas connections shown on plans to be provided by plumbing contractor in compliance with Division 22 – Plumbing. Furniture fabricator shall provide openings, for plumbing fixtures shown on plans, for laboratory tables in rooms 104, 108 and 110.

2.8 ELECTRICAL SERVICE FITTINGS

- A. Electrical devices and connections shown on plans to be provided by electrical contractor in compliance with Division 26 – Electrical. Furniture fabricator shall provide openings, for electrical devices shown on plans, for laboratory tables in rooms 104, 108 and 110.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of reinforcements, and other conditions affecting performance of laboratory casework.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF CABINETS

- A. Comply with installation requirements in SEFA 2.3. Install level, plumb, and true; shim as required, using concealed shims. Where laboratory casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical. Do not exceed the following tolerances:
 - 1. Variation of Tops of Base Cabinets from Level: 1/16 inch in 10 feet (1.5 mm in 3 m).

- B. Base Cabinets: Fasten cabinets to utility-space framing, partition framing, wood blocking, or reinforcements in partitions with fasteners spaced not more than 24 inches (600 mm) o.c. Bolt adjacent cabinets together with joints flush, tight, and uniform.
 - 1. Where base cabinets are installed away from walls, fasten to floor at toe space at not more than 24 inches (600 mm) o.c. and at sides of cabinets with not less than 2 fasteners per side.
- C. Install hardware uniformly and precisely. Set hinges snug and flat in mortises.
- D. Adjust laboratory casework and hardware so doors and drawers align and operate smoothly without warp or bind and contact points meet accurately. Lubricate operating hardware as recommended by manufacturer.

3.3 INSTALLATION OF COUNTERTOPS

- A. Comply with installation requirements in SEFA 2.3. Abut top and edge surfaces in one true plane with flush hairline joints and with internal supports placed to prevent deflection. Locate joints only where shown on Shop Drawings.
- B. Field Jointing: Where possible, make in same manner as shop-made joints using dowels, splines, fasteners, adhesives, and sealants recommended by manufacturer. Prepare edges in shop for field-made joints.
 - 1. Use concealed clamping devices for field-made joints in plastic-laminate countertops. Locate clamping devices within 6 inches (150 mm) of front and back edges and at intervals not exceeding 24 inches (600 mm). Tighten according to manufacturer's written instructions to exert a uniform heavy pressure at joints.
- C. Fastening:
 - 1. Secure countertops, except for epoxy countertops, to cabinets with Z-type fasteners or equivalent, using two or more fasteners at each cabinet front, end, and back.
 - 2. Secure epoxy countertops to cabinets with epoxy cement, applied at each corner and along perimeter edges at not more than 48 inches (1200 mm) o.c.
 - 3. Where necessary to penetrate countertops with fasteners, countersink heads approximately 1/8 inch (3 mm) and plug hole flush with material equal to countertop in chemical resistance, hardness, and appearance.
- D. Provide required holes and cutouts for service fittings.
- E. Seal unfinished edges and cutouts in plastic-laminate countertops with heavy coat of polyurethane varnish.
- F. Provide scribe moldings for closures at junctures of countertop, curb, and splash with walls as recommended by manufacturer for materials involved. Match materials and finish to adjacent laboratory casework. Use chemical-resistant, permanently elastic sealing compound where recommended by manufacturer.
- G. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

3.4 INSTALLATION OF SINKS

- A. Comply with installation requirements in SEFA 2.3.
- B. Underside Installation of Epoxy Sinks: Use laboratory casework manufacturer's recommended adjustable support system for table- and cabinet-type installations. Set top edge of sink unit in sink and countertop manufacturers' recommended chemical-resistant sealing compound or adhesive and firmly secure to produce a tight and fully leakproof joint. Adjust sink and securely support to prevent movement. Remove excess sealant or adhesive while still wet and finish joint for neat appearance.

3.5 INSTALLATION OF LABORATORY ACCESSORIES

- A. Install accessories according to Shop Drawings, installation requirements in SEFA 2.3, and manufacturer's written instructions.
- B. Securely fasten adjustable shelving supports, stainless-steel shelves, and pegboards to partition framing, wood blocking, or reinforcements in partitions.
- C. Install shelf standards plumb and at heights to align shelf brackets for level shelves. Install shelving level and straight, closely fitted to other work where indicated.
- D. Securely fasten pegboards to partition framing, wood blocking, or reinforcements in partitions.

3.6 INSTALLATION OF SERVICE FITTINGS

- A. Comply with requirements in Divisions 22 and 26 Sections for installing water and laboratory gas service fittings and electrical devices.
- B. Install fittings according to Shop Drawings, installation requirements in SEFA 2.3, and manufacturer's written instructions. Set bases and flanges of sink- and countertop-mounted fittings in sealant recommended by manufacturer of sink or countertop material. Securely anchor fittings to laboratory casework unless otherwise indicated.

3.7 CLEANING AND PROTECTING

- A. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.
- B. Protect countertop surfaces during construction with 6-mil (0.15-mm) plastic or other suitable water-resistant covering. Tape to underside of countertop at a minimum of 48 inches (1200 mm) o.c.

3.8 SERVICE-FITTING SCHEDULE

- A. Laboratory Gas Service Fitting, Type GF-[#]:
 - 1. Service: Gas fuel.
 - 2. Type of Fitting: Turret.
 - 3. Outlets: Three.
 - 4. Outlet Type: Straight.
 - 5. Valve Type: Needle valve.
- B. Electrical Service Fitting, Type EF-[#]:
 - 1. Type of Fitting: Recessed.
 - 2. Device: See plans for device types.
 - 3. Additional Requirements: GFCI receptacles.

END OF SECTION 12 3553

SECTION 23 0993 - SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes control sequences for HVAC systems, subsystems, and equipment.
- B. Related Sections include the following:
 - 1. Section 23 0900, INSTRUMENTATION AND CONTROL FOR HVAC, for control equipment and devices and for submittal requirements.

1.3 DEFINITIONS

- A. DDC: Direct digital control.
- B. VAV: Variable air volume.

1.4 HEATING CONTROL SEQUENCES

- A. AIR HANDLING UNIT AHU-1: Air handler shall be scheduled to start through the campus building automation system. When the air handler is unoccupied, outside and relief air dampers shall be closed, return air damper shall be open. Supply and return fans shall start in the unoccupied mode if the unoccupied cooling set-up temperature is exceeded. Supply and return fans shall stop by a signal from the fire alarm system or if the freeze stat trips. On morning start up, outside air damper shall be closed until the return air temperature reaches 70 degrees (adjustable).
 - 1. SUPPLY FAN CONTROL: The variable speed supply fans will be started based on occupancy schedule. When either supply fan status indicates a fan started, the control sequence will be enabled. The supply fans will modulate in unison to maintain the discharge static pressure at setpoint. Upon a loss of airflow on either fan, the fan will stop until the unit is manually reset.
 - 2. RETURN FAN CONTROL: After the supply fan has been started, the variable speed return fans will be started. The return fans will modulate together in conjunction with the supply fan. The return fans will lag the supply fan by a fixed differential measured between the supply and return air airflow measuring stations. The fixed differential shall be 1400 CFM (adjustable)
 - 3. ECONOMIZER CONTROL: When the outdoor air temperature is less than the return air temperature, the economizer control shall be initiated. Economizer shall modulate outside return, and relief air damper to maintain discharge air temperature, working in sequence with the cooling coil.
 - 4. MINIMUM OA CONTROL: The outside air damper shall open and close as required to maintain the minimum outside air flow setpoint. Outside air flow shall be measured by an airflow measuring station. The outside air intake of the unit will be limited to prevent the preheat temperature from falling below the low limit setpoint. Outside air flow shall be reset, based on room carbon dioxide sensors in the conference room and classrooms.
 - 5. RELIEF AIR DAMPER: Relief air damper shall modulate to maintain a positive 0.05" W.C. across the relief air damper in the Attic.
 - 6. TEMPERATURE CONTROL: Discharge air temperature shall be maintained. Reset discharge air temperature based on VAV box damper position.

7. PREHEAT COIL: On a call for heating, the preheat valve shall modulate to maintain the discharge air temperature. When the unit is shutdown, the preheat coil shall be commanded to a preset position should the outdoor air temperature fall below the low outdoor air temperature setpoint.
8. COOLING COIL: The cooling coil 2-way valve shall modulate to maintain the temperature setpoint. When the unit is shutdown, the cooling coil will be commanded to a preset position should the outdoor air temperature fall below the low outdoor air temperature setpoint.
9. ADDITIONAL POINTS MONITORED BY THE EMS:
 - a. OUTDOOR AIR TEMPERATURE (OA-T)
 - b. DISCHARGE AIR FLOW (DA-F)
 - c. RETURN FAN 1 STATUS (RF1-S)
 - d. RETURN FAN 2 STATUS (RF2-S)
 - e. RETURN AIR TEMPERATURE (RA-T)
 - f. RETURN AIR FLOW (RA-F)
 - g. PREFILTER DIFF PRESSURE (PFILT-DP)
 - h. FINAL FILTER DIFF PRESSURE (FFILT-DP)
 - i. DISCHARGE AIR HIGH DUCT PRESSURE (DAPHI-A)
 - j. RETURN AIR LOW DUCT PRESSURE (RAPLO-A)
 - k. LOW TEMPERATURE ALARM (LT-A)
 - l. SUPPLY FAN 1 STATUS (SF1-S)
 - m. SUPPLY FAN 2 STATUS (SF2-S)
 - n. SUPPLY FAN VFD STATUS
 - o. SUPPLY FAN VFD ALARM
 - p. SUPPLY FAN VFD SPEED
 - q. RETURN FAN VFD STATUS
 - r. RETURN FAN VFD ALARM
 - s. RETURN FAN VFD SPEED

- B. AIR HANDLING UNIT AHU-2: Air handler shall be scheduled to start through the campus building automation system. When the air handler is unoccupied, outside and relief air dampers shall be closed, return air damper shall be open. Supply and return fans shall start in the unoccupied mode if the unoccupied cooling set-up temperature is exceeded. Supply and return fans shall stop by a signal from the fire alarm system or if the freeze stat trips. On morning start up, outside air damper shall be closed until the return air temperature reaches 70 degrees (adjustable).
1. SUPPLY FAN CONTROL: The variable speed supply fan will be started based on occupancy schedule. When supply fan status indicates a fan started, the control sequence will be enabled. The supply fans shall operate at constant speed.
 2. RETURN FAN CONTROL: After the supply fan has been started, the variable speed return fan will be started. The return fan shall also be constant speed.
 3. ECONOMIZER CONTROL: When the outdoor air temperature is less than the return air temperature, the economizer control shall be initiated. Economizer shall modulate outside, return, and relief air damper to maintain discharge air temperature, working in sequence with the cooling coil.
 4. MINIMUM OA CONTROL: The outside air damper shall open and close as required to maintain the minimum outside air flow setpoint. Outside air flow shall be measured by an airflow measuring station. The outside air intake of the unit will be limited to prevent the preheat temperature from falling below the low limit setpoint. Outside air flow shall be reset, based on room carbon dioxide sensors in the return air duct.
 5. TEMPERATURE CONTROL: Discharge air temperature shall be maintained based on room temperature.
 6. PREHEAT COIL: On a call for heating, the preheat valve shall modulate to maintain the space temperature. When the unit is shutdown, the preheat coil shall be commanded to a preset position should the outdoor air temperature fall below the low outdoor air temperature setpoint.
 7. COOLING COIL: The cooling coil 2-way valve shall modulate to maintain the temperature setpoint. When the unit is shutdown, the cooling coil will be commanded to a preset position should the outdoor air temperature fall below the low outdoor air temperature setpoint.

8. ADDITIONAL POINTS MONITORED BY THE EMS:
 - a. OUTDOOR AIR TEMPERATURE (OA-T)
 - b. DISCHARGE AIR FLOW (DA-F)
 - c. RETURN FAN STATUS (RF-S)
 - d. RETURN AIR TEMPERATURE (RA-T)
 - e. RETURN AIR FLOW (RA-F)
 - f. PREFILTER DIFF PRESSURE (PFILT-DP)
 - g. FINAL FILTER DIFF PRESSURE (FFILT-DP)
 - h. DISCHARGE AIR HIGH DUCT PRESSURE (DAPHI-A)
 - i. RETURN AIR LOW DUCT PRESSURE (RAPLO-A)
 - j. LOW TEMPERATURE ALARM (LT-A)
 - k. SUPPLY FAN STATUS (SF-S)
 - l. SUPPLY FAN VFD STATUS
 - m. SUPPLY FAN VFD ALARM
 - n. SUPPLY FAN VFD SPEED
 - o. RETURN FAN VFD STATUS
 - p. RETURN FAN VFD ALARM
 - q. RETURN FAN VFD SPEED

C. HEATING WATER SYSTEM

1. SYSTEM ENABLE: The heating system will automatically start when the system enable is "on". When the system enable is "off", the heating system will be disabled.
2. HEAT EXCHANGER CONTROL: This system consists of two steam heat exchangers (one is back-up). BAS shall select which heat exchanger is to be in operation. Enabling the operation of a heat exchanger shall open the heating water isolation control valve and the steam valves. Two sequenced steam inlet valves (1/3 – 2/3 capacity) shall modulate in sequence to maintain the desired hot water supply temperature to setpoint as reset by the outdoor air temperature.
3. HEATING WATER PUMP CONTROL. When enabled, heating water pump HWP-1 or HWP-2 shall start (one pump is redundant). Pump speed shall be controlled by the pumps variable speed motor controller to maintain a constant differential pressure across the system. Alternate lead/lag pump on a monthly (adj.) basis.
4. ADDITIONAL POINTS MONITORED BY THE EMS:
 - a. PRIMARY HW RETURN TEMPERATURE (PHWR-T)
 - b. PRIMARY HW SUPPLY TEMPERATURE
 - c. STEAM PRESSURE
 - d. CONDENSATE PUMP HIGH LEVEL ALARM
 - e. HEATING WATER PUMP HWP-1 VFD STATUS
 - f. HEATING WATER PUMP HWP-1 VFD ALARM
 - g. HEATING WATER PUMP HWP-1 VFD SPEED
 - h. HEATING WATER PUMP HWP-2 VFD STATUS
 - i. HEATING WATER PUMP HWP-2 VFD ALARM
 - j. HEATING WATER PUMP HWP-2 VFD SPEED

D. ROOM SPACE CONTROL (VAV BOX AND RADIATOR/FINTUBE)

1. OCCUPIED MODE: When the zone temperature is between the occupied heating and cooling setpoints (inside of the bias), the primary air damper shall be at the minimum CFM and there shall be no mechanical heating. On a rise in zone temperature above the cooling setpoint, the primary air damper shall open and there will be no mechanical heating. On a drop in zone temperature below the heating setpoint, the reheat coil valve and/or radiator/fintube control valve shall open to maintain the zone temperature and the VAV box damper shall close to provide a minimum CFM.
2. UNOCCUPIED MODE (Air Handling Unit is Off): When in this mode, while the zone temperature is between the unoccupied heating and cooling setpoints (inside of the bias), the primary air damper shall be at the minimum CFM and there shall be no mechanical heating. On a rise in zone temperature above the unoccupied cooling setpoint, the primary air damper shall open and there shall be no mechanical heating. On a drop in zone temperature below the unoccupied

- heating setpoint, the radiator/fintube control valve shall open to maintain the space night setback temperature.
3. DISCHARGE AIR TEMP SENSOR: A discharge air temp sensor is provided on each box for monitoring purposes.
 4. ROOM OCCUPANCY CONTROL: When the air handler is in the occupied mode and the space is unoccupied through its occupancy sensor, the VAV box damper shall close to maintain the night set-up temperature for cooling and shall fully close and the radiator/fintube control valve shall modulate to maintain night setback conditions. When occupancy in the space is detected, the VAV box shall return to its normal operating condition.
 5. UNIT ENABLE: A network unit enable signal will control the mode of the box.
 6. NETWORK WARMUP-COOLDOWN: Warmup-cooldown modes will be activated by a network command. When the zone temperature is below the effective heating setpoint, the box will use warm air flow, then reheat coil to maintain the zone temperature. When the box is satisfied the flow will remain at the warm-up minimum position until the warm command has been removed.
- E. UNIT HEATER CONTROL: Room thermostat shall start fan motor and heating coil valve in sequence. On a drop in temperature to setpoint of the room thermostat, fan motor shall start and heating coil valve shall open/close to maintain temperature.
- F. FAN COIL CONTROL: Room thermostat shall start fan motor and chilled water coil valve in sequence. On a rise in temperature to setpoint of the room thermostat, fan motor shall start and cooling coil valve shall open/close to maintain temperature.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 23 0993

SECTION 23 8219 - FAN COIL UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes fan-coil units and accessories.

1.3 DEFINITIONS

- A. BAS: Building automation system.

1.4 SUBMITTALS

- A. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories.
- B. Field quality-control test reports.
- C. Operation and Maintenance Data: For fan-coil units to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 01 7823, OPERATION AND MAINTENANCE DATA, include the following:
 - 1. Maintenance schedules and repair part lists for motors, coils, integral controls, and filters.
- D. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2004, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."
- C. ASHRAE/IESNA 90.1-2004 Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004, Section 6 - "Heating, Ventilating, and Air-Conditioning."

1.6 COORDINATION

- A. Coordinate layout and installation of fan-coil units and suspension system components with other construction that penetrates or is supported by ceilings, including light fixtures, HVAC equipment, fire-suppression-system components, and partition assemblies.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of condensing units that fail in materials or workmanship within specified warranty period.

1.8 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Fan-Coil-Unit Filters: Furnish one spare filters for each filter installed.

PART 2 - PRODUCTS

2.1 FAN-COIL UNITS

- A. Manufacturers:
 - 1. Airtherm; a Mestek Company.
 - 2. Carrier Corporation.
 - 3. Engineered Air Ltd.
 - 4. Environmental Technologies, Inc.
 - 5. First Co.
 - 6. International Environmental Corporation.
 - 7. Marlo Coil; Subsidiary of Engineered Support Systems, Inc.
 - 8. Marshall Engineered Products Co., LLC (MEPCO); Dunham-Bush, Inc.
 - 9. McQuay International.
 - 10. Rosemex.
 - 11. Trane.
 - 12. USA Coil & Air.
 - 13. YORK International Corporation.
- B. Description: Factory-packaged and -tested units rated according to ARI 440, ASHRAE 33, and UL 1995.
- C. Coil Section Insulation: 1/2-inch (13-mm) thick, coated glass fiber complying with ASTM C 1071 and attached with adhesive complying with ASTM C 916.
 - 1. Fire-Hazard Classification: Insulation and adhesive shall have a combined maximum flame-spread index of 25 and smoke-developed index of 50 when tested according to ASTM E 84.
 - 2. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2004.
- D. Main and Auxiliary Drain Pans: Plastic, stainless steel, or insulated galvanized steel with plastic liner. Fabricate pans and drain connections to comply with ASHRAE 62.1-2004..
- E. Chassis: Galvanized steel where exposed to moisture. Floor-mounting units shall have leveling screws.
- F. Cabinet: Steel with baked-enamel finish in manufacturer's standard paint color as selected by Architect.
 - 1. Horizontal Unit Bottom Panels: Fastened to unit with cam fasteners and hinge and attached with safety chain; with cast-aluminum discharge grilles.
 - 2. Steel recessing flanges for recessing fan-coil units into ceiling or wall.
- G. Filters: Minimum arrestance according to ASHRAE 52.1, and a minimum efficiency reporting value (MERV) according to ASHRAE 52.2.
 - 1. Pleated Cotton-Polyester Media: 90 percent arrestance and 7 MERV.
- H. Hydronic Coils: Copper tube, with mechanically bonded aluminum fins spaced no closer than 0.1 inch (2.5 mm), rated for a minimum working pressure of 200 psig (1378 kPa) and a maximum entering-water temperature of 220 deg F (104 deg C). Include manual air vent and drain valve.
- I. Fan and Motor Board: Removable.
 - 1. Fan: Forward curved, double width, centrifugal; directly connected to motor. Thermoplastic or painted-steel wheels, and aluminum, painted-steel, or galvanized-steel fan scrolls.

2. Motor: Permanently lubricated, multispeed; resiliently mounted on motor board. Comply with requirements in Section 23 0513, COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT.
 3. Wiring Termination: Connect motor to chassis wiring with plug connection.
- J. Control devices and operational sequences are specified in Section 23 0900, INSTRUMENTATION AND CONTROL FOR HVAC, and Section 23 0993, SEQUENCE OF OPERATIONS FOR HVAC CONTROL.
- K. Electrical Connection: Factory wire motors and controls for a single electrical connection.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive fan-coil units for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine roughing-in for piping and electrical connections to verify actual locations before fan-coil-unit installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install fan-coil units level and plumb.
- B. Install fan-coil units to comply with NFPA 90A.
- C. Suspend fan-coil units from structure with elastomeric hangers.
- D. Install new filters in each fan-coil unit within two weeks after Substantial Completion.

3.3 CONNECTIONS

- A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties. Specific connection requirements are as follows:
 1. Install piping adjacent to machine to allow service and maintenance.
 2. Connect piping to fan-coil-unit factory hydronic piping package. Install piping package if shipped loose.
 3. Connect condensate drain to indirect waste.
 - a. Install condensate trap of adequate depth to seal against the pressure of fan. Install cleanouts in piping at changes of direction.
- B. Connect supply and return ducts to fan-coil units with flexible duct connectors specified in Section 23 3300, AIR DUCT ACCESSORIES. Comply with safety requirements in UL 1995 for duct connections.
- C. Ground equipment according to Section 26 0526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.
- D. Connect wiring according to Section 26 0519, LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections. Report results in writing.
- B. Perform the following field tests and inspections and prepare test reports:
 - 1. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
 - 2. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.
- C. Remove and replace malfunctioning units and retest as specified above.

3.5 ADJUSTING

- A. Adjust initial temperature set points.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fan-coil units. Refer to Section 01 7900, DEMONSTRATION AND TRAINING.

END OF SECTION 23 8219

SECTION 270000 - COMMUNICATIONS

PART 1 - GENERAL

1.1 GENERAL

- A. Installation: Under the contract the communications and systems routing infrastructure is provided only. Cabling installation to be completed under a separate contract.
- B. Application: Each new building or addition to an existing building shall include spaces designated for the location of communications equipment. These spaces will be called Telecommunication Rooms (TR).
- C. Use Restriction: TRs shall not be used as passageways to other equipment rooms, power transformers, custodial equipment, or any other function that would require access for reasons other than communications maintenance.
- D. Structured Cabling System: A certified Structured Cabling System with a 25-year CAT6 link performance compliance warranty is required. See Section 2.1 for a list of approved systems.

1.2 ROOM CONSTRUCTION

- A. Power: The TR shall be designed to include a dedicated power panel located in the TR. Provide a dedicated 20 amp 120 volt quad receptacle, one on each wall.
- B. Conduits and Raceways: Provide adequate conduit or other raceways through walls to adjoining accessible ceilings and/or accessible locations on other floors, where appropriate.
- C. Clearance: A clear space of 36" shall be provided in front and behind of all terminal boards, panels, or equipment racks.
- D. Door: Provide 3' 0" wide by 7' 0" high door, opening outward, with a storeroom function lock. The room shall be keyed with a core. Door shall be labeled "Telecommunication Room and Room #."
- E. Plywood Terminal Boards: Provide 3/4" thick Grade A-C plywood terminal boards, securely attached to walls and painted with two coats of light-colored fire-retardant paint. Plywood shall cover the equivalent of one short wall and one long wall of the TR (not the wall with the entrance door) with 4'x8' sheets of plywood mounted beginning 24" above the finished floor. The designation of the walls to be covered shall be coordinated with the location of the phone, data, and TV entrance equipment and racks.
- F. Equipment Grounding: A ground plate connected to the building main electrical ground system shall be mounted in the room with wiring sized as necessary. (See Communication Grounding section.)

1.3 COMMUNICATION PATHWAY REQUIREMENTS

- A. Secondary pathways to each Communications Location (CL) - conduits to CL backboxes.
 - 1. Conduits will be installed from within 3 feet of a cable tray to each CL backbox.
 - 2. Backboxes are defined as the communications metallic box (single gang, double gang, 4 square, handy-box, or device box) with appropriate cover that are mounted in the wall and the conduit is attached for cabling. The Backbox is used to mount the CL and voice/data jacks.
 - 3. Conduits to each CL will be sized depending on the number of cables at the CL, but generally, most CL conduits will be 3/4" conduits.

4. All cable to each CL will be homerun through the pathway system described. The CL cable will travel through the secondary pathway (conduit), then the primary pathway (cable tray and conduits), then to the serving TR.

1.4 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain materials for systems from either a single manufacturer or a manufacturer approved by the Structured Cabling System's manufacturer to ensure quality of appearance and performance.
- B. All installations shall be performed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated shall be subject to the control of the Architect. The contractor must be a certified installer of Systimax Solutions and have a minimum of five (5) years experience in SCS cabling systems. The contractor must agree to a 20 year installation warranty.
- C. Equipment and materials shall be of the quality and manufacturer indicated. The equipment specified is based on the acceptable manufacturers listed in each section. Where "approved equal" is stated, equipment shall be equivalent in every way to that of the equipment specified and subject to approval of the Architect based on submittals provided.
- D. Standards
 1. All work done shall comply with applicable ordinances, rules, and regulations.
 2. If any portion of this work requires various permits or licenses, the Contractor shall obtain or assist UNL in obtaining all such permits and licenses. All work must comply with and conform to the following codes and standards as applicable to the project:
 - a. State of Nebraska State Building Code
 - b. National Electric Code (NEC) and Nebraska Electrical Code
 - c. National Fire Protection Association (NFPA) 101 Life Safety Code
 - d. Occupational Safety and Health Act of 1970 (OSHA)
 - e. American National Standards Institute (ANSI)
 - f. Institute of Electrical and Electronics Engineers (IEEE)
 - g. Telecommunications Industry Association (TIA/EIA 568-A, A-1, A-2, A-3, A-4, A- 5(e), 569-A, 606, 607, TSB – 67, 72, 75, 95, and other applicable EIA standards)
 - h. National Board of Fire Underwriters (NBFU)
 - i. National Bureau of Standards (NBS)
 - j. Underwriters Laboratories, Inc. (UL), Federal Specifications
 - k. BICSI best practices
 3. The latest editions of these Codes and Standards shall be applicable unless otherwise designated. Where conflicts exist from one code to another, the code to adhere to will be decided by UNL Facilities Project Manager.

1.5 COORDINATION

- A. Contractor shall coordinate the work specified in the Communication sections with the work of the other trades involved in this project and in particular with the building automation system, electrical, mechanical, and plumbing trades.
- B. Contractor shall coordinate with Division 26 – Electrical for communications pathway, power, grounding and bonding, and space development.
- C. All questions and issues regarding coordination and construction element phasing shall be directed to the General Contractor and UNL Project Manager.

- D. The Contractor shall make every effort to coordinate their work so there shall be a minimum of disruption to any occupants of the UNL campus. There shall be no prolonged disruption of existing service such as telephone, cable television, electrical, and other utilities. Any necessary disruption shall be scheduled with the appropriate staff well in advance.
- E. Contractor will follow all stipulations set forth through the general specification sections with regard to delivery hours, delivery locations, storage, and communications with the Architect and General Contractor.
- F. The Contractor shall coordinate with and follow the requirements of all other applicable specification sections including, but not limited to, the following:
 - a. Hazardous material
 - b. Storage
 - c. Security
 - d. Safety
 - e. Logistics

1.6 SUBMITTALS

- A. All submittals for products and hardware provided under the Communications Specification section shall be made to the Architect and the UNL IS Project Manager for review and approval prior to installation of products and hardware.
- B. Manufacturers' cut sheets shall be submitted for all products to be supplied by Contractor in response to Division 27 Specification sections.
- C. The Contractor will submit all as-built drawings and the manufacturers' 25-year warranty certifications at the completion of the project and before final payment will be made for the project.

1.7 INTENT OF DRAWINGS AND SPECIFICATIONS

- A. These Specifications, together with the Drawings accompanying them, are intended to depict the installation requirements of the infrastructure necessary to support the Structured Cabling Systems included in this Project. Contractor shall furnish materials shown on the drawings or mentioned in the specifications, or both, that are necessary for the complete provisioning and build-out of the Structured Cabling Systems herein depicted. Additionally, Contractor shall provide all incidental equipment, required tools, and incidental materials required for the completion of the Structured Cabling Systems whether or not specified or shown on the drawings.
- B. Drawings are diagrammatic; their intent is to depict the on-site conditions accurately, but discrepancies between on-site conditions and drawings do exist. It is the Contractor's responsibility to familiarize itself with the on-site conditions and to immediately point out any discrepancies between drawings and on-site conditions to the Architect.
- C. Do not use drawing scale to determine length or location dimension. Scaled drawings are still to be considered diagrammatic. If exact lengths or locations are known, the drawings will show the dimensions or coordinates.

1.8 MATERIAL SUBSTITUTIONS

- A. Submit requests for substitutions within 30 days of contract award, or sooner if required to maintain schedules.

- B. Acceptance of substitutions is at the Architect's and UNL IS Project Manager's discretion. Submit sufficient information to show that the proposed substitute is equivalent to the item specified.
- C. Make changes needed to accommodate the substitution without impact to the installation schedule or work under other divisions and at no expense to the owner.
- D. Substitutions of any components must comply with warranty requirements of the overall system.
- E. The Structured Cabling System is intended to provide a level of link performance that exceeds the latest ANSI/TIA/EIA standards for cable installations. Any substitutions of any type proposed by the Contractor must not degrade the performance of the overall system.

PART 2 - PRODUCTS

2.1 STRUCTURED CABLING

- A. Provide one of the following cabling manufacturers, or approved equal:
 - 1. ADC TrueNet™ Network Cabling System.
 - 2. PANDUIT® PAN-NET Network Cabling System.
 - 3. Systimax Structured Cabling System.
 - 4. Uniprise Structured Cabling System.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Contractor is responsible for examining existing conditions and comparing them with drawings and specifications and notifying the General Contractor of any discrepancies before commencing work.
- B. Contractor is responsible for coordinating with the General Contractor and other associated disciplines to address and adjust for any discrepancies.

3.2 INSTALLATION

- A. Contractor is responsible for all materials, labor, installation, testing, certification, documentation, and approval for acceptance of the Structured Cabling System.

3.3 VERIFICATION

- A. It is incumbent upon the Contractor to verify that the installation and materials used have been inspected before they are enclosed within building features, or otherwise hidden from view. The Contractor shall bear costs associated with uncovering or exposing installations or features that have not been inspected. Inspection forms verifying an inspection as complete along with results of the inspection shall be dated and signed by both the General Contractor and the Contractor. If installation methods and materials are approved, and that is so stated on the inspection form, then Contractor may enclose installation and material within building features or other features such as Outside Plant pathway and spaces.
- B. After installation, test and certify all cabling systems per the appropriate standards and manufacturers' requirements.

3.4 ADJUSTMENTS

- A. Contractor is responsible for coordinating and documenting with the General Contractor and other associated disciplines to address any approved change orders.

END OF SECTION 270000

SECTION 270536 - CABLE TRAYS FOR COMMUNICATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide all services, labor, materials, tools, and equipment required for the complete and proper installation of communications cable trays, J-hook hardware, and supports as called for in these specifications and related drawings. The communication cable trays will be installed by the electrical contractor.

1.2 SYSTEM DESCRIPTION

- A. Pathway: Cable trays, raceway, J-hooks, D-rings, and all fittings and connectors end-to-end that make up the primary and secondary pathway system.
- B. Pathway definitions
 1. Primary pathways are major pathways for cable routed floor-to-floor, through corridors, and pathways that carry cables feeding multiple areas that are likely to be used to support growth in those areas. Primary pathways carry cable to secondary pathways.
 2. Secondary pathways extend from the primary pathway to the Communications Location (CL).

1.3 SUBMITTALS

- A. Product Data: Submit manufacturers' product information for cable trays, J- hooks, and supports.

1.4 QUALITY ASSURANCE

- A. Comply with Section 270000.
- B. Comply with Division 26 – Electrical.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 270000.
- B. Comply with Division 26 – Electrical.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Conduit: Comply with Division 26 – Electrical.
- B. Cable tray:
 1. The cable trays and all fittings and accessories shall comprise a complete structural system in the form of a rigid mechanical tray of compatible material and design, functional to support all cables.
 2. Description: Continuous, rigid, welded steel wire mesh outside the Telecommunication Room. Tubular steel, ladder rack inside the Telecommunications Room.

- C. Fittings and accessories: Provide the manufacturer's recommended fittings including splice plates, spacers, wall brackets, ceiling hanger brackets, couplings, junctions, radius bends, radius elbows, radius vertical and horizontal tees, waterfalls, crosses, wall end connectors, angle connectors, offset connectors, wall plate connectors, tray-to-box connectors, fasteners, offsets, and all other components to make the system work.
- D. Materials and Fabrication:
 - 1. Comply with Division 26 – Electrical.
 - 2. J-hooks (if used): Rated for plenum indoor use. J-hooks shall be rated to support Category 6 cable.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Comply with section 270000.
- B. Comply with Division 26 – Electrical.

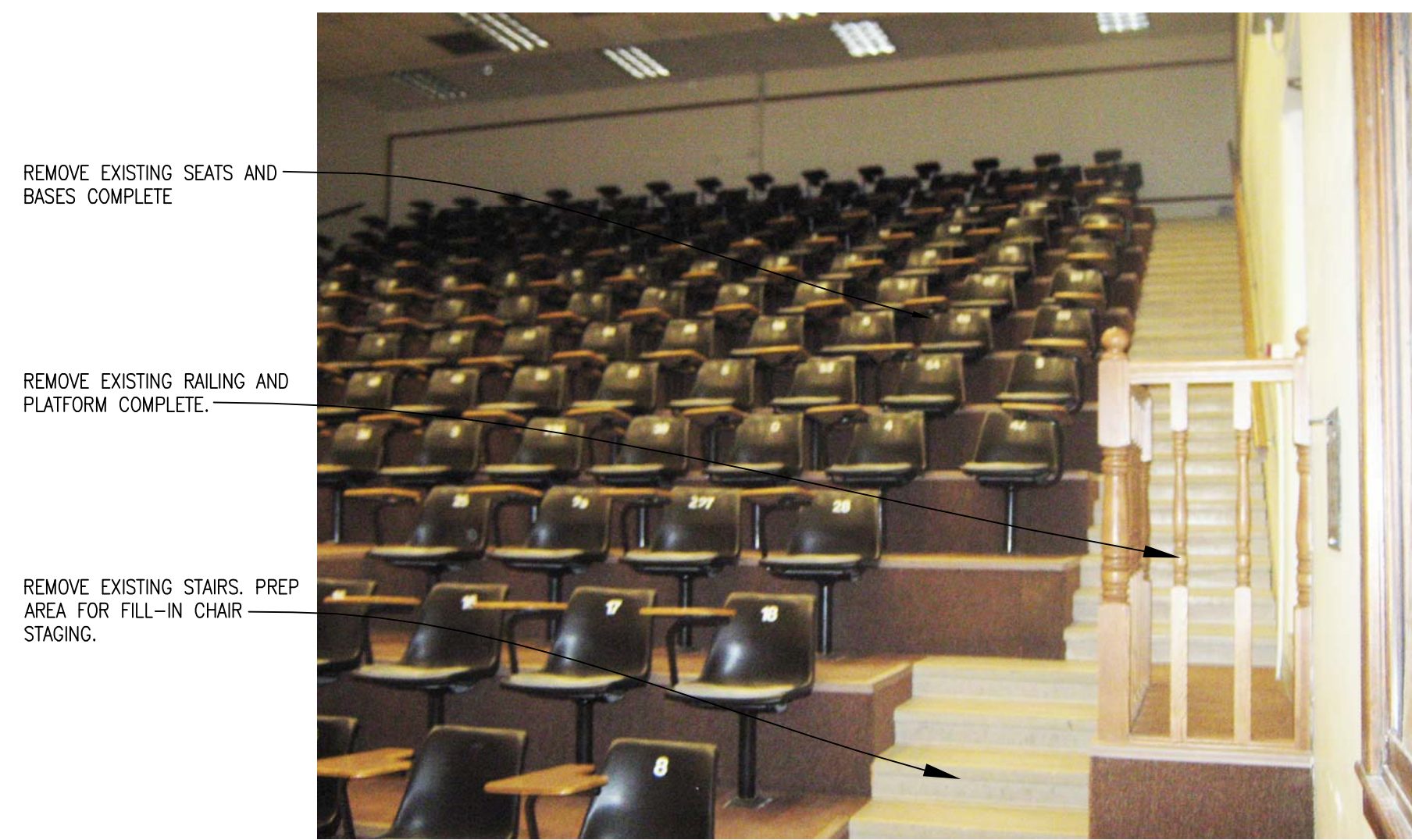
3.2 INSTALLATION

- A. Comply with Division 26 – Electrical.
- B. Where physical discontinuity of the cable tray is necessary, cables shall be mechanically supported over the discontinuity by alternate means (including hangers, clips, brackets, hooks).
- C. The ends of the cable tray rack shall be electrically bonded together over each discontinuity.
- D. Bond the cable tray to make electrically continuous. Bond the cable tray to the telecommunications grounding bussbars in the TR, as applicable.
- E. Support cable tray at splices, tees, elbows, bends, intersections, and transitions, and per manufacturer's recommendation.
- F. The supporting mechanisms shall be sufficiently spaced to support the weight of the cable trays for their maximum capacity rating.
- G. Install the cable tray, support system, entry, and exit points to be free of all sharp edges, burrs, or projections.
- H. Route cable trays parallel and perpendicular to walls and ceilings.

3.3 ADJUSTMENTS

- A. Comply with section 270000.
- B. Comply with Division 26 – Electrical.

END OF SECTION 270536



- REMOVE EXISTING SEATS AND BASES COMPLETE.
- REMOVE EXISTING RAILING AND PLATFORM COMPLETE.
- REMOVE EXISTING STAIRS. PREP AREA FOR FILL-IN CHAIR STAGING.

5 PHOTO- SEATING IN MAIN LECTURE HALL
SCALE: NONE



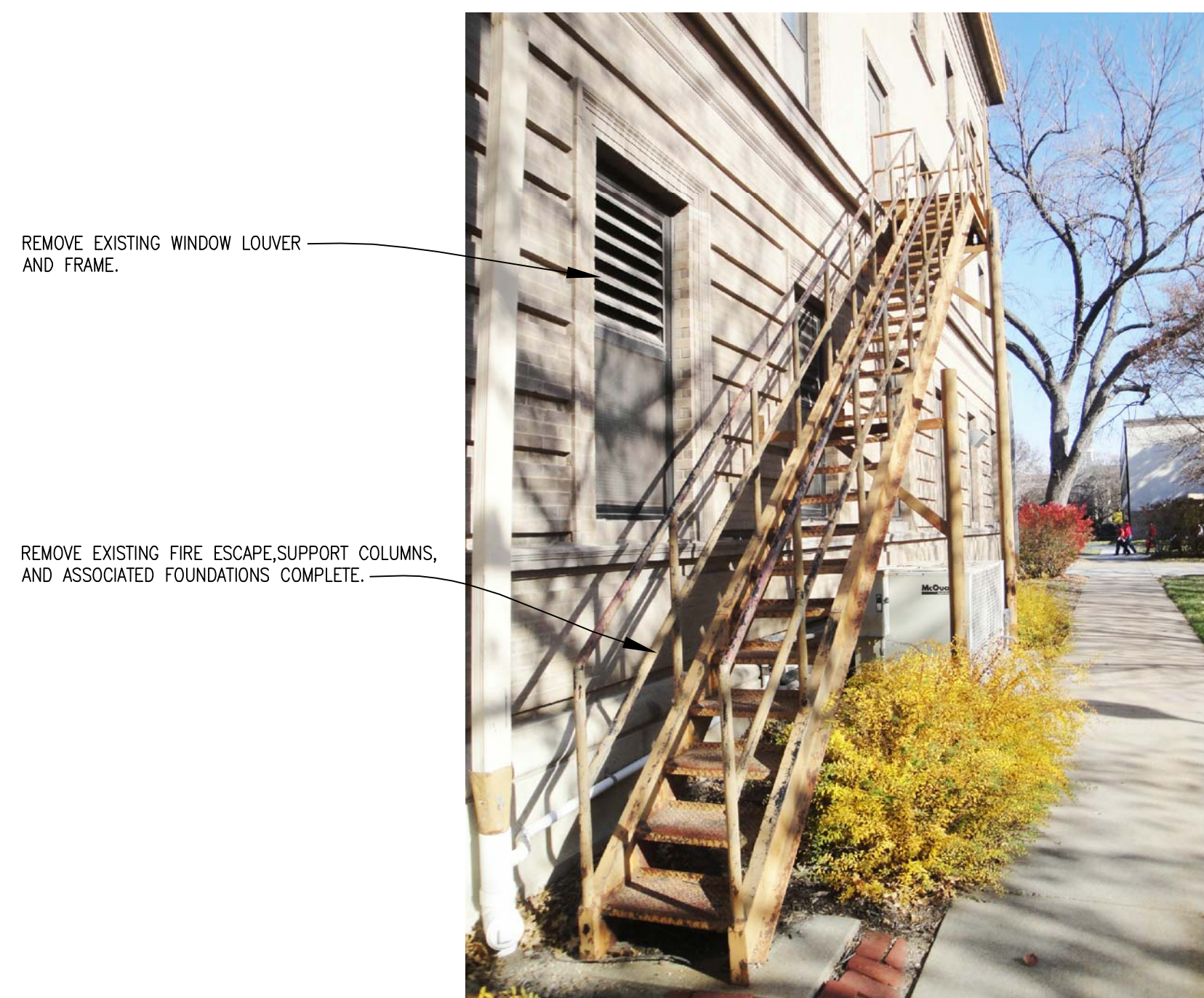
- REMOVE EXISTING INTERMEDIATE RAILING.
- EXISTING RAILING AND TRIM- WORK TO REMAIN. CONTRACTOR TO PROTECT FROM DAMAGING ANY PORTION OF STAIRCASE.
- REMOVE EXISTING FLOORING. ORIGINAL TILE BELOW IS TO BE PROTECTED. PREP TILE BELOW FOR RENOVATION WORK.

6 PHOTO- MAIN STAIRWAY, EAST ENTRY
SCALE: NONE



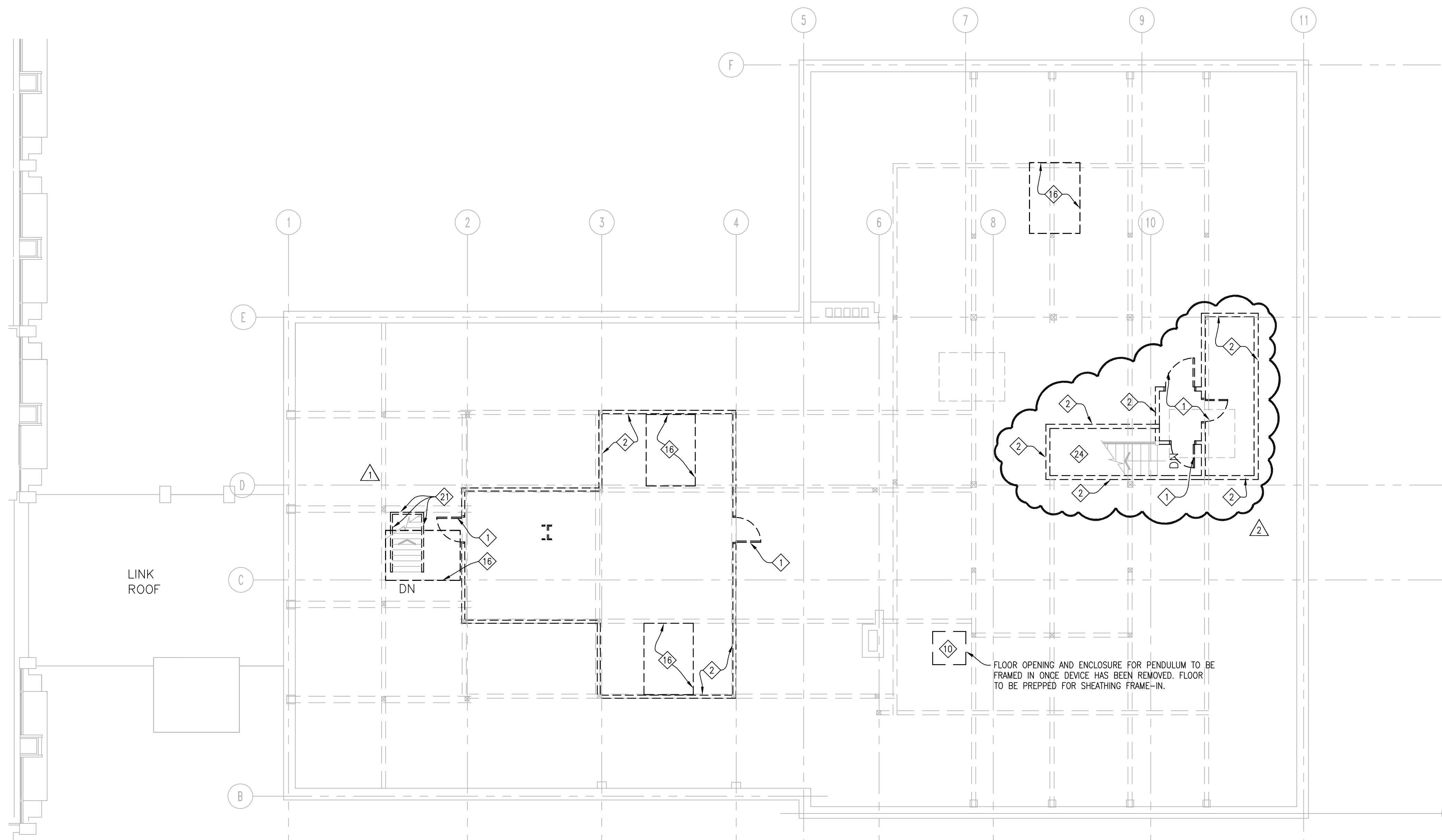
- REMOVE PARTIAL HEIGHT WALLS AND SMALL DOORS AND FRAMES.

7 PHOTO- STORAGE DOORS IN LECTURE HALL
SCALE: NONE

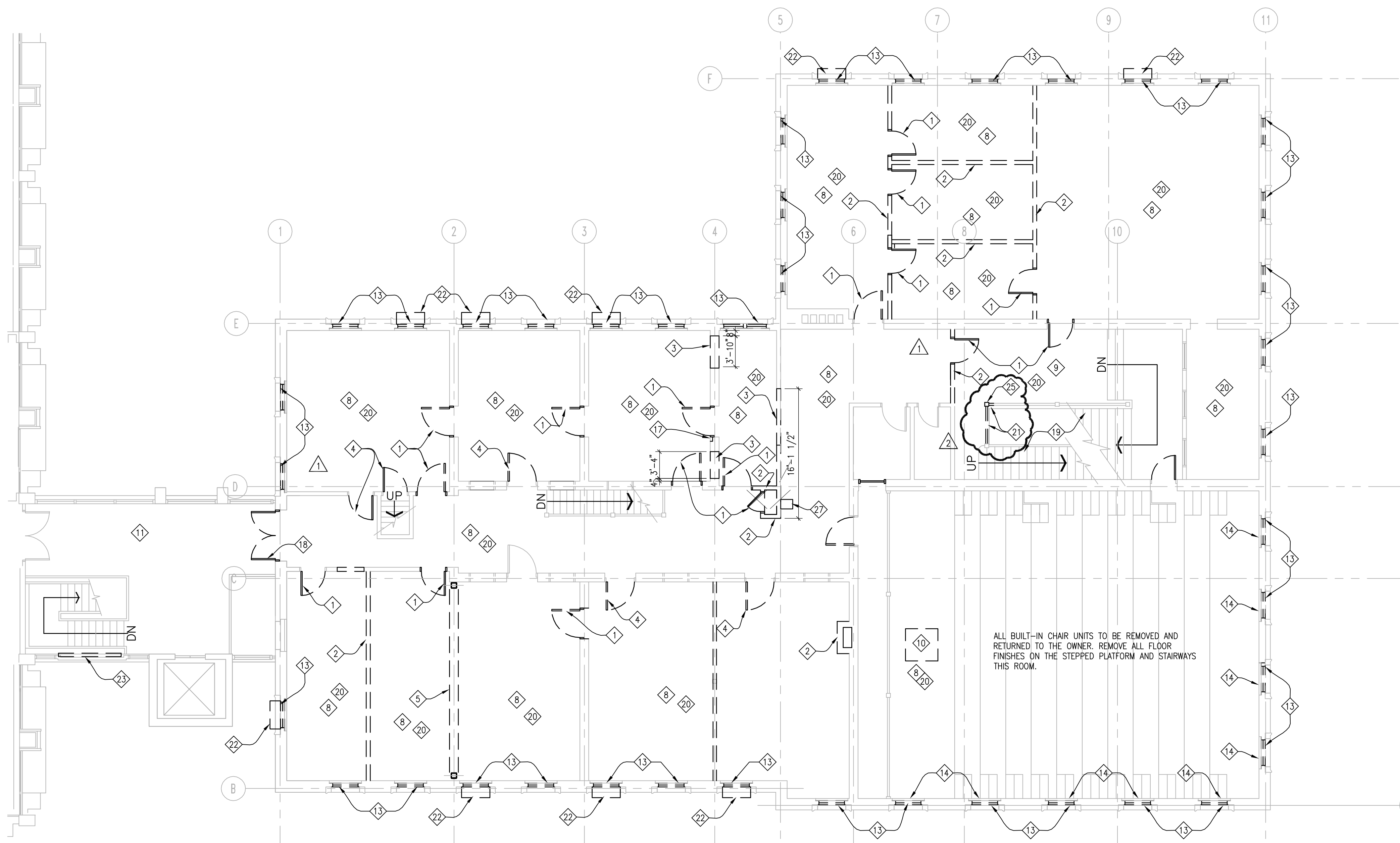


- REMOVE EXISTING WINDOW LOUVER AND FRAME.
- REMOVE EXISTING FIRE ESCAPE SUPPORT COLUMNS, AND ASSOCIATED FOUNDATIONS COMPLETE.

8 PHOTO- FIRE ESCAPE ON SOUTH SIDE
SCALE: NONE



1 DEMOLITION FLOOR PLAN - ATTIC LEVEL
AD102 SCALE: 1/8" = 1'-0"



2 DEMOLITION FLOOR PLAN - LEVEL 3
AD102 SCALE: 1/8" = 1'-0"

DEMOLITION GENERAL NOTES
REFER TO SHEET AD101

KEYED DEMOLITION NOTES

- 1 REMOVE EXISTING DOOR, FRAME AND paneled CASING, WHERE OCCURRING COMPLETE.
- 2 REMOVE EXISTING WALL, AND ASSOCIATED PIPING, FROM FLOOR SLAB TO STRUCTURE COMPLETE.
- 3 REMOVE PORTION OF WALL TO CREATE FINISHED CLEAR OPENING AS DIMENSIONED.
- 4 REMOVE EXIST. DOOR AND HARDWARE.
- 5 REMOVE EXIST. FLOOR STRUCTURE ABOVE, PARTITION WALL, AND ASSOCIATED BRACING AND PIPING CHASE FULL-HEIGHT. CAP UTILITIES AS NECESSARY. SHORE AS REQUIRED TO INSTALL NEW COLUMNS AND BEAMS. REFER TO S/AE502.
- 6 REMOVE SECTION OF EXTERIOR WALL PANEL INDICATED.
- 7 REMOVE EXIST. CLOSET, WALLS, DOORS, SHELVES, RODS AND HARDWARE COMPLETE.
- 8 REMOVE EXIST. ACOUSTICAL TILE CEILING THROUGHOUT ROOM OR CORRIDOR; SALVAGE ACOUSTICAL TILES/PANELS AND TURN OVER TO OWNER.
- 9 EXISTING PLASTER CEILING TO REMAIN.
- 10 REMOVE FRAMING FOR PENDULUM OPENING TO STRUCTURE COMPLETE.
- 11 CONTRACTOR TO USE TEMPORARY DUST PARTITIONS AS REQUIRED IN AREAS DISTURBED DURING CONSTRUCTION.
- 12 NO ARCHITECTURAL OR INTERIOR WORK THIS AREA OF BUILDING.
- 13 REMOVE EXISTING GLAZING; WINDOW FRAMES AND STORM WINDOWS; SEE ENLARGED WINDOW DETAILS SHEET AE310.
- 14 REMOVE INTERIOR SURFACE FINISH AND FRAMING AT EXISTING WINDOW OPENING. PREP OPENING FOR NEW WINDOW.
- 15 REMOVE EXISTING DRINKING FOUNTAIN. CAP PIPING AT WALL.
- 16 REMOVE EXISTING ORIGINAL SKYLIGHT AND FRAME COMPLETE. REMOVE SECTION OF ROOF AS REQUIRED FOR NEW MECHANICAL DORMER. REFER TO ROOF PLAN, SHEET AE121.
- 17 REMOVE PORTION OF BRICK AS REQ'D FOR PAPER TOWEL DISPENSER/WASTE RECEPTACLE.
- 18 REMOVE EXISTING DOORS, HARDWARE AND FRAME. SALVAGE DOORS TO BE RELOCATED IN CORRIDOR PER DOOR SCHEDULE.
- 19 REMOVE EXISTING RUBBER TREADS.
- 20 REMOVE EXISTING FLOORING THROUGHOUT ROOM. PREP SURFACE TO RECEIVE NEW FLOORING AS SCHEDULED. THIS INCLUDES REMOVAL OF ALL PROTRUDING NAILS IN ROOMS WHERE HARDWOOD FLOOR EXIST; AND FLOOR COVERING WAS REMOVED AS PART OF ABATEMENT. REPAIR ALL FASTENERS AS REQUIRED.
- 21 REMOVE EXISTING WOOD RAILING. SALVAGE PARTS FOR REPLACEMENT AT OTHER LOCATIONS AS NECESSARY.
- 22 REMOVE EXISTING WINDOW A/C UNIT. REFER TO MECHANICAL.
- 23 REMOVE EXISTING WOOD SLAT WALL FINISH.
- 24 REMOVE EXISTING PLASTER CEILING CAP AND ASSOCIATED FRAMING OVER STAIRWAY.
- 25 REMOVE POST AND SALVAGE FOR RE-USE OUTSIDE NEW WALL.

UNIVERSITY OF
Nebraska
Lincoln

BRACE HALL
RENOVATIONS
Stadium Drive and S Street
LINCOLN, NE

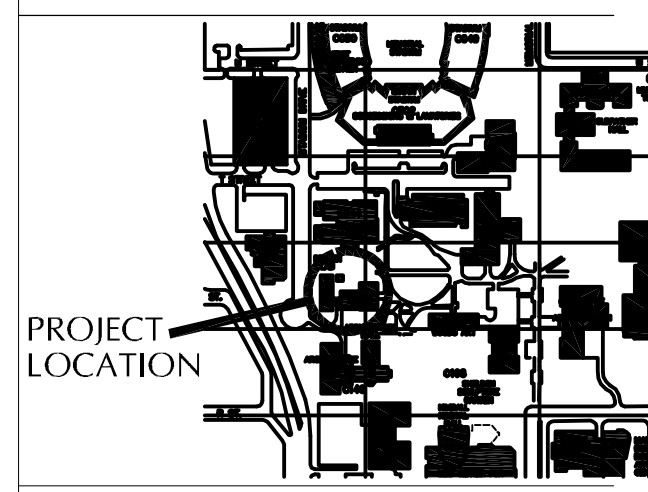
UNIVERSITY OF
NEBRASKA-LINCOLN
LINCOLN, NE 68508

LEO A DALY
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ARCHITECTURE
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INTERIORS
EST. 1915

8600 Indian Hills Drive
Omaha, NE 68114-4039 USA
Tel 402-391-8111 Fax 402-391-8564

UNL Project #C008P098

KEY PLAN



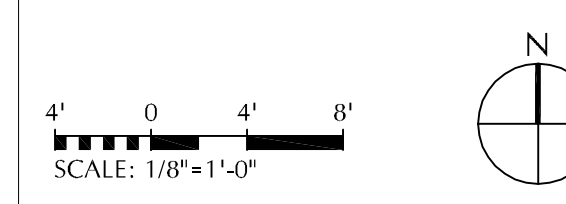
REVISIONS

NO.	DESCRIPTION	DATE
ADDENDUM 001		09.06.2013
ADDENDUM 002		09.13.2013

FILE LOG

ACTIVITY	BY
Manager	DTB
Design	DTB
Draw	AMT
Check	DTB

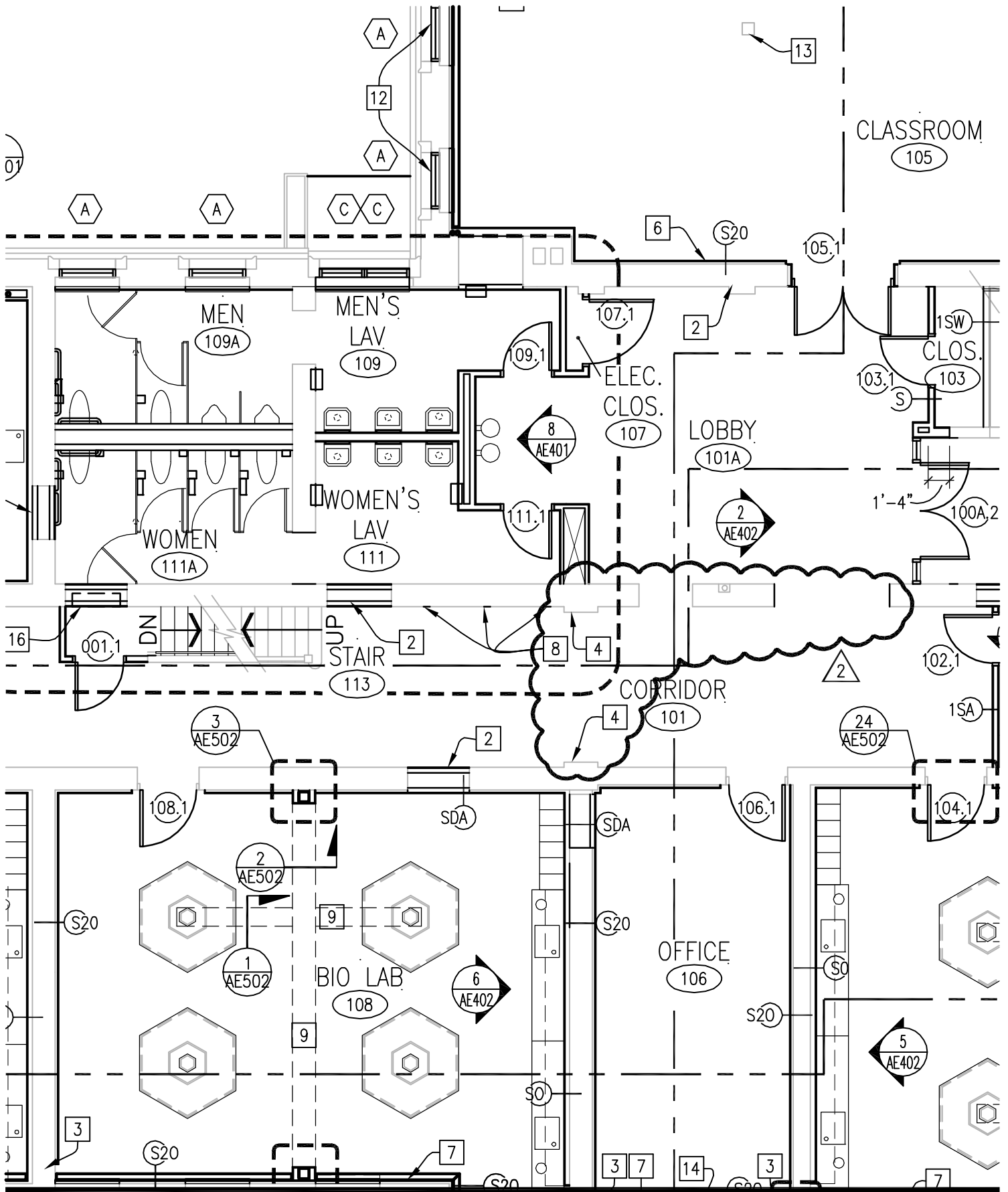
BID SET



Project No. 003-10126-004
August 19, 2013

DEMOLITION FLOOR PLANS
LEVEL 3 AND ATTIC LEVEL

AD103



LEO A DALY

PLANNING
ARCHITECTURE
ENGINEERING
INTERIORS

8600 Indian Hills Drive Omaha NE 68114 USA
Tel 402-391-8111 Fax 402-391-8564

BRACE HALL RENOVATIONS

JOB NO. 003-10126-004
DRAWN BY: JMK
CHECKED BY:



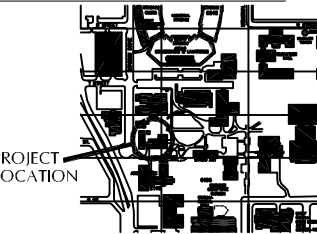
DATE:

DRAWING:

ADDENDUM 002

09/13/13

AE101a

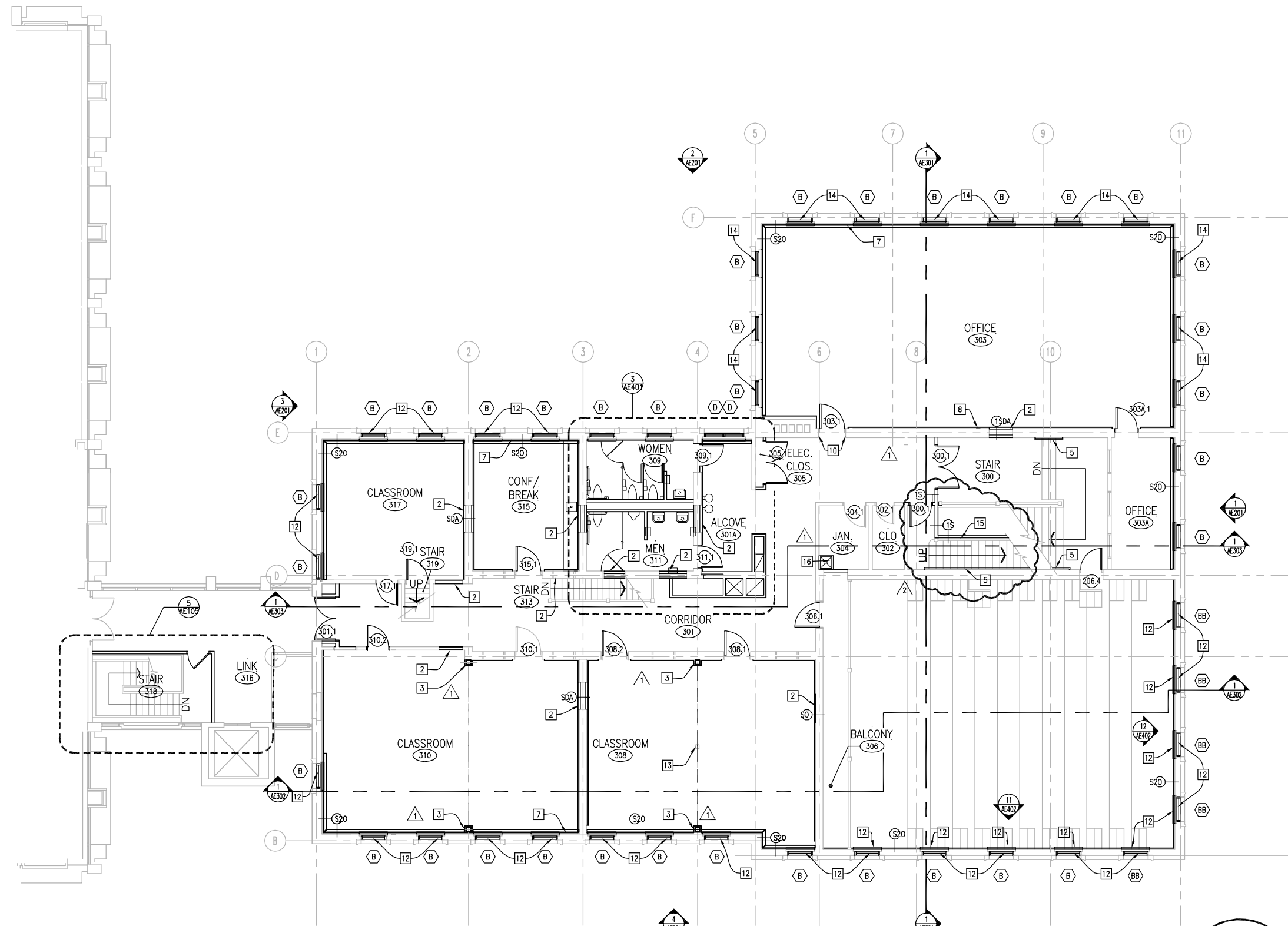


NO.	DESCRIPTION	DATE
1	ADDENDUM 001	09.06.2013
2	ADDENDUM 002	09.13.2013

ACTIVITY	BY
Manager	DTB
Design	DTB
Draw	AHF
Check	DTB

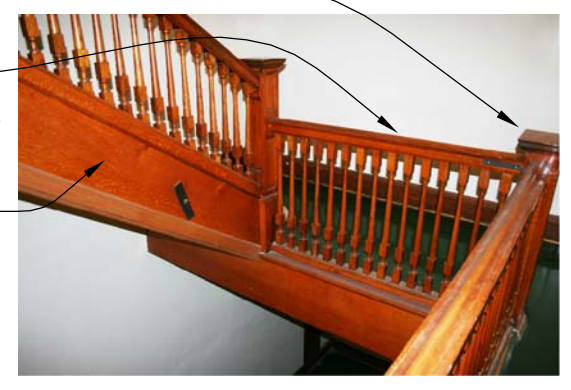
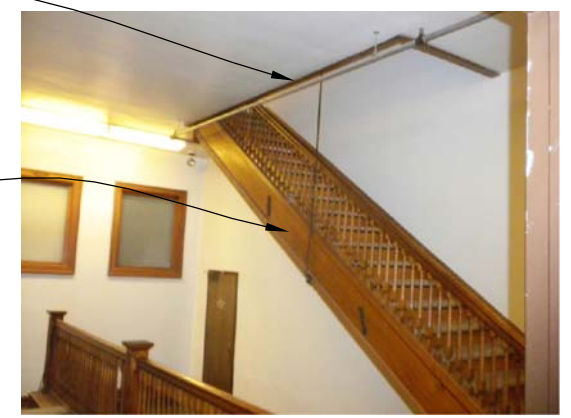
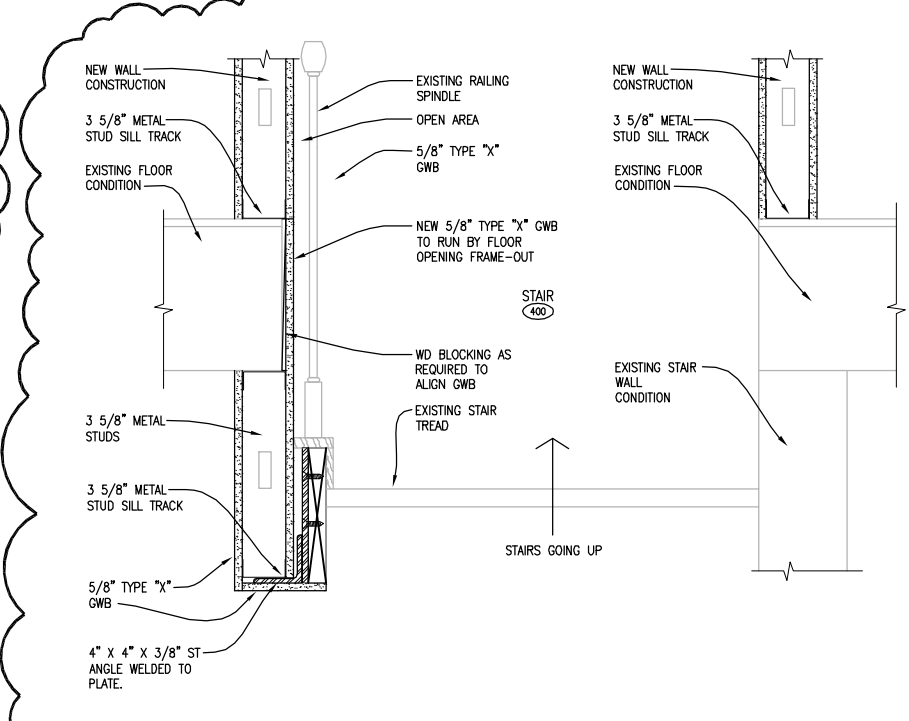
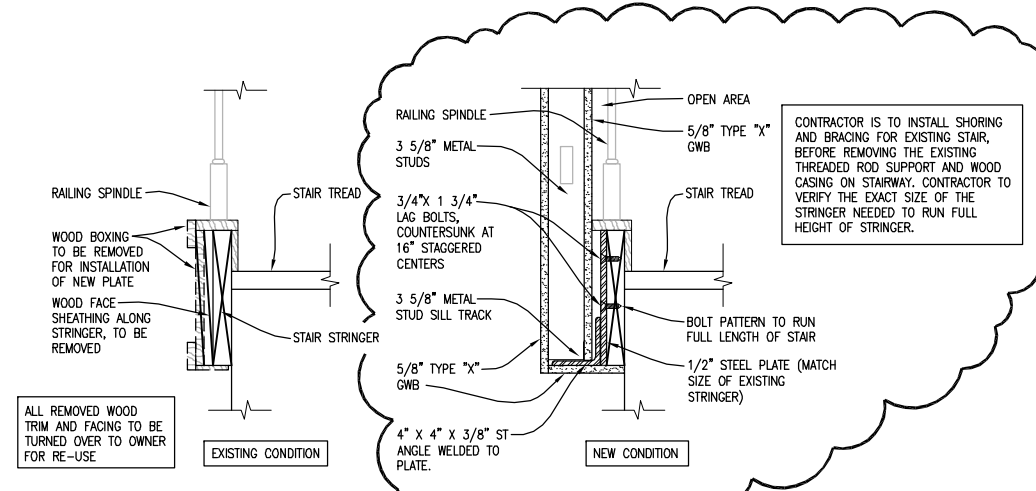
KEYED ARCHITECTURAL NOTES

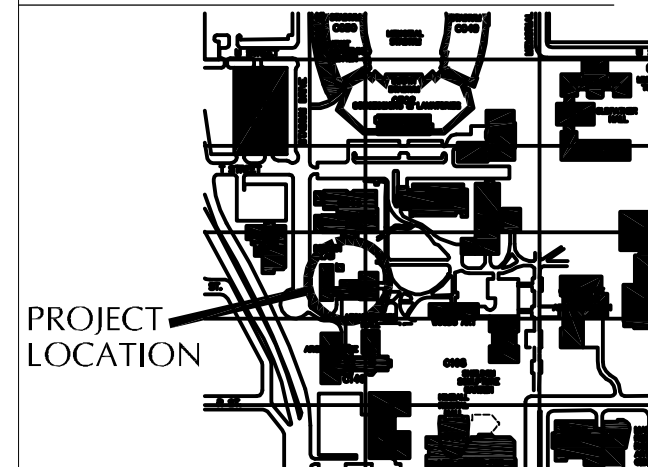
- 1 NEW FLOOR FINISH TO WILL NEED TO BE INSTALLED ON AND AROUND THE MANHOLE ACCESS COVER TO THE BASEMENT BELOW. MAINTAIN ACCESS.
- 2 NEW WALL CONSTRUCTION INFILL. NOTE WALL TYPE, ALIGN WITH FACE OF EXIST PARTITION.
- 3 NEW FRAMED BOX OUT AT NEW COLUMN. SIM TO DETAIL 3/AE502.
- 4 CONSTRUCT NEW WOOD CASING AT NEW WALL OPENING. WOOD TRIM TO MATCH CASING OPENINGS AT EXISTING OPENINGS.
- 5 NEW 1 1/2" DIAMETER WOOD HANDRAIL MOUNTED TO EXISTING WALL. HANDRAILS SHALL EXTEND HORIZONTALLY 12" BEYOND TOP RISER AND CONTINUE TO SLOPE FOR THE DEPTH OF ONE TREAD BEYOND THE BOTTOM RISER. WHERE EXTENSION IS NOT POSSIBLE, RETURN TO WALL.
- 6 ALIGN NEW PARTITION FACE WITH EXISTING WALL (TYP. ALL CONDITIONS).
- 7 FUR OUT WALL AS DESIGNATED ON WALL TYPES.
- 8 PATCH ALL EXISTING WALLS WHERE ATTACHED WALLS HAVE BEEN REMOVED. INSTALL GWB TO ALIGN WITH THE EXISTING FACE OF EXISTING PLASTER OR GWB AND PAINT TO MATCH.
- 9 AREA OF PATCHED SUB-FLOOR FOR UTILITY INSTALLATION.
- 10 HARDWOOD CASING OPENING.
- 11 NEW EXIT DOOR IN EXISTING FRAME ASSEMBLY.
- 12 WINDOW TO HAVE BLACK-OUT SHADE UNIT INSTALLED.
- 13 EXIST COLUMN TO REMAIN.
- 14 WINDOW TO HAVE LIGHT FILTERING SHADE UNIT INSTALLED.
- 15 STAIR STRINGER TO BE REINFORCED WITH NEW STEEL PLATE ASSEMBLY. SEE DETAIL 2/AE103.
- 16 PIPING MAY NOT BE ROUTED IN 1 HOUR RATED STAIR ENCLOSURE.



FLOOR PLAN - LEVEL 3

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





NO.	DESCRIPTION	DATE
1	ADDENDUM 002	09/13/2013

ACTIVITY	BY
Manager	DTB
Design	DTB
Draw	AMT
Check	DTB

CEILING LEGEND

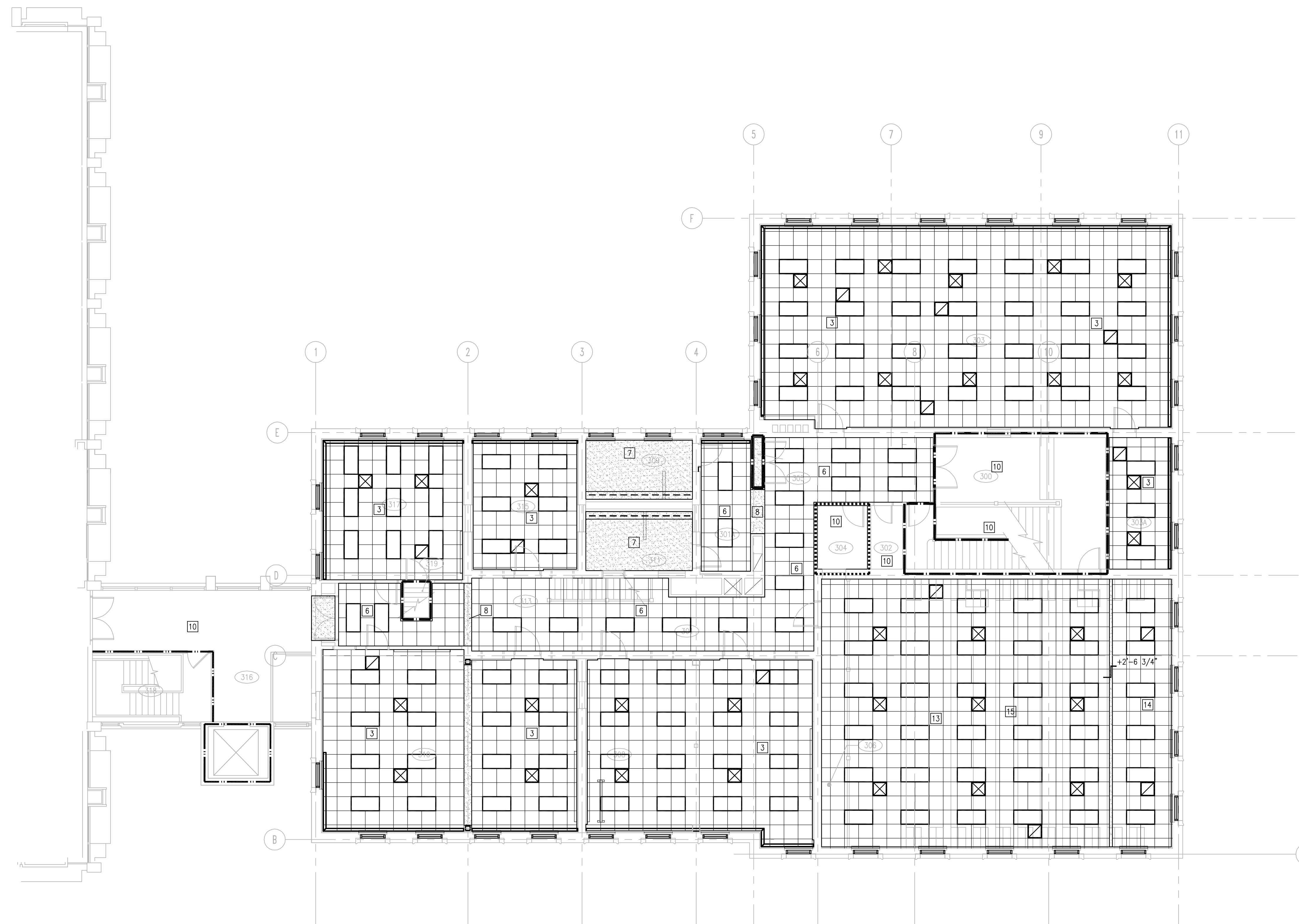
- CEILING DESCRIPTION**
- ACOUSTICAL TILE CEILING
 - GWB CEILING/SOFFIT
- ELECTRICAL ENGINEERING**
- RECESSED LIGHT FIXTURE
 - CAN LIGHT FIXTURE
 - PROCEDURE LIGHT FIXTURE
 - FIRE EXIT SIGN
 - RECESSED COVE LIGHT
- MECHANICAL ENGINEERING**
- DIFFUSER
 - RETURN AIR GRILLE
- AUDIO VISUAL**
- RETRACTABLE PROJ. SCREEN
 - PROJECTOR
- SPECIAL CONDITION**
- FIRE DETECTION EQUIPMENT - SEE FIRE PROTECTION PLANS

**REFLECTED CEILING PLAN
GENERAL NOTES:**

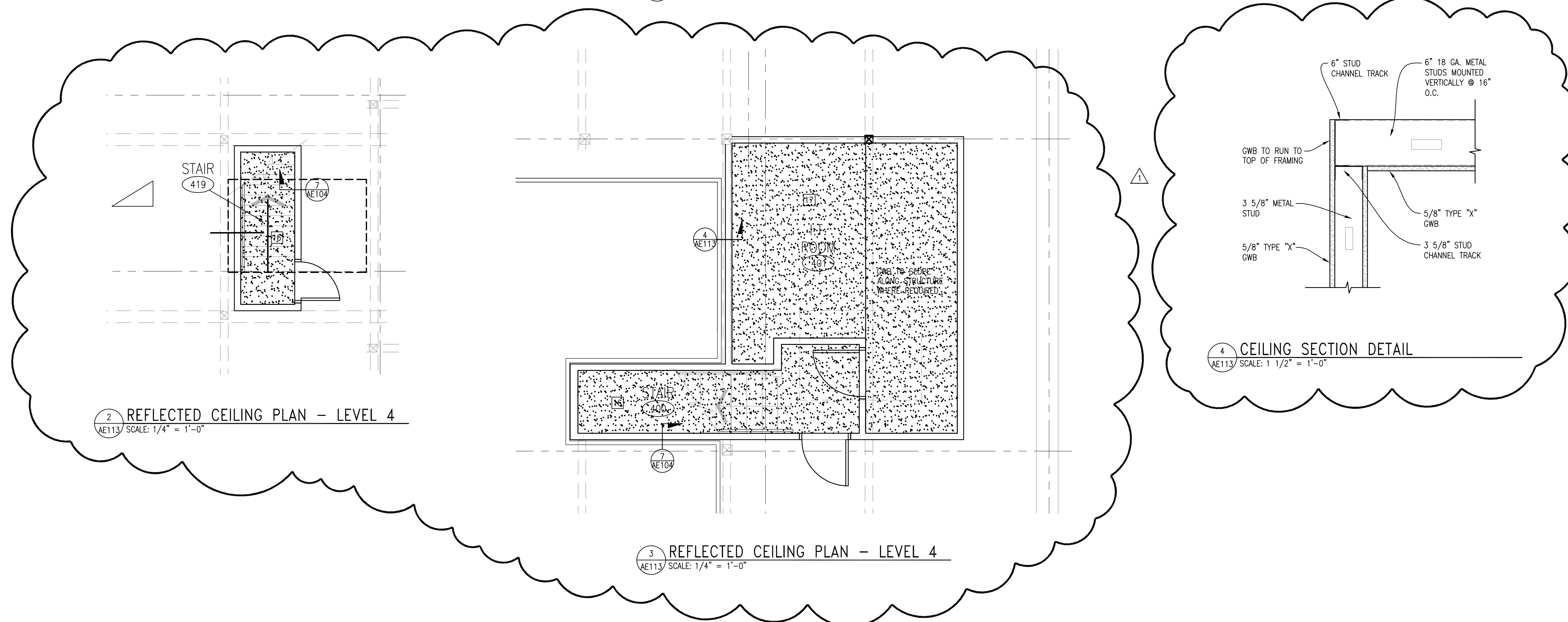
1. REFER TO SHEET AE111

REFLECTED CEILING KEY NOTES:

- 1 GWB SOFFIT/BULKHEAD AT 8'-11" AFF.
- 2 GWB CEILING OUTSIDE OF BULKHEAD AT 10'-4" AFF.
- 3 ATC GRID AT 10'-2" AFF.
- 4 CEILING ACCESS PANEL
- 5 EXISTING ACOUSTICAL TILE CEILING
- 6 ATC GRID AT 9'-0" AFF.
- 7 GWB CEILING AT 10'-2" AFF.
- 8 GWB BULKHEAD/SOFFIT AT 8'-10" AFF.
- 9 ATC GRID AT 8'-0" AFF.
- 10 OPEN TO EXISTING
- 11 GWB CEILING AT 9'-0" AFF.
- 12 GWB SOFFIT AT 11'-8 3/4" AFF.
- 13 ATC GRID AT 21'-8 3/4" AFF. (SECOND LEVEL)
- 14 ATC GRID AT 24'-3 1/2" AFF (SECOND LEVEL)
- 15 LOCATION OF THE VIDEO PROJECTOR. CHECK WITH MEDIA EQUIPMENT FOR EXACT LOCATION.
- 16 SHaft WALL W/GWB CEILING AT 7'-1" AFF @ STAIRWELL.
- 17 GWB CEILING AT 8'-0" AFF.



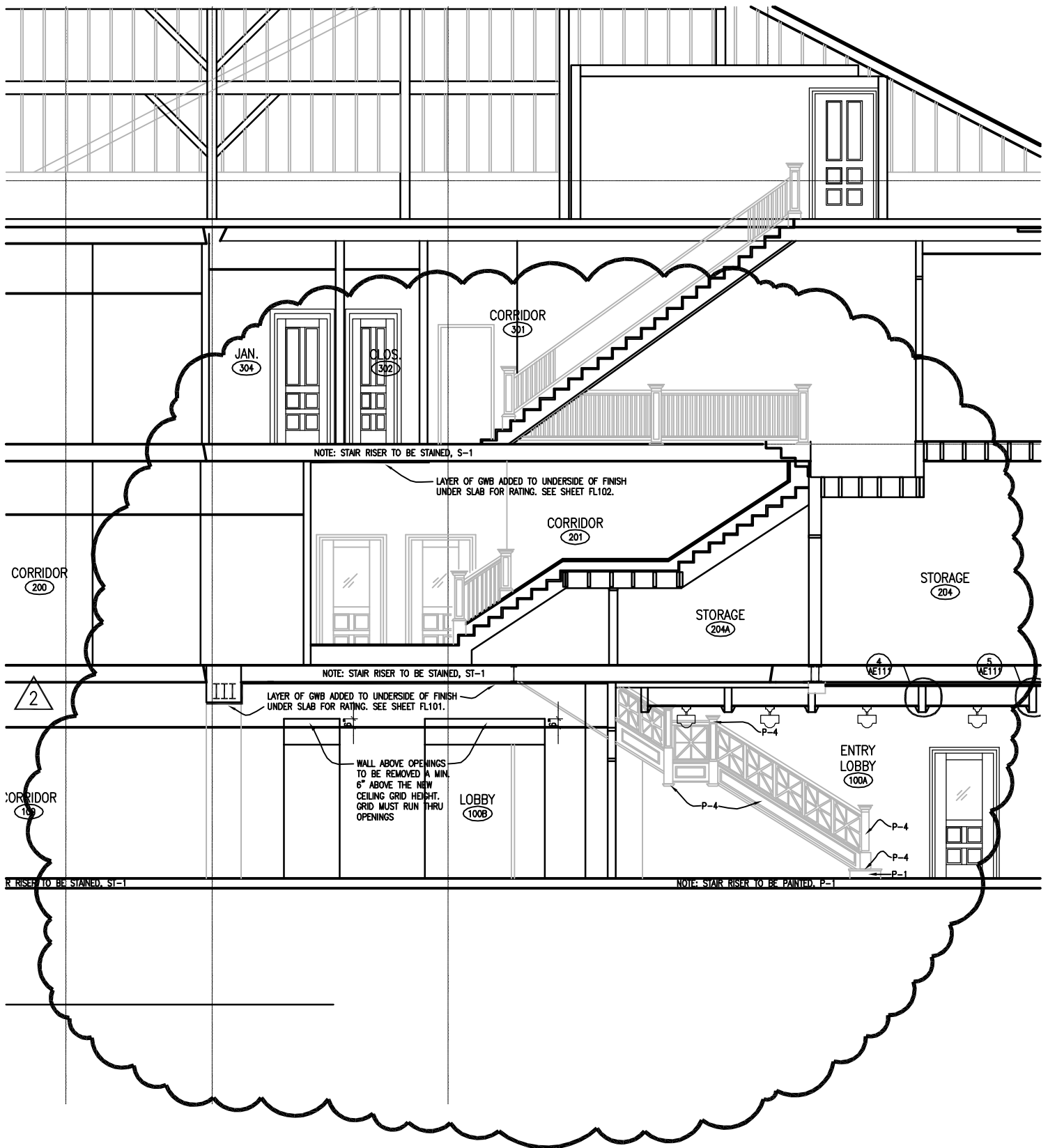
1 REFLECTED CEILING PLAN - LEVEL 3
AE113 SCALE: 1/8" = 1'-0"



2 REFLECTED CEILING PLAN - LEVEL 4
AE113 SCALE: 1/4" = 1'-0"

3 REFLECTED CEILING PLAN - LEVEL 4
AE113 SCALE: 1/4" = 1'-0"

4 CEILING SECTION DETAIL
AE113 SCALE: 1 1/2" = 1'-0"



LEO A DALY

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BRACE HALL RENOVATIONS

JOB NO. 003-10126-004

DRAWN BY: JMK

CHECKED BY:



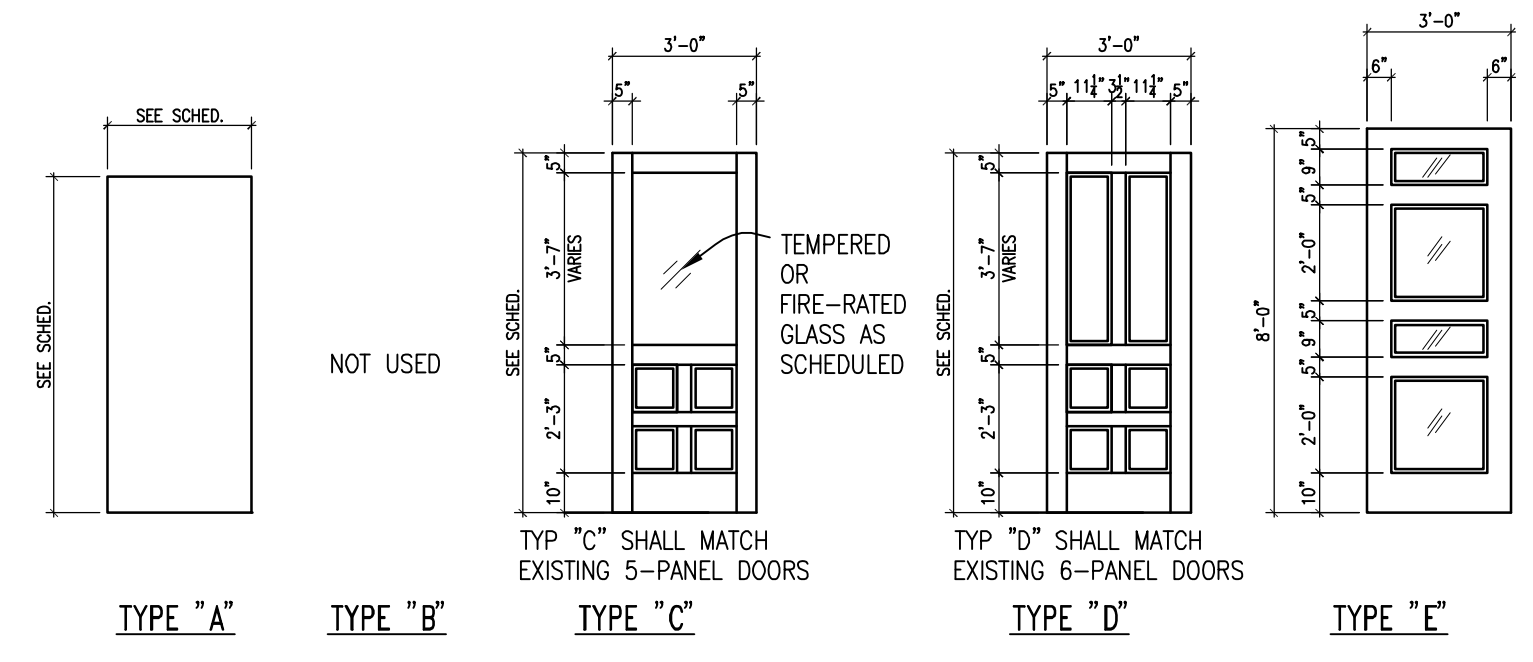
ADDENDUM 002

DATE: 09/13/13

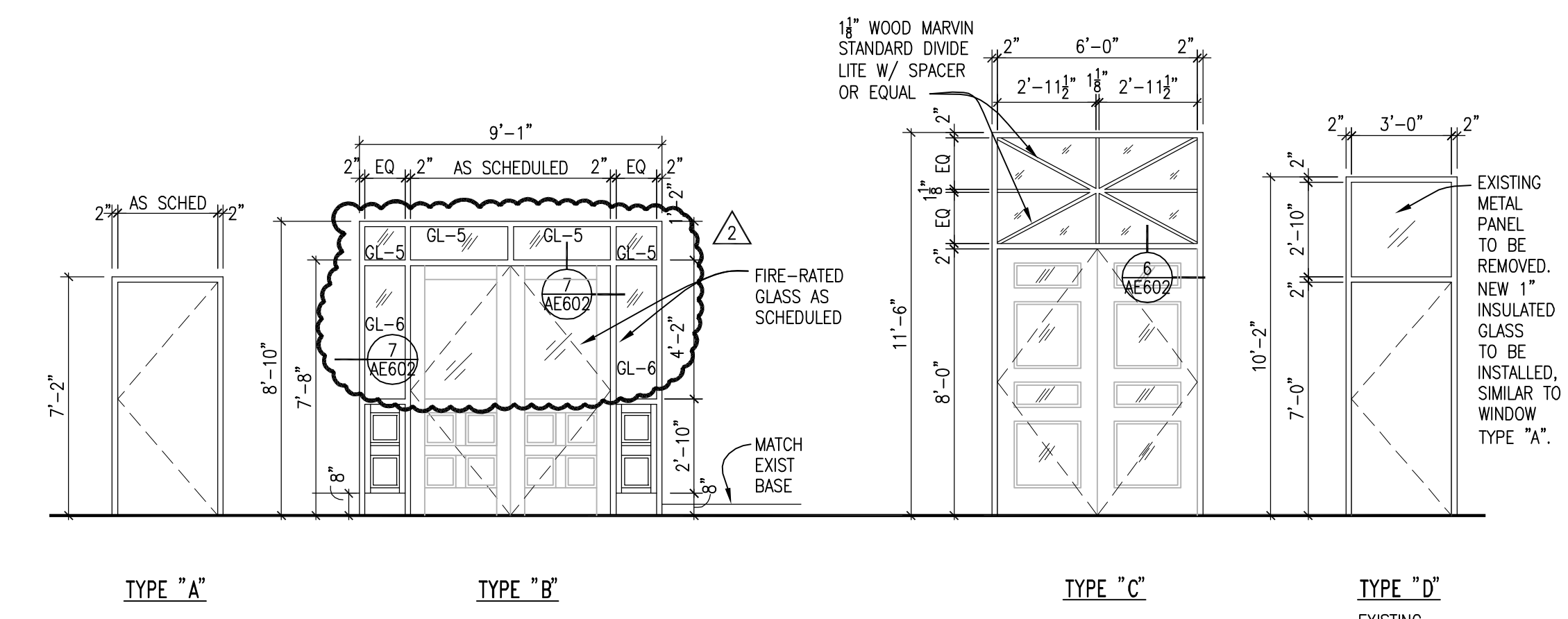
DRAWING: AE303a

DOOR SCHEDULE

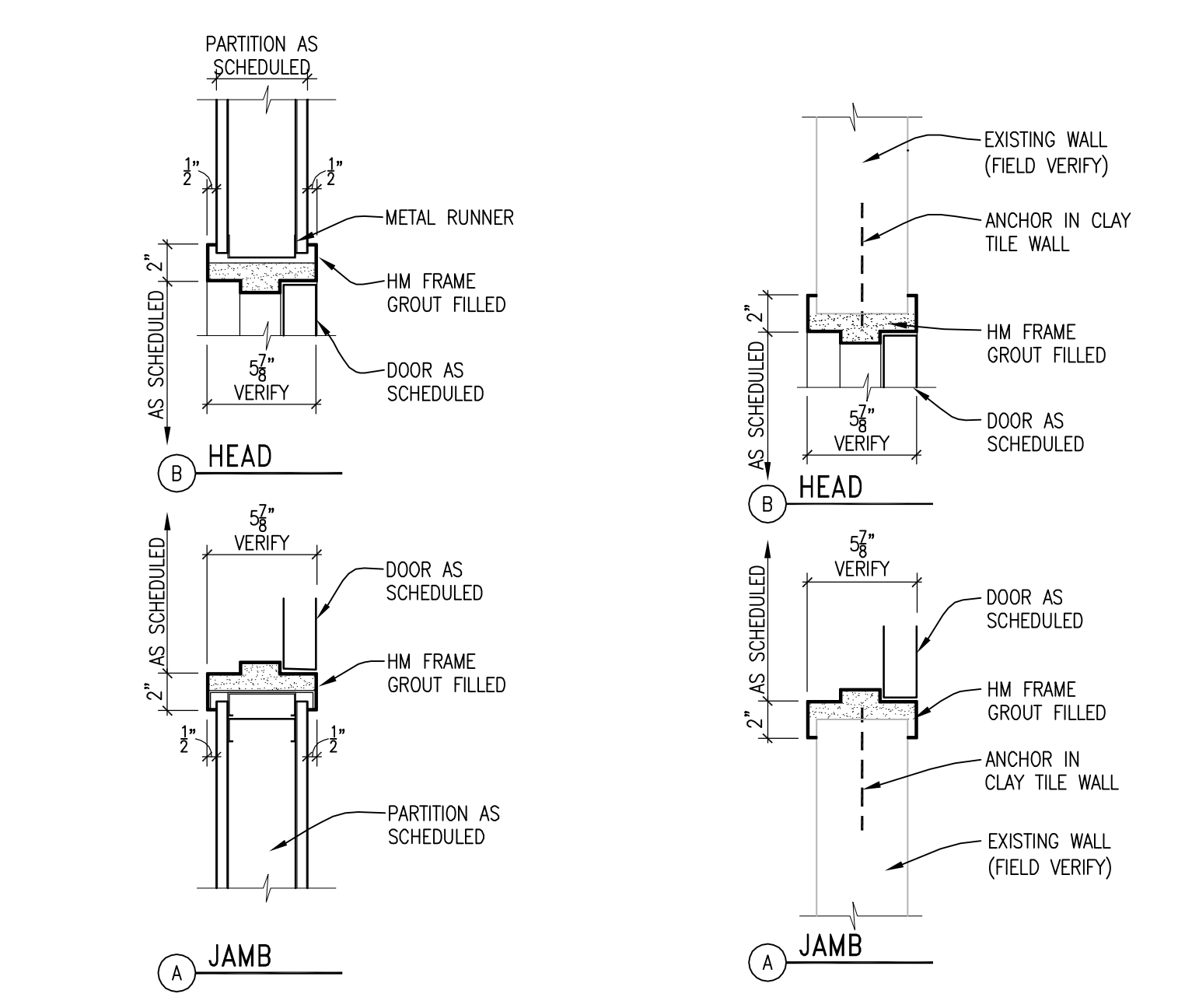
DOOR NO.	BID BASE/ALT	DOOR SIZE	DOOR		FRAME				RATING IN MINUTES	SIGN TYPE	REMARKS
			TYPE	MAT'L	FIN.	TYPE	MAT'L	FIN.			
SUB BASEMENT											
SB16.1		3'-0" x 7'-0"	A	HM		A	HM			90	LINK STAIR DOOR
SB51		EXISTING	--	--	--	--	--	--	--	--	NO WORK
SB52		EXISTING	--	--	--	--	--	--	--	--	NO WORK
BASEMENT											
001.1		3'-0" x 7'-0"	D	WD	S-1		WD	S-1		60	STAIR DOOR
B16.1		3'-0" x 7'-0"	A	HM	P-6	A	HM	P-6		90	LINK STAIR DOOR
B50		3'-0" x 7'-0"	A	HM	P-6	A	HM	P-6		--	--
B51		EXISTING	--	--	--	--	--	--	--	--	NO WORK
B51.1		3'-0" x 7'-0"	A	HM	P-6	A	HM	P-6		--	--
FIRST LEVEL											
100A.1		PR 3'-0" x 8'-0"	E	WD	S-1	A	WD	S-1		AE602	EXTERIOR DOOR; INSULATED CORE/GLAZING
100A.2		PR 3'-0" x 7'-6"	C	WD	S-1	B	HM	P-2		AE602	W/TRANSOM AND SIDELITES
100A.3		3'-6" x 7'-6"	C	WD	--	EXIST	NOTE 1	--		60	NOTE 1-REFINISH DOOR/FRAME
101.1		PR EXISTING	--	--	NOTE 1	--	EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
102.1		3'-0" x 7'-0"	A	HM	P-2	A	HM	P-2		AE602	NOTE 1-REFINISH DOOR/FRAME
103.1		3'-0" x 7'-0"	A	HM	P-2		HM	P-2		AE602	--
104.1		3'-6" x 7'-6"	C	WD	S-1	EXIST	NOTE 1	--		--	NOTE 1-REFINISH DOOR/FRAME
104A.1		3'-0" x 7'-6"	D	WD	S-1		WD	S-1		AE602	--
105.1		PR 3'-0" x 7'-6"	C	WD	S-1	A	WD	S-1		AE602	--
106.1		3'-6" x 7'-6"	C	WD	S-1		EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
107.1		4'-0" x 7'-0"	A	HM	P-2		HM	P-2		AE602	ELECTRICAL CLOSET
108.1		3'-6" x 7'-6"	C	WD	S-1	EXIST	NOTE 1	--		--	NOTE 1-REFINISH DOOR/FRAME
109.1		3'-0" x 7'-0"	A	WD	S-1	A	WD	S-1		AE602	--
110.1		3'-6" x 7'-6"	C	WD	S-1	A	EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
111.1		3'-0" x 7'-0"	A	WD	S-1	A	WD	S-1		AE602	--
113.1		EXISTING	--	--	NOTE 1	--	EXIST	NOTE 1		--	STAIR DOOR NOTE 1-REFINISH DOOR/FRAME
115.1		3'-6" x 7'-6"	C	WD	S-1		EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
116.1		3'-0" x 7'-0"	A	HM	P-6	A	HM	P-6		90	LINK STAIR DOOR
116.2		EXISTING	--	--	--	--	EXIST	--		60	NO WORK
116.3		EXISTING	--	--	--	--	EXIST	--		60	NO WORK
117.1		3'-6" x 7'-6"	C	WD	S-1	A	WD	S-1		--	--
SECOND LEVEL											
201.1		PR EXISTING	--	--	NOTE 1	--	EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
200.1		PR 3'-0" x 7'-0"	A	HM	P-2		HM	P-2		AE602	60
203.1		EXISTING	--	--	NOTE 1	--	EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
203.2		3'-6" x 7'-6"	C	WD	S-1		EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
203.3		EXISTING	--	--	NOTE 1	--	EXIST	NOTE 1		60	NOTE 1-REFINISH DOOR/FRAME; EXTERIOR DOOR-FIRE ESCAPE
204A.1		EXISTING	--	--	--	--	EXIST	--		--	GC TO COORDINATE REUSE
204B.1		EXISTING	--	--	--	--	EXIST	--		--	GC TO COORDINATE REUSE
204C.1		EXISTING	--	--	--	--	EXIST	--		--	GC TO COORDINATE REUSE
204D.1		EXISTING	--	--	--	--	EXIST	--		--	GC TO COORDINATE REUSE
204E.1		EXISTING	--	--	--	--	EXIST	--		--	GC TO COORDINATE REUSE
205.1		PR 3'-0" x 7'-0"	A	HM	P-2		HM	P-2		AE602	45
206.1		3'-0" x 7'-6"	C	WD	S-1		NOTE 1	--		--	NOTE 1-REFINISH DOOR/FRAME
206.2		PR EXISTING	--	--	NOTE 1	--	EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
206.3		3'-0" x 7'-6"	C	WD	S-1		EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
206.4		3'-0" x 7'-6"	C	WD	S-1		EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
207.1		3'-0" x 7'-0"	A	HM	P-2		HM	P-2		AE602	45
209.1		3'-0" x 7'-0"	A	WD	S-1		WD	S-1		AE602	--
208.1		3'-6" x 7'-6"	D	WD	S-1		EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
208.2		3'-6" x 7'-6"	D	WD	S-1		EXIST	S-1		AE602	--
211.1		3'-0" x 7'-0"	A	WD	S-1		WD	S-1		AE602	--
210.1		3'-6" x 7'-6"	D	WD	S-1		WD	S-1		AE602	--
210.2		3'-0" x 7'-6"	D	WD	S-1		WD	S-1		AE602	--
213.1		3'-0" x 7'-6"	D	WD	S-1		HM	P-2		AE602	45
215.1		3'-6" x 7'-6"	C	WD	S-1		EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
216.1		3'-0" x 7'-0"	A	HM	P-6		HM	P-6		90	LINK STAIR DOOR
217.1		3'-0" x 7'-6"	C	WD	S-1		WD	S-1		AE602	--
THIRD LEVEL											
300.1		PR 3'-6" x 7'-6"	D	WD	S-1	A	HM	P-2		AE602	60
301.1		PR EXISTING	--	--	NOTE 1	--	EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
302.1		EXISTING	--	--	NOTE 1	--	EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
303.1		3'-6" x 7'-6"	C	WD	S-1		EXIST	NOTE 1		--	--
303A.1		3'-0" x 7'-0"	C	WD	S-1		WD	S-1		10	AE602
304.1		EXISTING	--	--	NOTE 1	--	EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
305.1		PR 3'-0" x 7'-0"	A	HM	P-2		HM	P-2		AE602	45
306.1		3'-6" x 7'-6"	C	WD	S-1		EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
308.1		3'-6" x 7'-6"	C	WD	S-1		EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
308.2		3'-6" x 7'-6"	C	WD	S-1		EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
309.1		3'-0" x 7'-0"	A	WD	S-1		HM	P-2		10	AE602
310.1		3'-6" x 7'-6"	--	--	NOTE 1	--	EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
310.2		3'-0" x 7'-6"	--	--	NOTE 1	--	EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME, REVERSE SWING
311.1		3'-0" x 7'-0"	A	WD	S-1		HM	P-2		10	AE602
315.1		3'-6" x 7'-6"	--	--	NOTE 1	--	EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
316.1		3'-0" x 7'-0"	A	HM	P-6		HM	P-6		90	LINK STAIR DOOR
317.1		3'-0" x 7'-6"	--	--	NOTE 1	--	EXIST	NOTE 1		--	NOTE 1-REFINISH DOOR/FRAME
319.1		3'-0" x 7'-0"	D	WD	S-1		HM	P-2		60	STAIRS TO ATTIC
ATTIC											
400.1		3'-0" x 7'-6"	D	WD	S-1		HM	P-2		60	--
401.1		3'-0" x 7'-6"	A	WD	S-1		HM	P-2		60	--
403.1		3'-0" x 7'-0"	A	WD	S-1		HM	P-2		60	--
419.1		2'-6" x 6'-8"	A	WD	S-1		HM	P-2		60	--



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

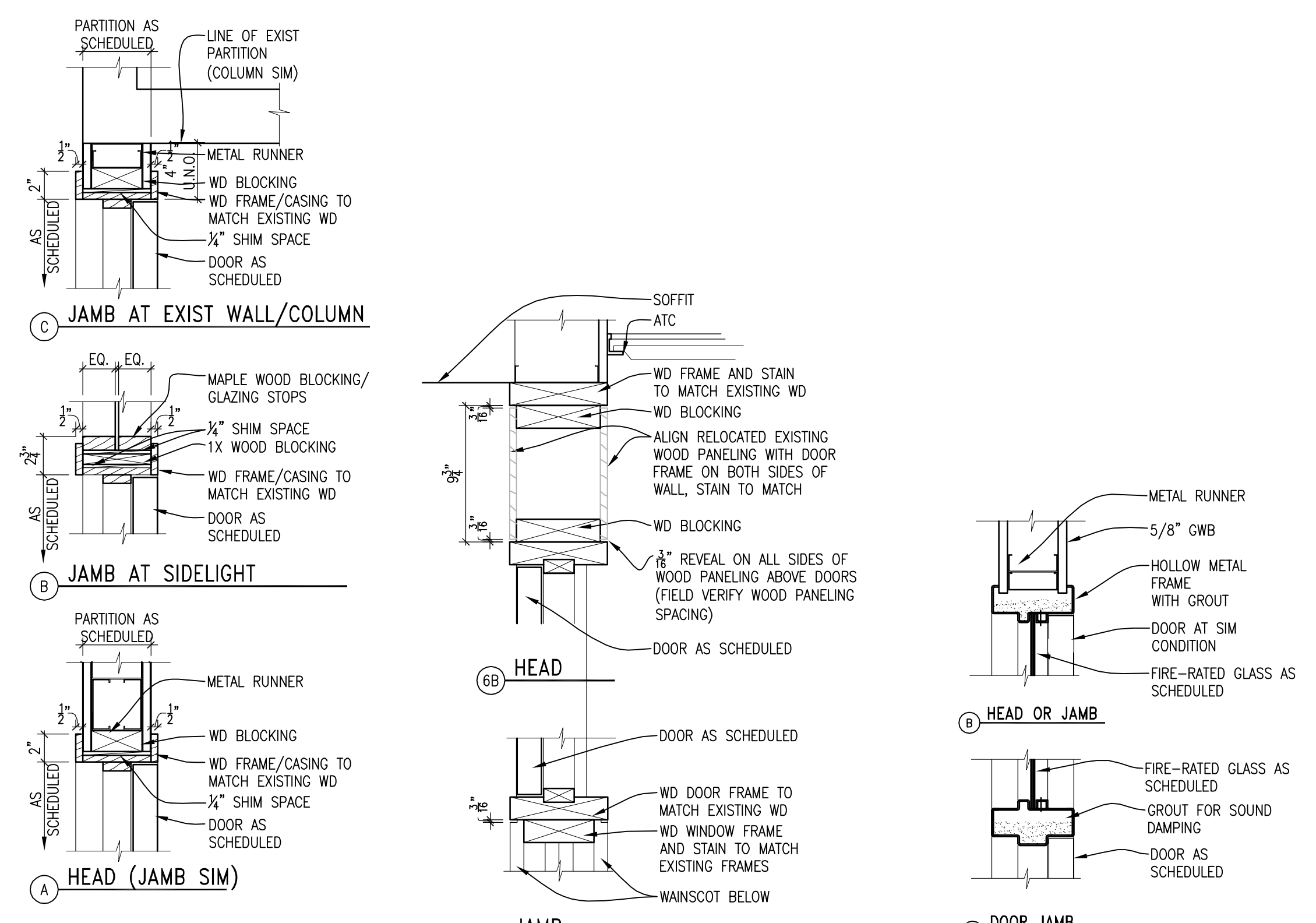


2 FRAME TYPES
SCALE: 1/4" = 1'-0"



3 HM DOOR FRAME IN MET STUD PARTITION
SCALE: 1 1/2" = 1'-0"

4 HM DOOR FRAME IN EXISTING WALL
SCALE: 1 1/2" = 1'-0"

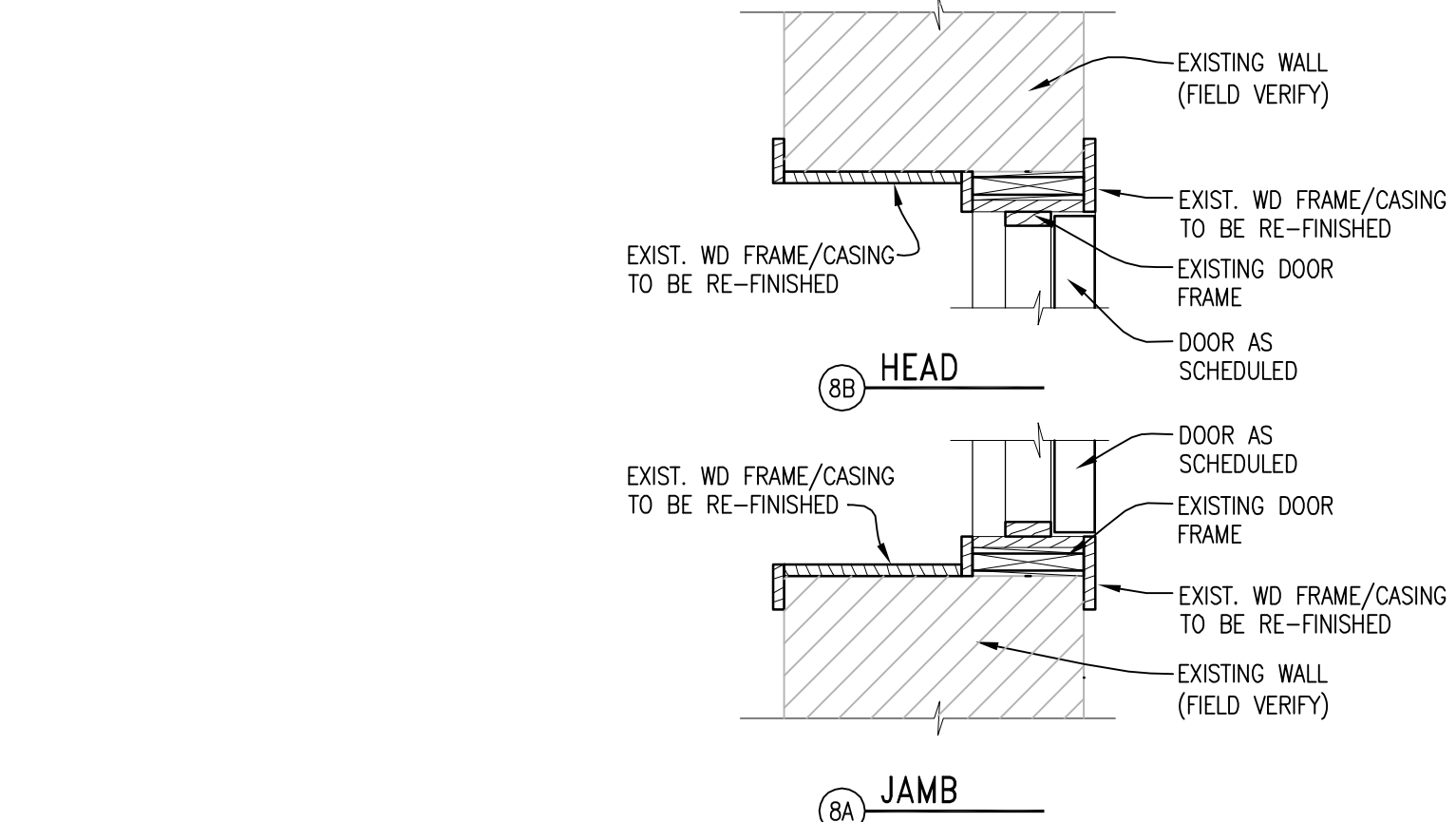


5 WD DOOR FRAME IN MET STUD PARTITION
SCALE: 1 1/2" = 1'-0"

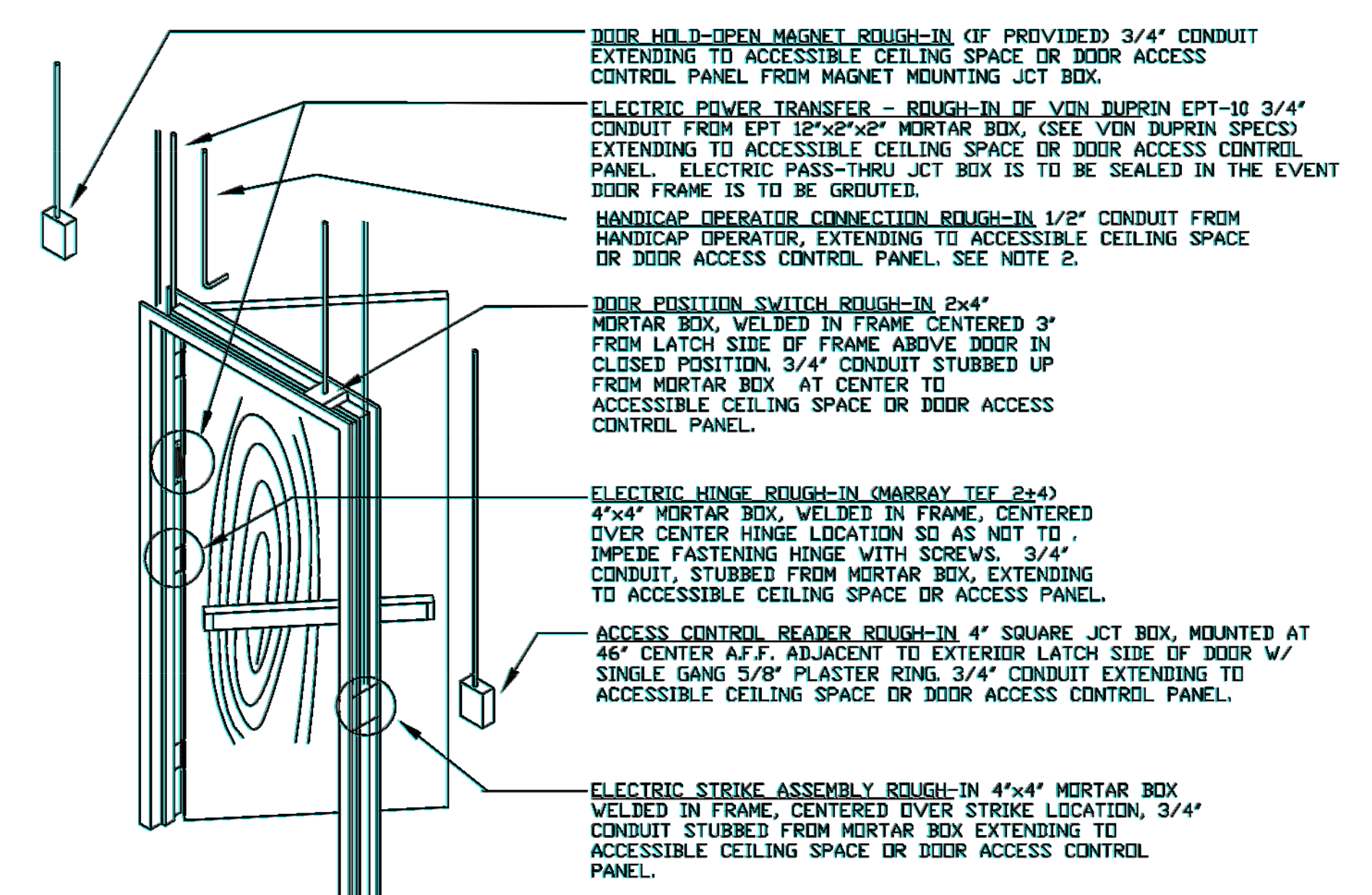
6 WD DOOR FRAME DETAILS @ LOBBY DOORS
SCALE: 1 1/2" = 1'-0"

7 HM DOOR FRAME - WD DOOR/SIDE WINDOW DETAIL
SCALE: 1 1/2" = 1'-0"

SOME DOORS ARE BEING REVAMPED TO HAVE DOORS SWING IN OPPOSITE DIRECTION. ON THESE DOORS, CONTRACTOR WILL NEED TO REMOVE ALL FRAMES, WOOD CASING & TRIM, AND THE DOOR, CLEAN AND RE-STAIN, THEN REPLACE AS SHOWN ON NEW PLAN. CONTRACTOR SHOULD BE AWARE THAT IF THE DOOR IS REVERSED, ANY DOOR AND/OR HINGE DEVICES REQUIRING REMOVAL MAY LEAVE DAMAGE TO EXISTING WALL. THESE AREAS SHOULD BE REPAIRED BEFORE RE-INSTALLATION OF ANY WOOD TRIM.



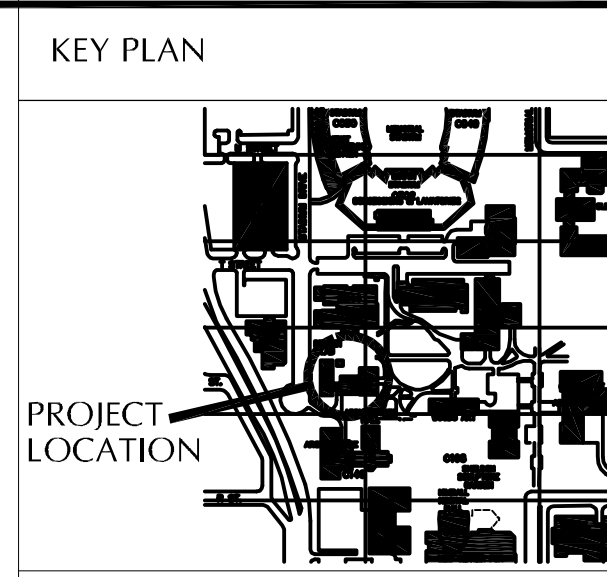
8 EXIST. WD DOOR FRAME IN EXIST. WALL
SCALE: 1 1/2" = 1'-0"



NOTE:
1. IF DOOR IS TO BE GROUTED, GROUT ONLY TO LEVEL OF TOP FRAME MEMBER, MAKING SURE EPT-10 MORTAR BOX IS IN PLACE, PIPED & SEALED.
2. IF DOOR IS TO BE EQUIPPED WITH HANDICAP ACCESS OPERATOR, THESE ROUGH-IN PROVISIONS SHALL BE IN ADDITION TO THESE REQUIREMENTS. HANDICAP ACCESS OPERATOR SHALL HAVE CONDUIT RUN FROM ITS CONTROL PANEL TO THE DOOR ACCESS CONTROL PANEL.
3. IF NO ACCESSIBLE CEILING SPACE IS NEAR THE CONTROLLED DOOR, ALL CONDUITS ARE TO BE RUN CONTINUOUS TO THE DOOR ACCESS CONTROL PANEL.
4. FOR DOUBLE DOORS, DUPLICATE THE DOOR POSITION SWITCH ROUGH-IN AND AND ELECTRIC PASS THRU ROUGH-IN.
5. IF PATH TO DOOR ACCESS CONTROL PANEL IS THRU OPENED AREA, ALL CONDUITS MAY BE JOINED TOGETHER AT A DEEP 4x4" JCT BOX AND ROUTED TO THE CONTROL PANEL AS A SINGLE 3/4" CONDUIT.

**ACCESS CONTROL - GENERIC ROUGH-IN DETAILS
DOOR HARDWARE SCHEDULE DETERMINES ACTUAL
ROUGH-IN REQUIREMENTS.**

UNL Project #C008P098



REVISIONS

NO.	DESCRIPTION	DATE
AE602	ADDENDUM 002	09.13.2013

FILE LOG

ACTIVITY	BY
Manager	DB
Design	DB
Drawn	DBW
Check	CRB

STATUS

BID SET

Project No. 003-10126-004
August 19, 2013

DOOR SCHEDULE,
DOOR AND FRAME TYPES AND
DETAILS

AE602

ROOM NO.	ROOM NAME	FLOOR	BASE	WALLS				CEILING		ROOM AREA	REMARKS
				NORTH	EAST	SOUTH	WEST	MAT'L	HEIGHT		
001	MECHANICAL	EXISTING	EXISTING	---	---	---	---	---	---		
001A	STORAGE	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	VARIES		
002	PIPE TUNNEL	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	VARIES		
003	PIPE TUNNEL	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	VARIES		
004	PIPE TUNNEL	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	VARIES		
005	PIPE TUNNEL	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	VARIES		
016	LINK	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	VARIES		
100A	ENTRY LOBBY	EXISTING EXG CMT/CPT-3	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING/GWB P-2	GWB P-2	EXISTING/APC P-1/APC-3	EXG/10'-4"		12
101A	LOBBY	EXISTING RRF-1,2,3	EXG WD P-1/CT-3	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-3	9'-0"		9
101	CORRIDOR	EXISTING RRF-1,2,3	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-3	9'-0"		
102	JANITOR	EXISTING QT-1	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-3	9'-0"		
103	CLOSET	EXISTING QT-1	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-3	9'-0"		
104	BIO LAB	EXISTING RRF-1,2	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-3	10'-2"		2
104A	PREP	EXISTING RRF-1,2	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-3	10'-2"		
105	CLASSROOM	EXISTING CPT-1,4	EXG WD P-3	EXISTING P-3	GWB P-3	EXISTING P-3	GWB P-3	APC APC-1	10'-2"		
106	OFFICE	EXISTING CPT-1,4	EXG WD P-3	EXISTING P-3	GWB P-3	EXISTING P-3	GWB P-3	APC APC-1	10'-2"		
108	BIO LAB	EXISTING RRF-1,2	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-3	10'-2"		2
109	MEN'S LAVATORY	EXISTING CMT-1,2,3	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-3	10'-2"		2 3 4 5
109A	MEN	EXISTING CMT-1,2,3	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-3	10'-2"		2 3 4 5
110	BIO LAB	EXISTING RRF-1,2	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-3	10'-2"		2
111	WOMEN'S LAVATORY	EXISTING CMT-1,2,3	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-3	9'-0"		2 3 4 5
111A	WOMEN	EXISTING CMT-1,2,3	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-3	9'-0"		2 3 4 5
113	STAIR	EXISTING	---	---	---	---	---	---	---		
115	RD SUPPLY	EXISTING RRF-1,2	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-3	10'-2"		
116	LINK	EXISTING EXG/RB-2	EXG WD P-2/EXG	EXISTING P-2/EXG	GWB P-2/EXG	EXISTING P-2/EXG	GWB P-2/EXG	APC APC-3	10'-2"		6
117	PREP	EXISTING RRF-1,2	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-3	10'-2"		
118	STAIR	EXISTING	---	---	---	---	---	---	---		
200	STAIR	EXISTING RRF-1/RST-1	EXG WD ST-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	8'-10/8'-0"		
201	CORRIDOR	EXISTING RRF-1,2	EXG WD ST-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-1/P-1	9'-0"/8'-10"		9
201A	ALCOVE	EXISTING RRF-1,2	EXG WD ST-1/CT-3	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-1/P-1	9'-0"/8'-10"		9
203	CLASSROOM	EXISTING CPT-1,4	EXG WD P-3	EXISTING P-3	GWB P-3	EXISTING P-3	GWB P-3	APC APC-1	10'-2"		
204	STORAGE	EXISTING REFINISH	---	---	---	---	---	---	---		
204A	CLOSET	EXISTING REFINISH	---	---	---	---	---	---	---		1
204B	CLOSET	EXISTING REFINISH	---	---	---	---	---	---	---		1
204C	CLOSET	EXISTING REFINISH	---	---	---	---	---	---	---		1
204D	CLOSET	EXISTING REFINISH	---	---	---	---	---	---	---		1
204E	CLOSET	EXISTING REFINISH	---	---	---	---	---	---	---		1
205	ELECTRICAL CLOSET	EXISTING QT-1	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	10'-2"		
206	AUDITORIUM	EXISTING CPT-1/RST-1	EXG WD P-3	EXISTING P-3	GWB P-3	EXISTING P-3	GWB P-3	APC P-1	10'-2"		7 8
207	JANITOR	EXISTING QT-1	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	10'-2"		
208	COLAB	EXISTING CPT-1,4	EXG WD P-3	EXISTING P-3	GWB P-3	EXISTING P-3	GWB P-3	APC APC-1	10'-2"		2 3 4 5
209	WOMEN'S	EXISTING CMT-1,2,3	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	10'-2"		2 3 4 5
210	COLAB	EXISTING CPT-1,4	EXG WD P-3	EXISTING P-3	GWB P-3	EXISTING P-3	GWB P-3	APC APC-1	10'-2"		
211	MEN'S	EXISTING CMT-1,2,3	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	10'-2"		2 3 4 5
213	STAIR	EXISTING	---	---	---	---	---	---	---		
215	CONFERENCE ROOM	EXISTING CPT-1,4	EXG WD P-3	EXISTING P-3	GWB P-3	EXISTING P-3	GWB P-3	APC APC-1	10'-2"		
216	LINK	EXISTING EXG/RB-2	EXG WD P-2/EXG	EXISTING P-2/EXG	GWB P-2/EXG	EXISTING P-2/EXG	GWB P-2/EXG	APC APC-3	10'-2"		6
217	COLAB	EXISTING CPT-1,4	EXG WD P-3	EXISTING P-3	GWB P-3	EXISTING P-3	GWB P-3	APC APC-1	10'-2"		
218	STAIR	EXISTING	---	---	---	---	---	---	---		

ROOMS FINISH NOTES

- EXISTING WOOD FLOOR TO BE SANDED AND REFINISHED.
- SEE FINISH FLOOR PLANS FOR LOCATION OF FINISHES.
- ALL OUTSIDE CORNERS TO USE SCHLUTER SCHIENE EDGE PROTECTION TO COVER UNFINISHED EDGES.
- SEE ELEVATION 16, SHEET AE401 FOR TYPICAL TILE PATTERN. TYPICAL ALL WALLS UNLESS NOTED OTHERWISE.
- SEE DETAIL 4 SHEET AE801 FOR FLOOR PATTERN.
- MATCH EXISTING FINISHES IN THIS SPACE.
- STAIR FINISH TO BE TREAD, RISER, AND STRINGER (RST-1).
- PLATFORM AND RISER TO BE CPT-2 WITH VINYL CORNER GUARD.
- NO WOOD BASE AT TILE WALL.
- STAIR RISER TO BE PAINTED, P-1.
- STAIR RISER TO BE STAINED, ST-1.

ROOMS FINISH NOTES, CONT.

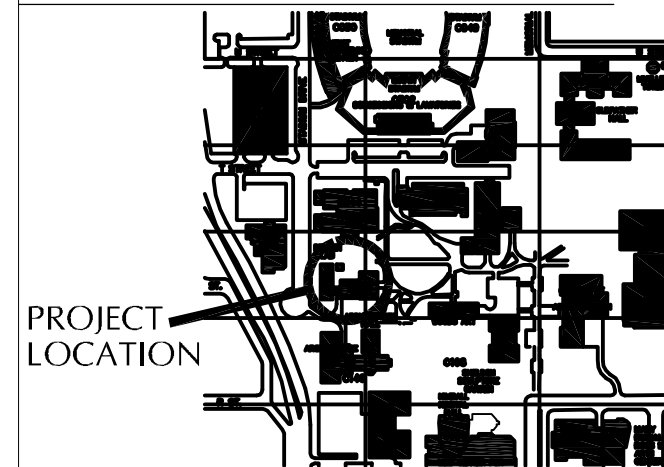
- REPAIR FLOOR CRACKS AT ENTRY. TO PATCH CRACK, CHASE OUT WITH MASONARY BLADE, APPLY MAPEI CR50 AT CRACK. SPRINKLE WITH SAND WHILE DRYING. APPLY MAPEI AQUA DEFENCE. RE-TILE CONTAINING WITH EXISTING FLOOR PATTERN. UTILIZE EXISTING CERAMIC MOSAIC TILES REMOVED FOR WALK OF MAT.

GENERAL NOTES

- TYPICAL ALL STAINED WOODWORK TO BE CLEANED, AND TOUCHED UP. ADD NEW FINISH TO BE COMPATIBLE WITH EXISTING.
- GROUT LINES ON WALL TO LINE UP WITH FLOOR GROUT.
- TYPICAL ALL PAINTED BASE TO BE PREPARED AND RE-PAINTED, P-1 (SEMI-GLOSS FINISH)
- EXISTING MOSAIC TILE TO BE CLEANED, PATCHED TO MATCH EXISTING. UTILIZE EXISTING TILE PIECES WHERE POSSIBLE.
- ALL EXISTING WOOD BASE TO BE REUSED. WHERE WALLS ARE REMOVED EXISTING BASE TO BE USED IN OTHER AREAS.

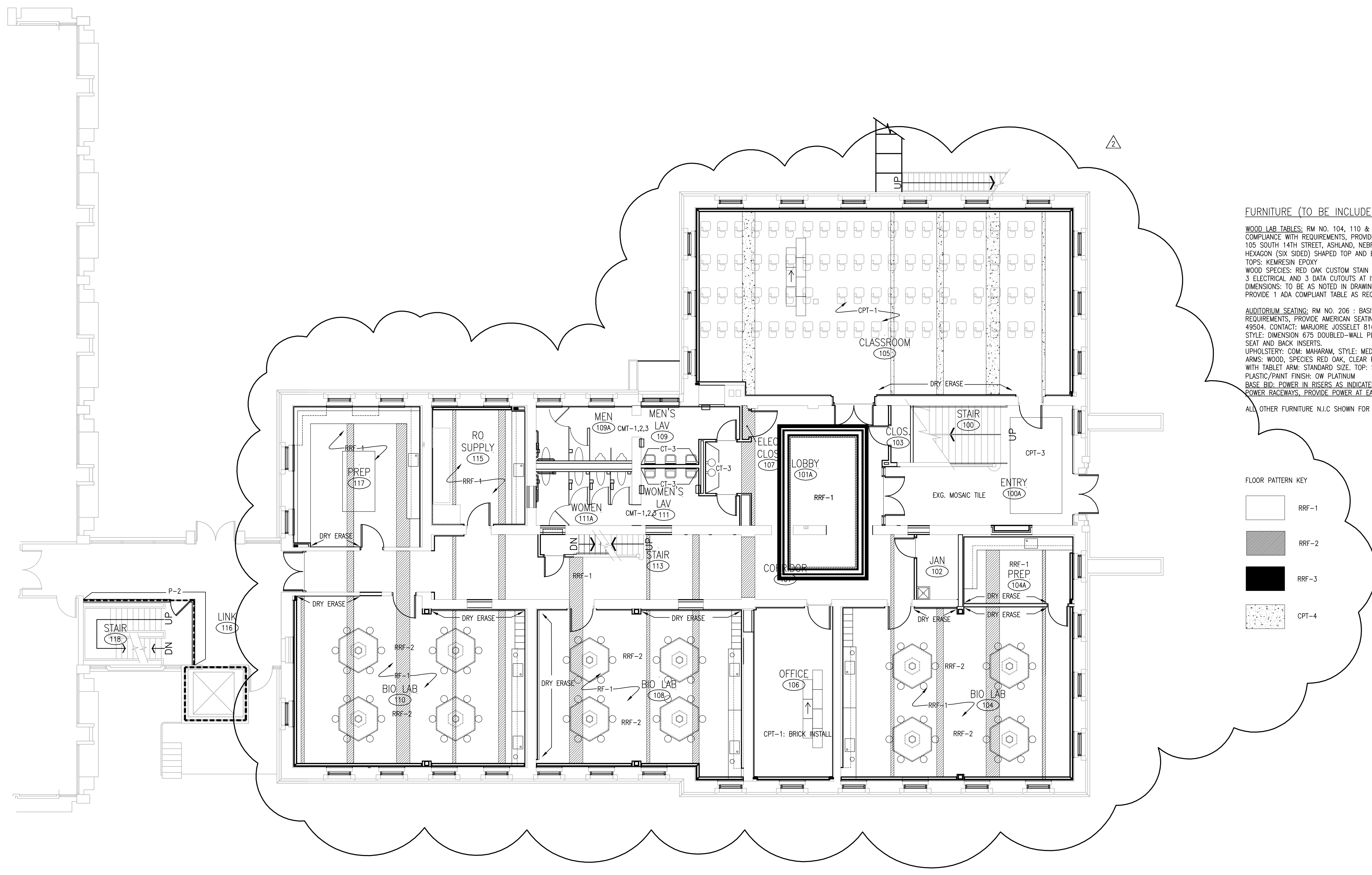
ROOM NO.	ROOM NAME	FLOOR	BASE	WALLS				CEILING		ROOM AREA	REMARKS
				NORTH	EAST	SOUTH	WEST	MAT'L	HEIGHT		
300	STAR	EXISTING RRF-1/RST-1	EXG WD ST-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	EXISTING		
301	CORRIDOR	EXISTING RRF-1,2	EXG WD ST-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-1/P-1	9'-0"/8'-10"		
301A	ALCOVE	EXISTING RRF-1,2	EXG WD ST-1/CT-3	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC APC-1/P-1	9'-0"/8'-10"		9
302	CLOSET	EXISTING RRF-1,2	EXG WD ST-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	10'-2"		
303	OFFICE	EXISTING CPT-1,4	EXG WD P-3	EXISTING P-3	GWB P-3	EXISTING P-3	GWB P-3	APC APC-1	10'-2"		
303A	OFFICE	EXISTING REFINISH	---	---	---	---	---	---	---		
304	JANITOR	EXISTING QT-4	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	10'-2"		
305	ELECTRICAL CLOSET	EXISTING QT-4	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	10'-2"		
306	BALCONY	EXISTING REFINISH	---	---	---	---	---	---	---		
308	COLAB	EXISTING CPT-1,4	EXG WD P-3	EXISTING P-3	GWB P-3	EXISTING P-3	GWB P-3	APC APC-1	10'-2"		
309	WOMEN'S	EXISTING CMT-1,2,3	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	10'-2"		3
310	COLAB	EXISTING CPT-1,4	EXG WD P-3	EXISTING P-3	GWB P-3	EXISTING P-3	GWB P-3	APC APC-1	10'-2"		
311	MEN'S	EXISTING CMT-1,2,3	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	10'-2"		3
313	STAIR	EXISTING	---	---	---	---	---	---	---		
315	CONF/BREAK ROOM	EXISTING CPT-1,4	EXG WD P-3	EXISTING P-3	GWB P-3	EXISTING P-3	GWB P-3	APC APC-1	10'-2"		
316	LINK	EXISTING EXG/RB-2	EXG WD P-2/EXG	EXISTING P-2/EXG	GWB P-2/EXG	EXISTING P-2/EXG	GWB P-2/EXG	APC APC-3	10'-2"		6
317	COLAB	EXISTING CPT-1,4	EXG WD P-3	EXISTING P-3	GWB P-3	EXISTING P-3	GWB P-3	APC APC-1	10'-2"		
318	STAIR	EXISTING	---	---	---	---	---	---	---		
400	STAIR	EXISTING RRF-1/RST-1	EXG WD ST-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	EXISTING		
401	LT. ROOM	EXIST/CONC	---	---	---	---	---	---	---		
402	MECHANICAL	EXIST/CONC	---	---	---	---	---	---	---		
419	STAIR	EXIST/CONC	---	---	---	---	---	---	---		
811	STAIR #2 - BSMT/LEVEL 1	EXIST/CONC RST-1	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	EXISTING		7
101	STAIR #1 - LEVELS 1/2	EXISTING RST-1	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	EXISTING		10
111	STAIR #2 - LEVELS 1/2	EXISTING RST-1	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	EXISTING		11
201	STAIR #1 - LEVELS 2/3	EXISTING RST-1	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	EXISTING		11
211	STAIR #2 - LEVELS 2-3	EXISTING RST-1	EXG WD P-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	EXISTING		11
301	STAIR #1 - LEVEL 3/ATTIC	EXIST/CONC RST-1	EXG WD ST-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	EXISTING		11
319	STAIR #3 - LEVEL 3/ATTIC	EXIST/CONC RST-1	EXG WD ST-1	EXISTING P-2	GWB P-2	EXISTING P-2	GWB P-2	APC P-1	EXISTING		11

COLOR SCHEDULE	
MODULAR CARPET TILE (096813)	
CPT-1: SHAW CONTRACT	
STYLE: MERGE TILE, COLLECTION: ON THE EDGE, SIZE: 18" X 36"	
COLOR: 59167 BLUE LIME	
INSTALL: BRICK INSTALL W/LOC-DOTS	
CPT-2: SHAW CONTRACT	
STYLE: COLOUR PLANK TILE, SIZE: 18" X 36"	
COLOR: PEWTER 95555	
INSTALL: BRICK INSTALL 100% ADHESIVE COVERAGE	
CPT-3: WATERBOG FLOOR MAT TILES	
STYLE: DIAGONAL	
COLOR: COLOR TO BE SELECTED FROM MANUFACTURER'S STANDARD COLORS	
INSTALL: MANUFACTURER'S RECOMMENDED, 100% ADHESIVE COVERAGE	
CPT-4: SHAW CONTRACT	
STYLE: COLOUR PLANK TILE, SIZE: 18" X 36"	
COLOR: 59595 SAXONY BLUE	
INSTALL: BRICK INSTALL W/LOC-DOTS	
INTERIOR PAINTING (099123)	
P-1: SHERWIN WILLIAMS PAINT (TYPICAL CEILING PAINT)	
COLOR: PURE WHITE, SW7005	
P-2: SHERWIN WILLIAMS PAINT (TYPICAL WALL PAINT)	
COLOR: ZURICH, SW7626	
P-3: SHERWIN WILLIAMS PAINT	
COLOR: ANALYTICAL GRAY, SW7051	
P-4: SHERWIN WILLIAMS PAINT (SATIN)	
COLOR: RON ORE, SW7069	
P-5: SHERWIN WILLIAMS PAINT	
COLOR: SEAWORTHY, SW7620	
P-6: SHERWIN WILLIAMS PAINT (EXTERIOR WINDOWS)	
COLOR: BLACK FOX SW7020	
P-5: SHERWIN WILLIAMS PAINT (EXTERIOR ACCENT)	
COLOR: EASTLAKE GOLD, SSW 0009	
P-6: SHERWIN WILLIAMS PAINT (HOLLOW METAL FRAMES - LINK)	
COLOR: MATCH EXISTING (CREAM/YELLOW COLOR)	
STAINING AND TRANSPARENT FINISHES (099300)	
ST-1: PRE-CATALYZED SATIN LAQUER FINISH	
COLOR: COLOR TO MATCH EXISTING WOODWORK	
CORK-1: FORBO CORK BULLITEN BOARD	
COLOR: BLACK 2202	
TRANSITION STRIPS	
SCHLUTER SYSTEMS - TRANSITION	



NO.	DESCRIPTION	DATE
1	ADDENDUM NO. 2	09.13.13

ACTIVITY	BY
Manager	DTB
Design	DTB
Draw	AMT
Check	DTB



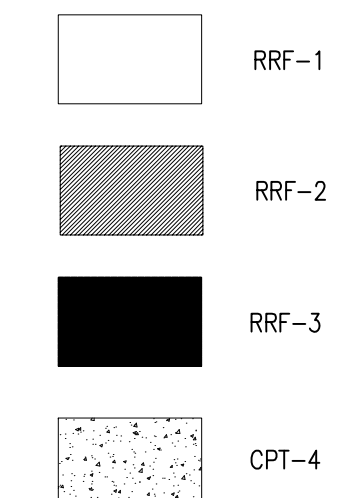
FURNITURE (TO BE INCLUDED IN CONTRACT)

WOOD LAB TABLES, RM NO. 104, 110 & 114: BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE INNOVATIVE LABORATORY SYSTEMS, INC. 105 SOUTH 14TH STREET, ASHLAND, NEBRASKA 68003. CONTACT: BIFF SCHOFIELD 402.980.4705. HEXAGON (SIX SIDED) SHAPED TOP AND BASE.
TOPS: KEMRESIN EPOXY
WOOD SPECIES: RED OAK CUSTOM STAIN TO MATCH EXISTING ARCHITECTURAL MILLWORK.
3 ELECTRICAL AND 3 DATA CUTOUPS AT ISLAND POP-UP
DIMENSIONS: TO BE AS NOTED IN DRAWING
PROVIDE 1 ADA COMPLIANT TABLE AS REQUIRED.

AUDITORIUM SEATING, RM NO. 206: BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE AMERICAN SEATING, 801 BROADWAY AVE NW, GRAND RAPIDS, MICHIGAN 49504. CONTACT: MARJORIE JOSSELET 616.585.5002
STYLE: DIMENSION 675 DOUBLED-WALL PLASTIC SEAT AND BACK SHELLS WITH PADDED FABRIC SEAT AND BACK INSERTS.
UPHOLSTERY: COM: MAHARAM, STYLE: MEDIUM, COLOR: 086 VOYAGE
ARMS: WOOD, SPECIES RED OAK, CLEAR FINISH
WITH TABLET ARM: STANDARD SIZE, TOP: SOLID LAMINATE, COLOR PEARL WITH PEARL EDGE.
PLASTIC/PAIN FINISH: OW PLATINUM
BASE: BID. POWER IN RISERS AS INDICATED ON DRAWINGS. ADD ALTERNATE NO. 3 PRICE OUT POWER RACEWAYS, PROVIDE POWER AT EACH SEAT.

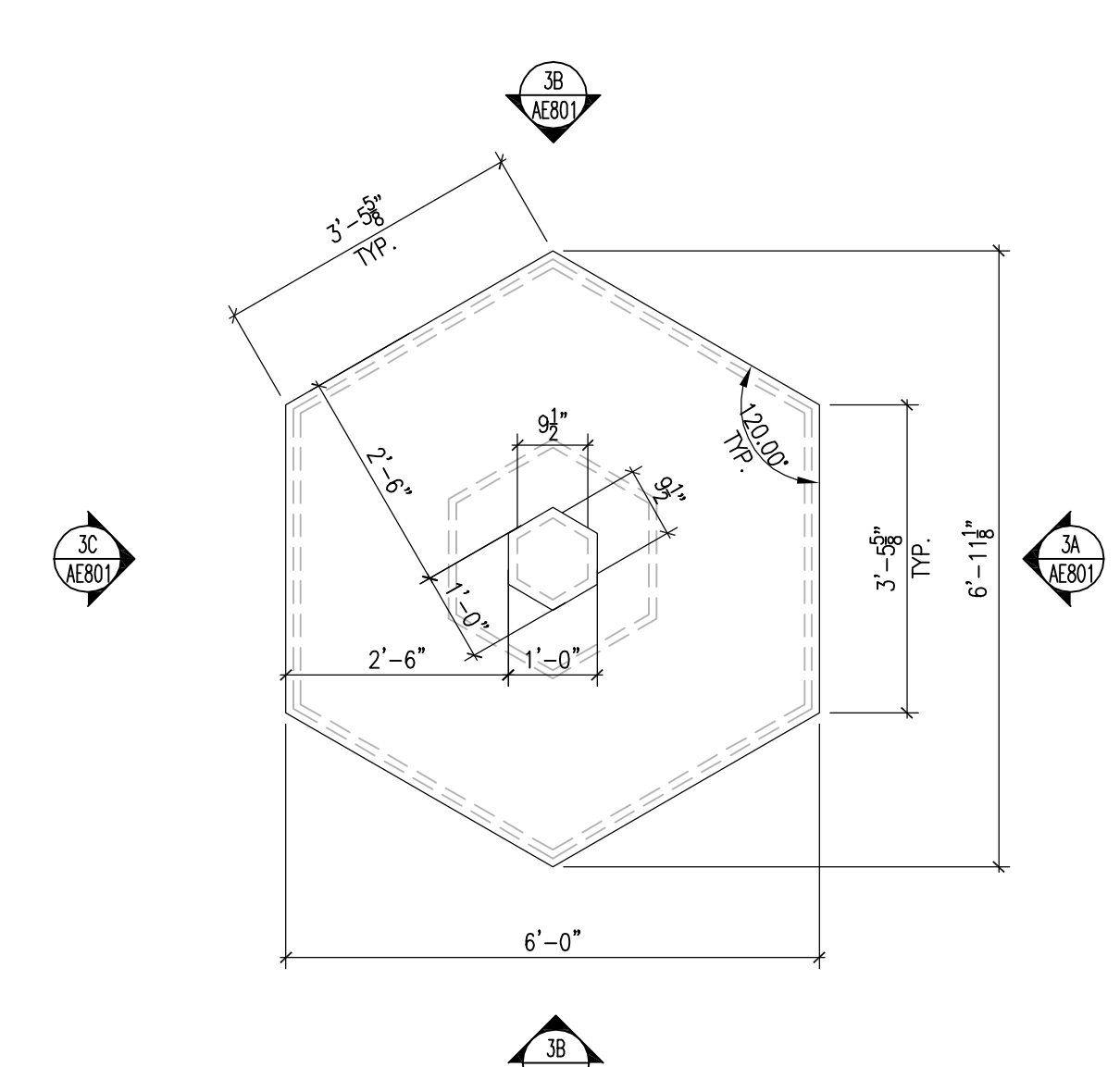
ALL OTHER FURNITURE N.I.C SHOWN FOR LAYOUT PURPOSES ONLY.

FLOOR PATTERN KEY



1 FURNITURE PLAN - LEVEL 1

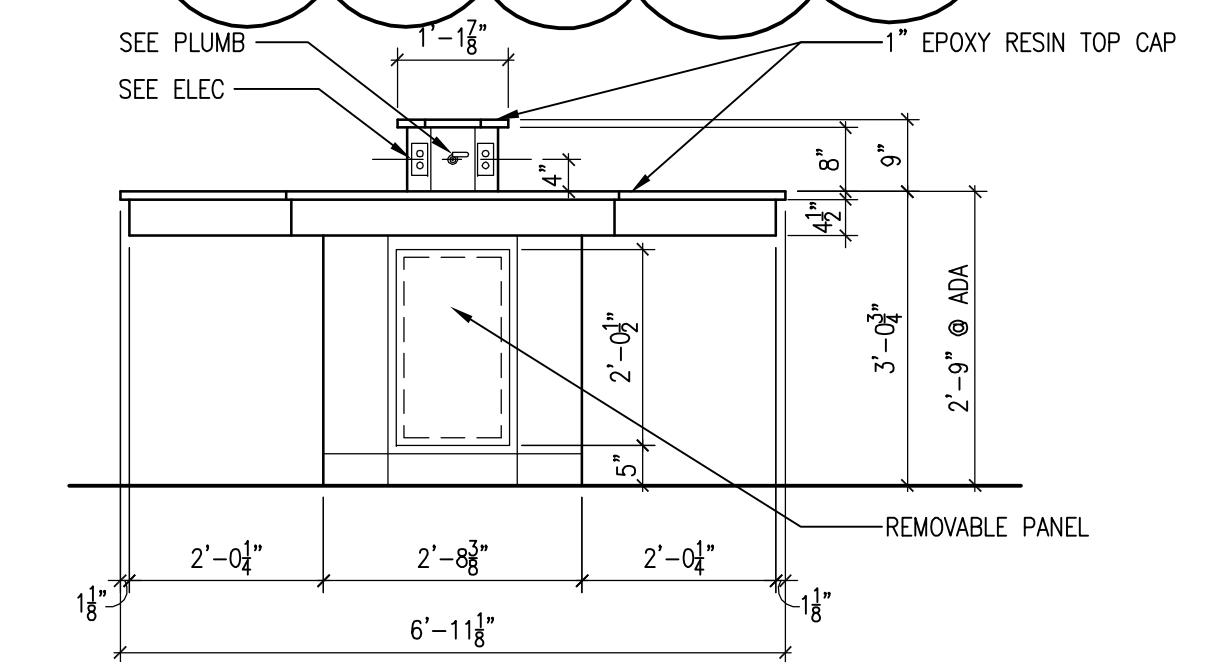
AEBD/ SCALE: 1/8" = 1'-0"



2 ENLARGED TABLE PLAN

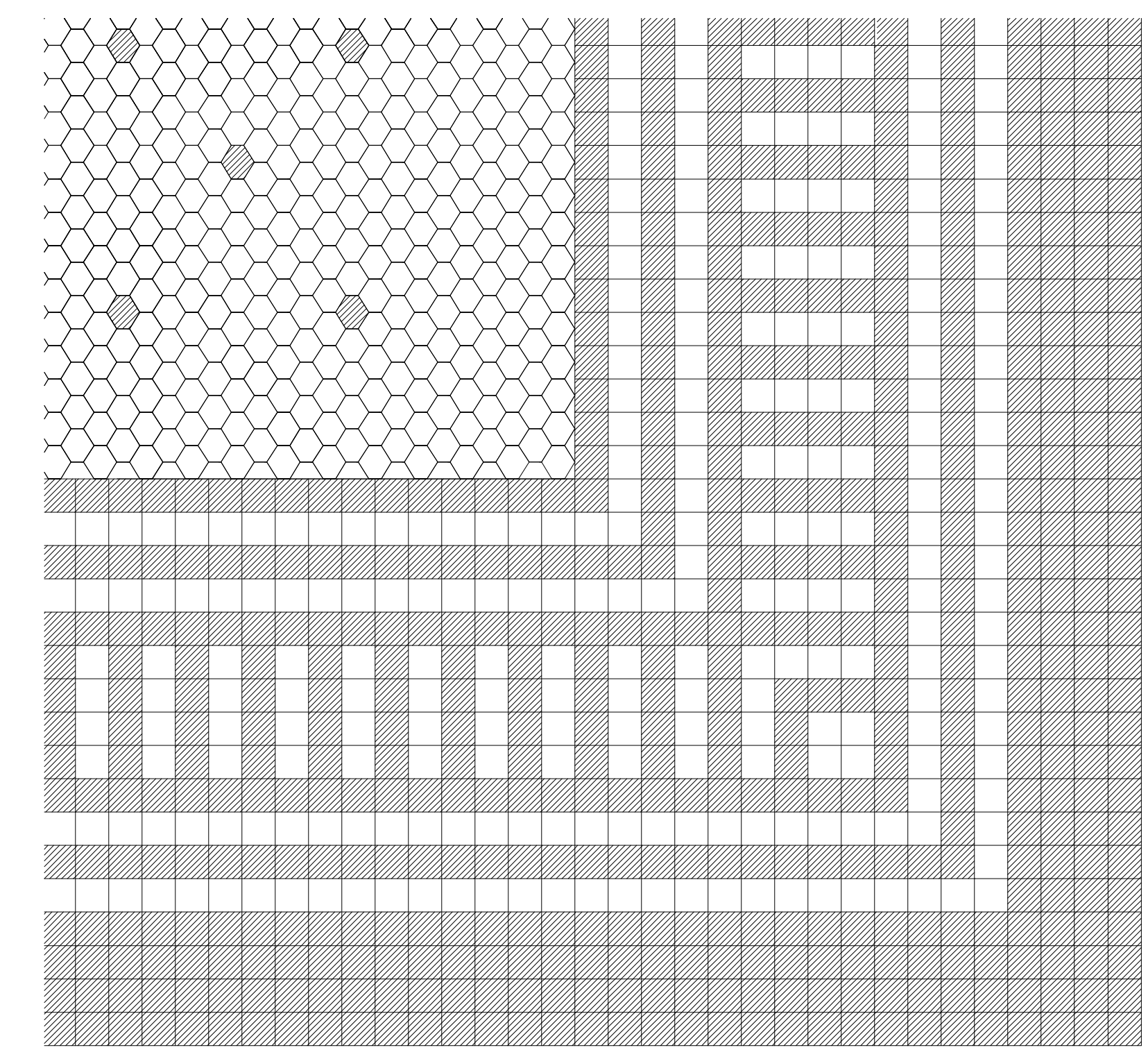
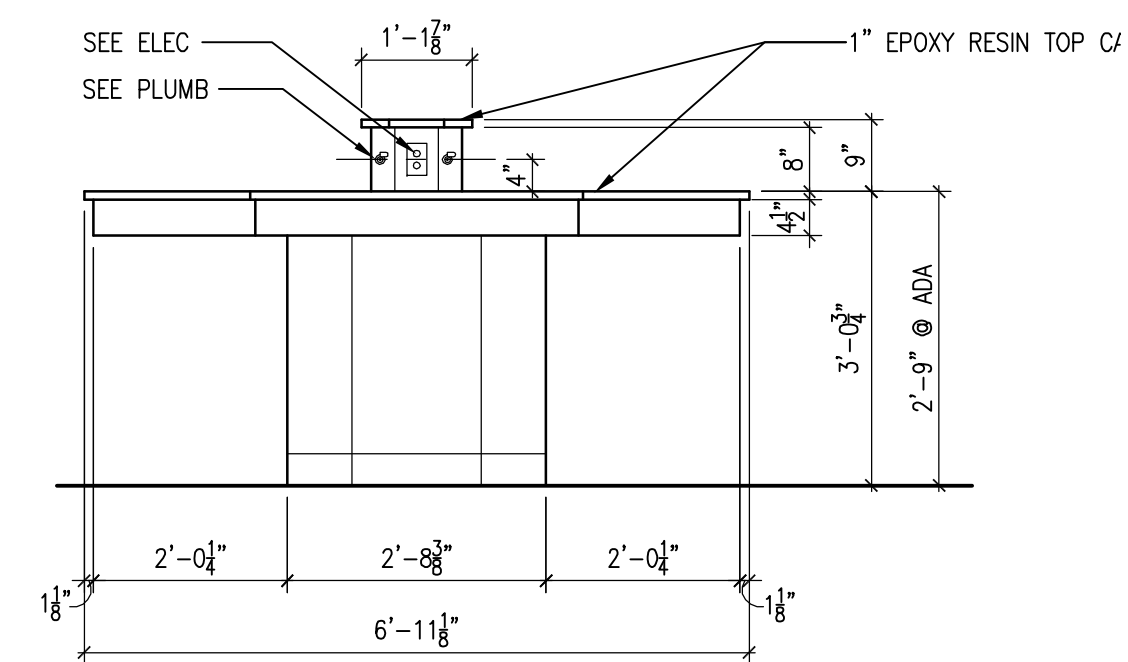
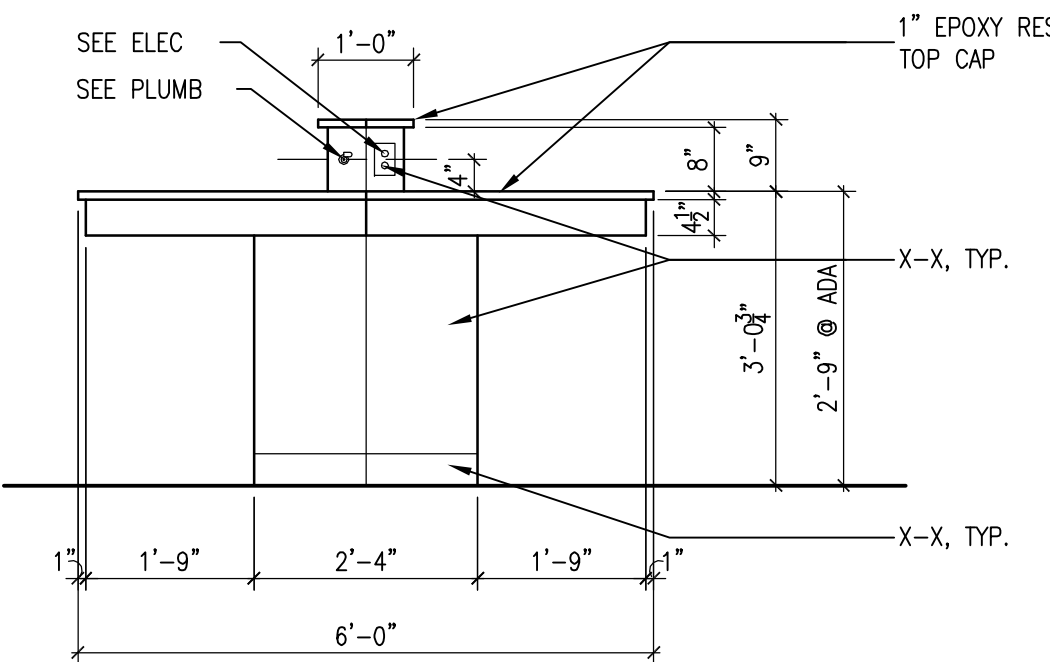
AEBD/ SCALE: 1/2" = 1'-0"

NOTE: PLUMBING TO BE PROVIDED BY PLUMBING CONTRACTOR.
ELECTRICAL TO BE PROVIDED BY ELECTRICAL CONTRACTOR.



3 TABLE ELEVATIONS

AEBD/ SCALE: 1/2" = 1'-0"

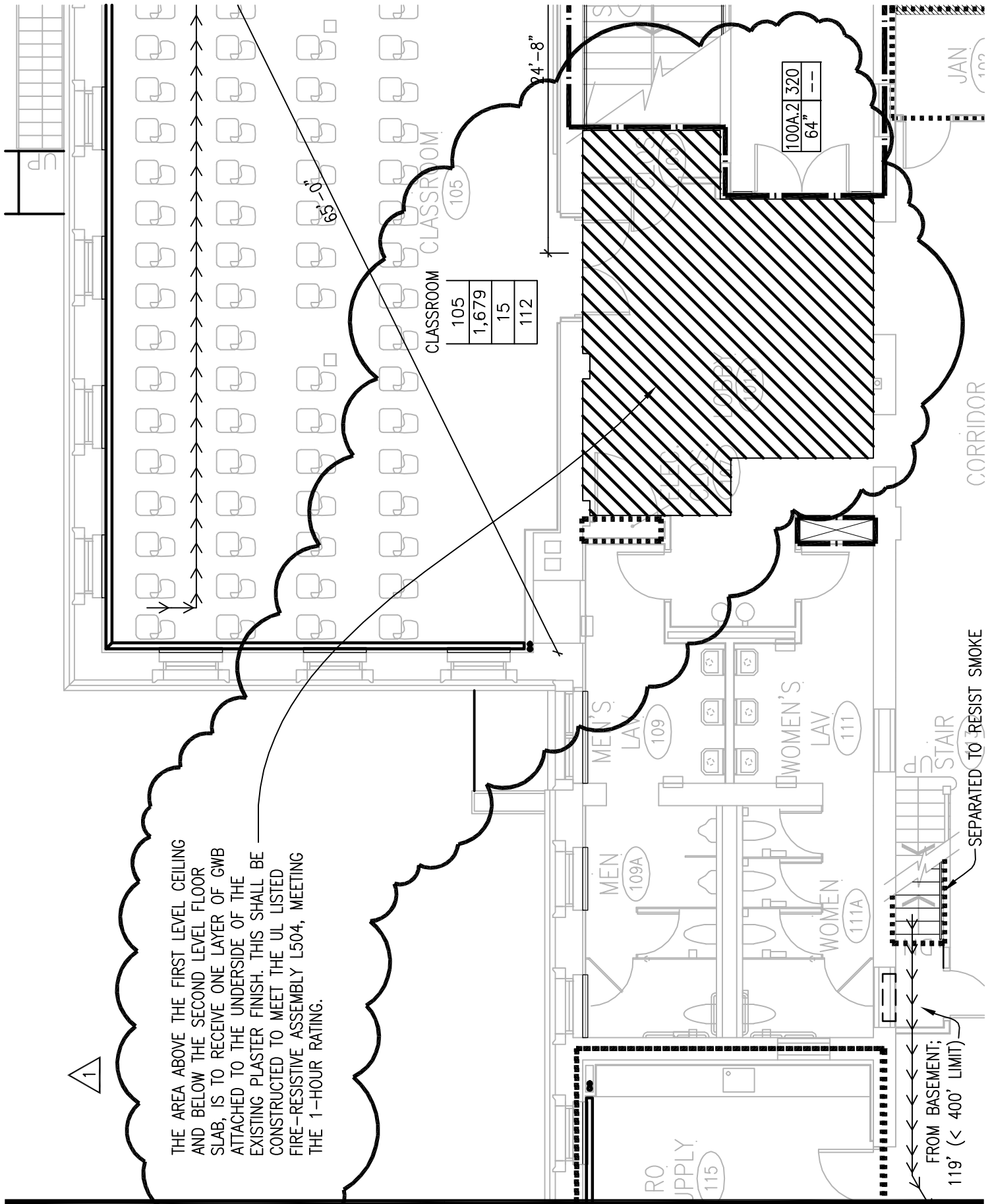


4 ENLARGED TILE PATTERN (TYP. ALL RESTROOMS FLOORS)

AEBD/ SCALE: 1/2" = 1'-0"

1

THE AREA ABOVE THE FIRST LEVEL CEILING AND BELOW THE SECOND LEVEL FLOOR SLAB, IS TO RECEIVE ONE LAYER OF GWB ATTACHED TO THE UNDERSIDE OF THE EXISTING PLASTER FINISH. THIS SHALL BE CONSTRUCTED TO MEET THE UL LISTED FIRE-RESISTIVE ASSEMBLY L504, MEETING THE 1-HOUR RATING.



LEO A DALY

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BRACE HALL RENOVATIONS

JOB NO. 003-10126-004
DRAWN BY: JMK
CHECKED BY:

1

DATE: 09/13/13

DRAWING: FL101a

ADDENDUM 002

2

THE AREA ABOVE THE SECOND LEVEL CEILING AND BELOW THE THIRD LEVEL FLOOR SLAB, IS TO RECEIVE ONE LAYER OF GWB ATTACHED TO THE UNDERSIDE OF THE EXISTING PLASTER FINISH. THIS SHALL BE CONSTRUCTED TO MEET THE UL LISTED FIRE-RESISTIVE ASSEMBLY L504, MEETING THE 1-HOUR RATING.

201 190
38' ---

201 340
68' ---

211 160
32' ---

CONF	215
	285
	15
	19

COLAB	217
	434
	20
	22

117' (< 300' LIMIT)
CORRIDOR
SEPARATED TO RESIST SMOKE

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INTERIORS

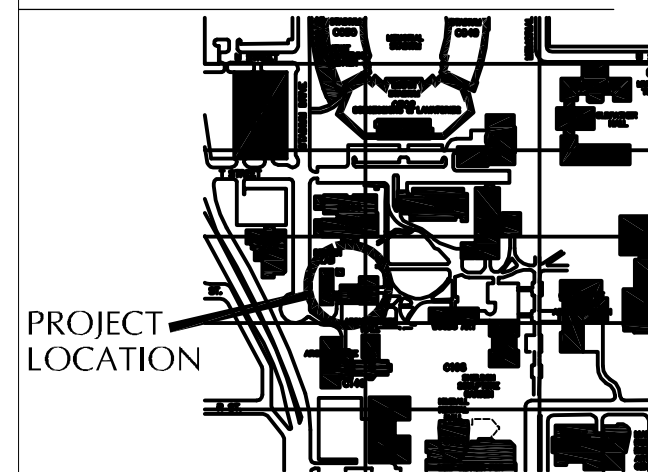
8600 Indian Hills Drive Omaha NE 68114 USA
Tel 402-391-8111 Fax 402-391-8564

BRACE HALL RENOVATIONS

JOB NO. 003-10126-004
DRAWN BY: JMK
CHECKED BY:

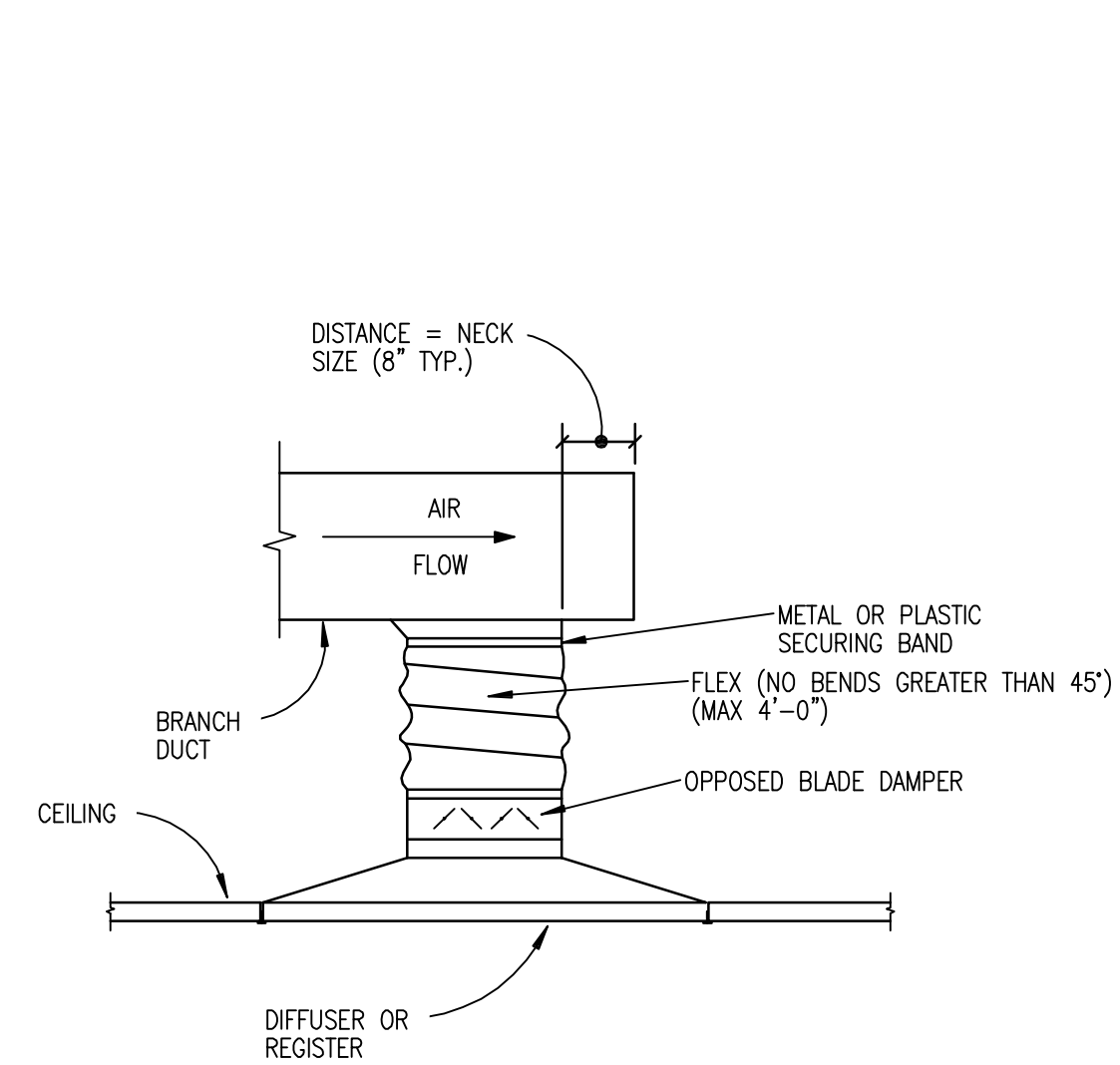
2

ADDENDUM 002
DATE: 09/13/13
DRAWING: FL102a

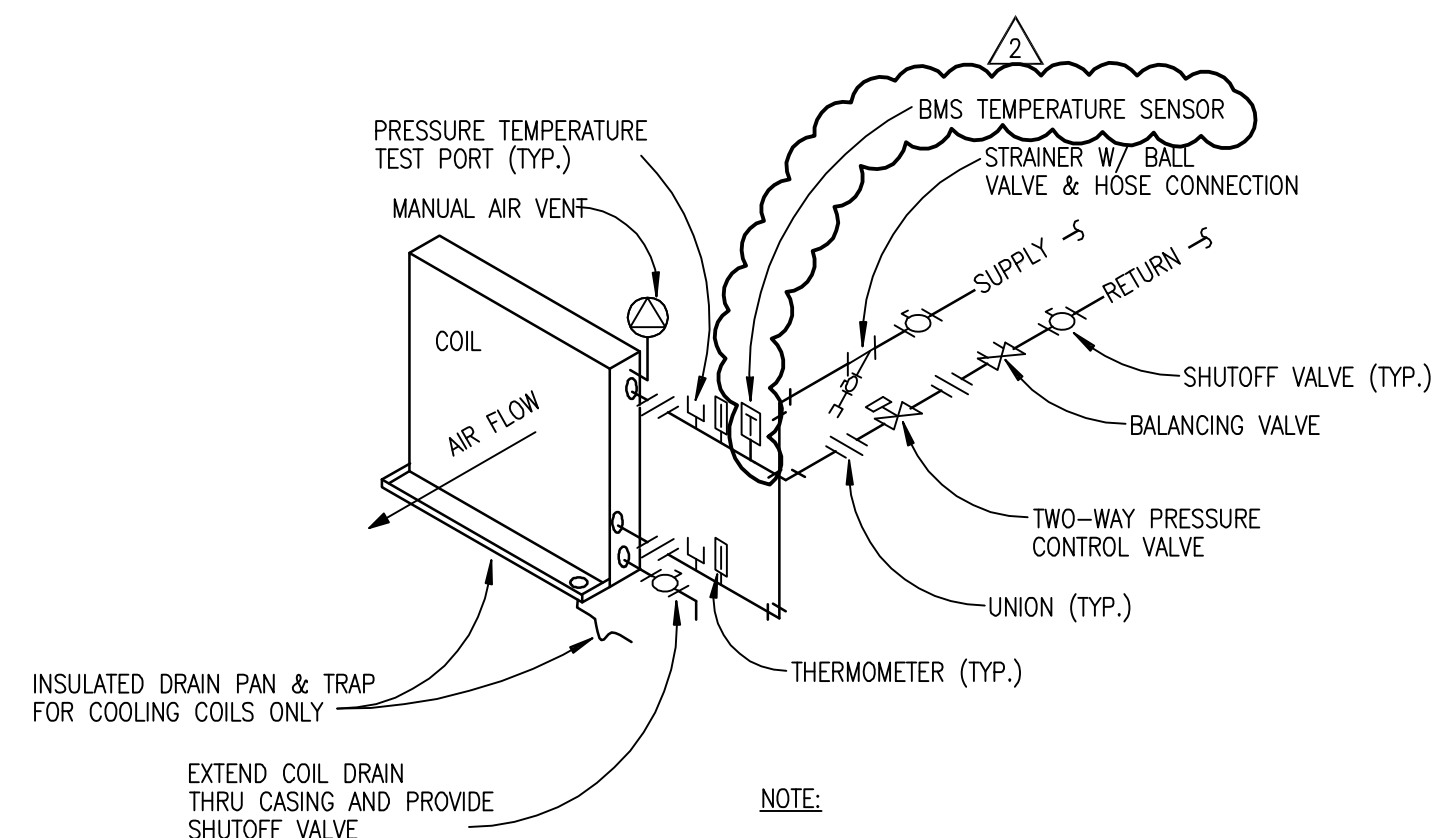


NO.	DESCRIPTION	DATE
ADDENDUM 001		09.06.2013
ADDENDUM 002		09.13.2013

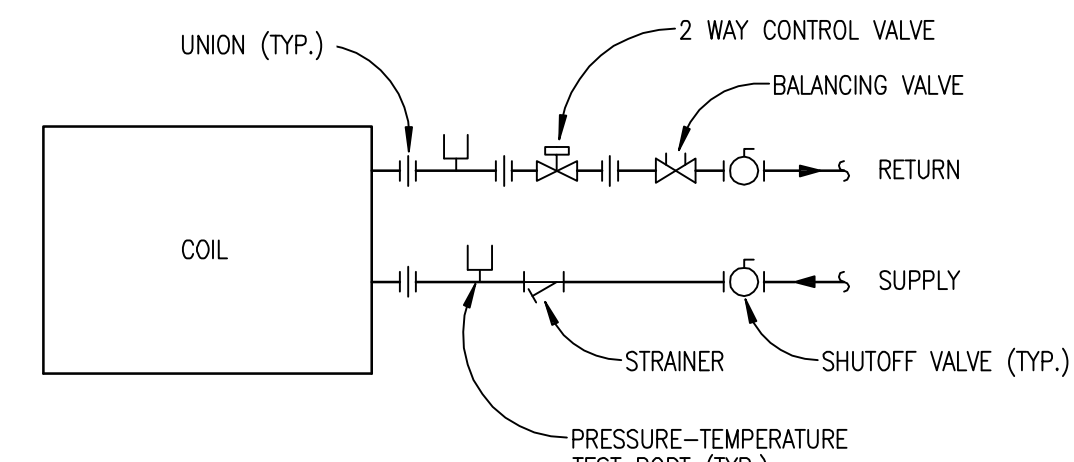
ACTIVITY	BY
Manager	DTB
Design	MSB
Draw	SEAS
Check	MSB



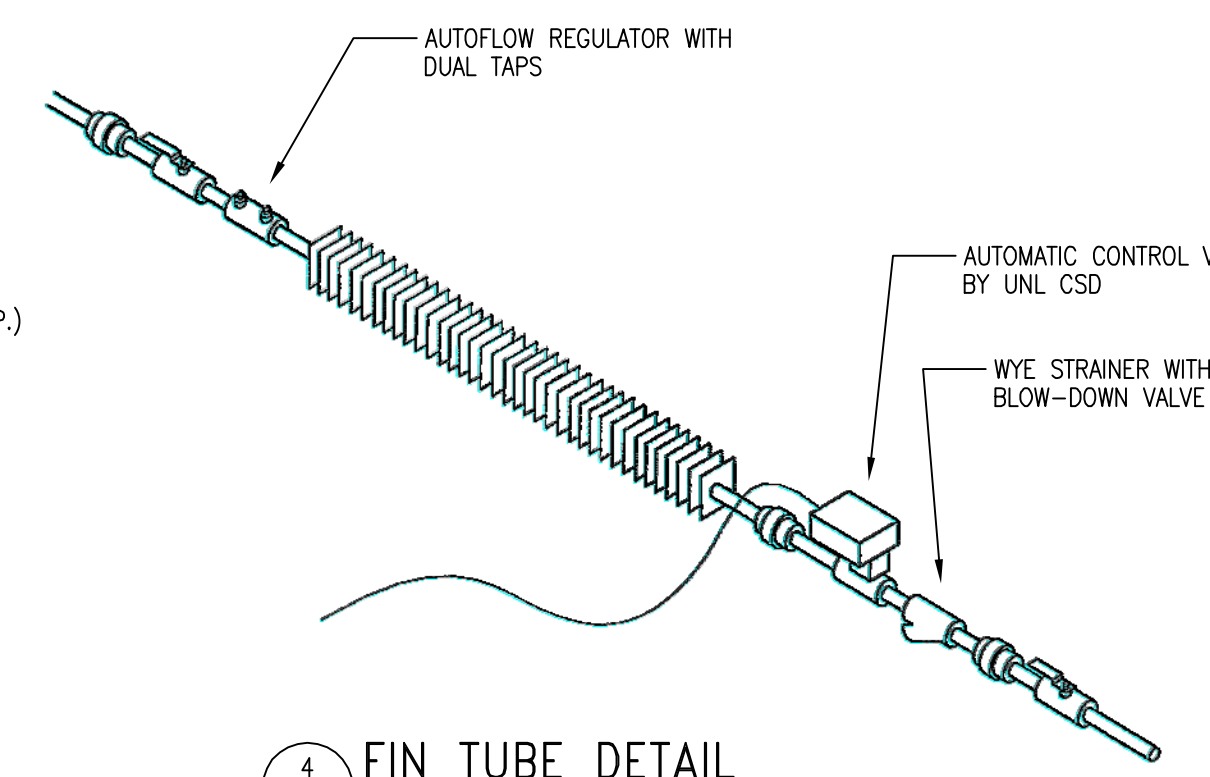
1 DIFFUSER CONNECTION
SCALE: NONE



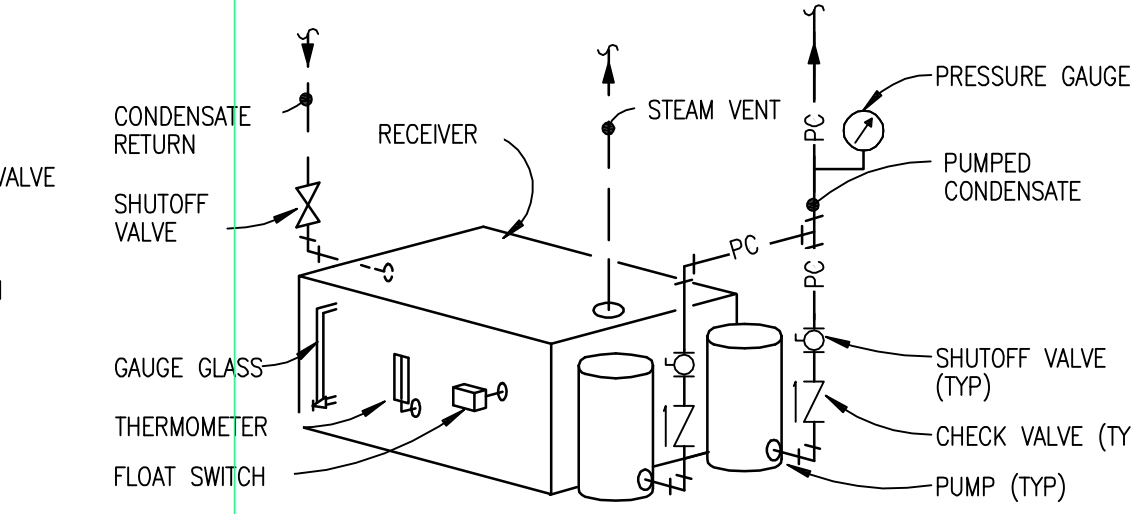
2 AIR HANDLER COIL (2 WAY)
SCALE: NONE



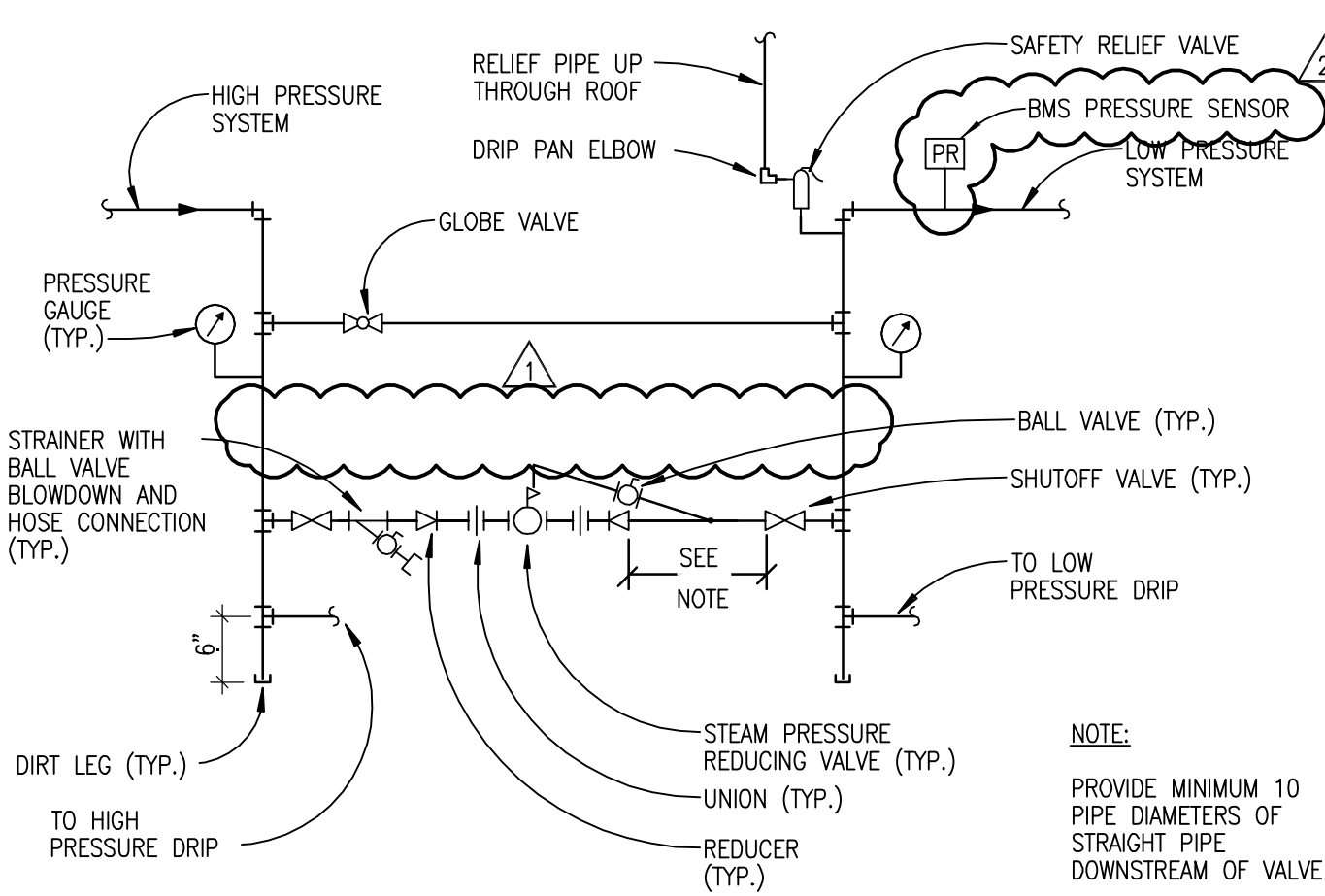
3 FAN COIL/UNIT HEATER/REHEAT
COIL - VAV BOX (2 WAY)
SCALE: NONE



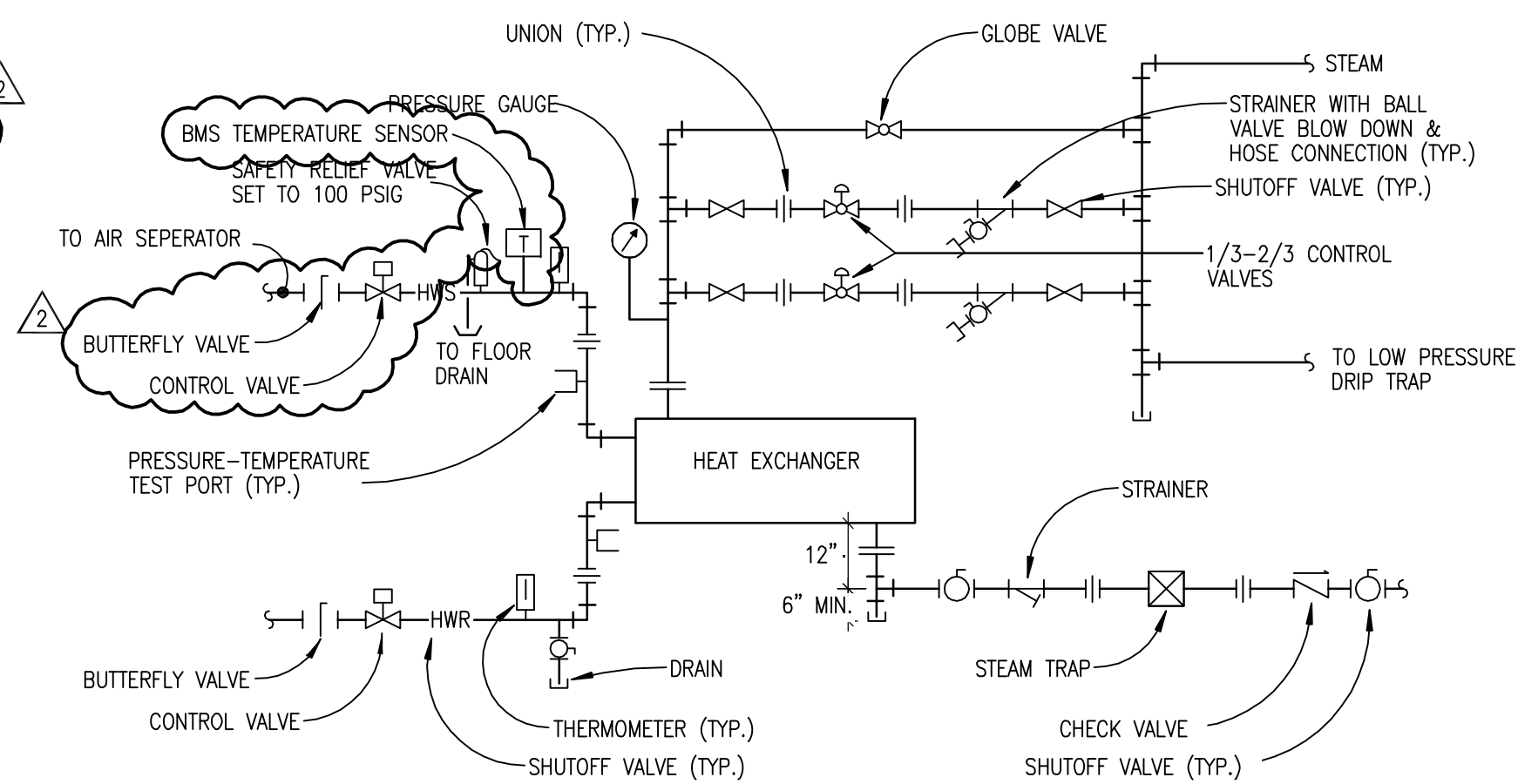
4 FIN TUBE DETAIL
SCALE: NONE



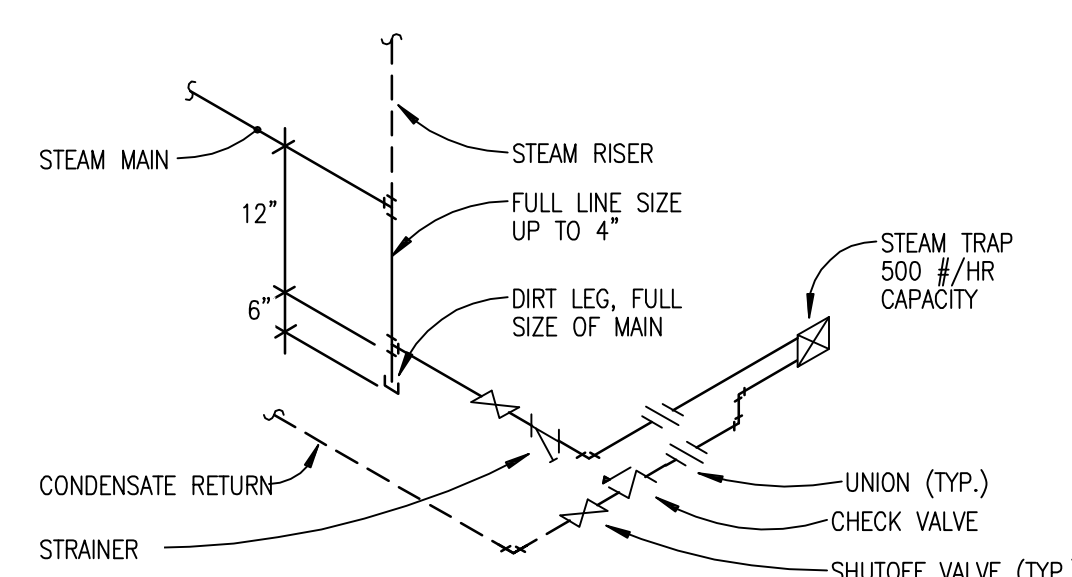
5 DUPLEX CONDENSATE PUMP
SCALE: NONE



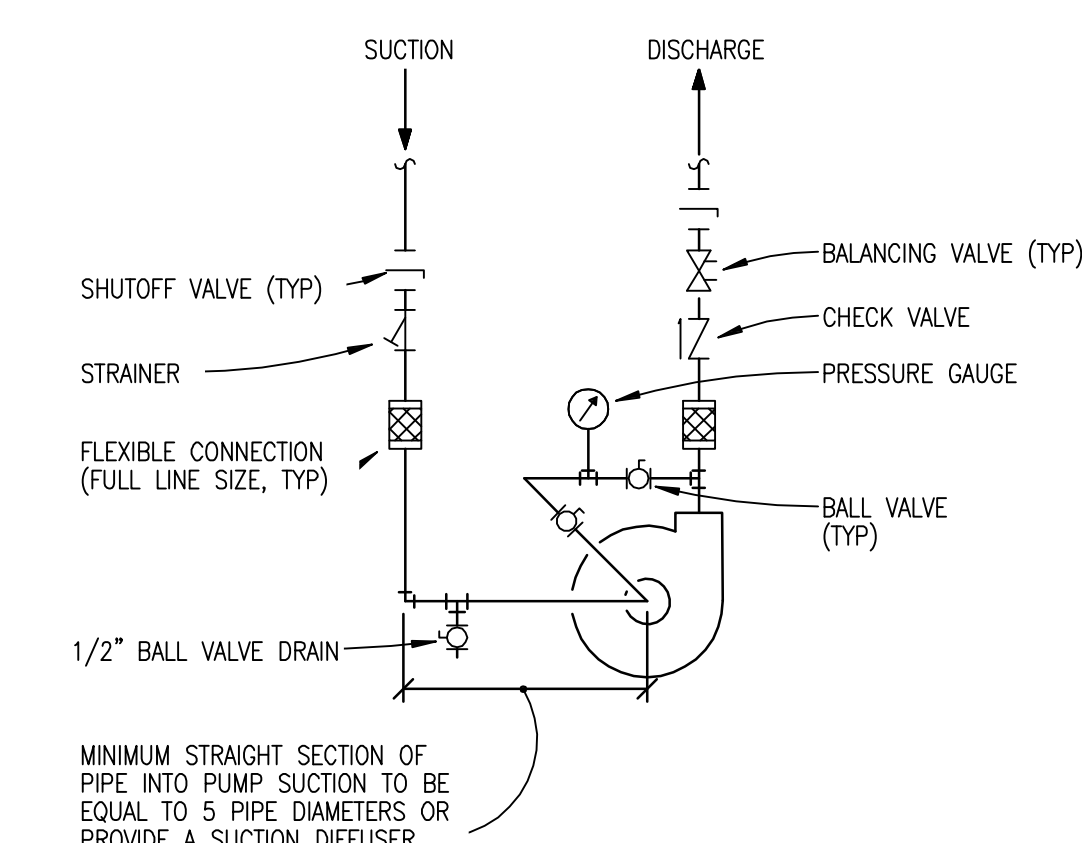
6 SINGLE STAGE STEAM PRESSURE REDUCING STATION
SCALE: NONE



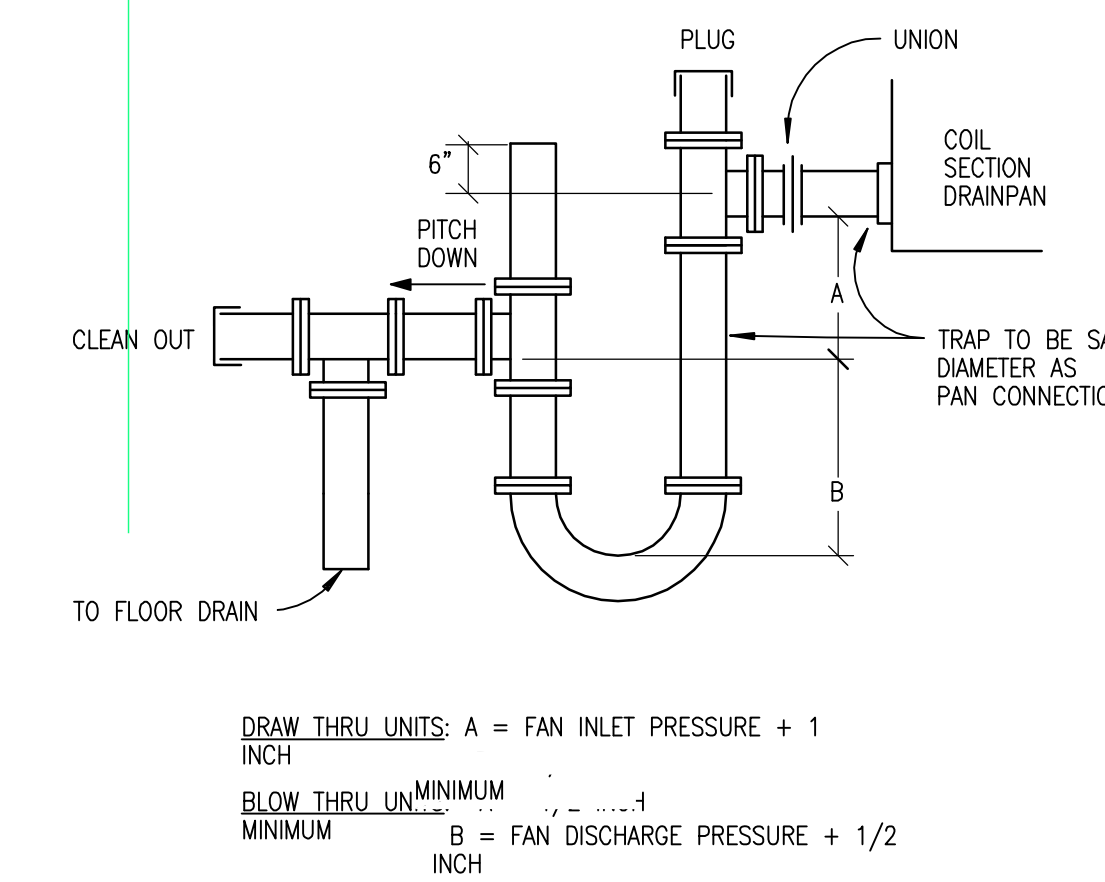
7 HEAT EXCHANGER (STEAM TO WATER)
SCALE: NONE



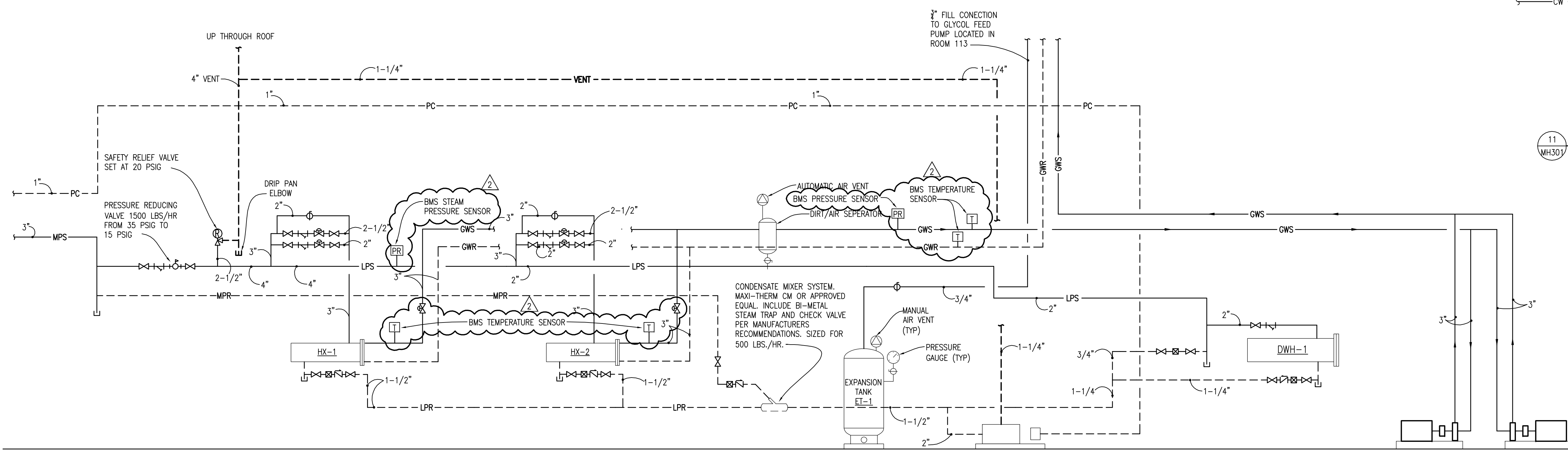
8 LOW PRESSURE DRIP STEAM TRAP
SCALE: NONE



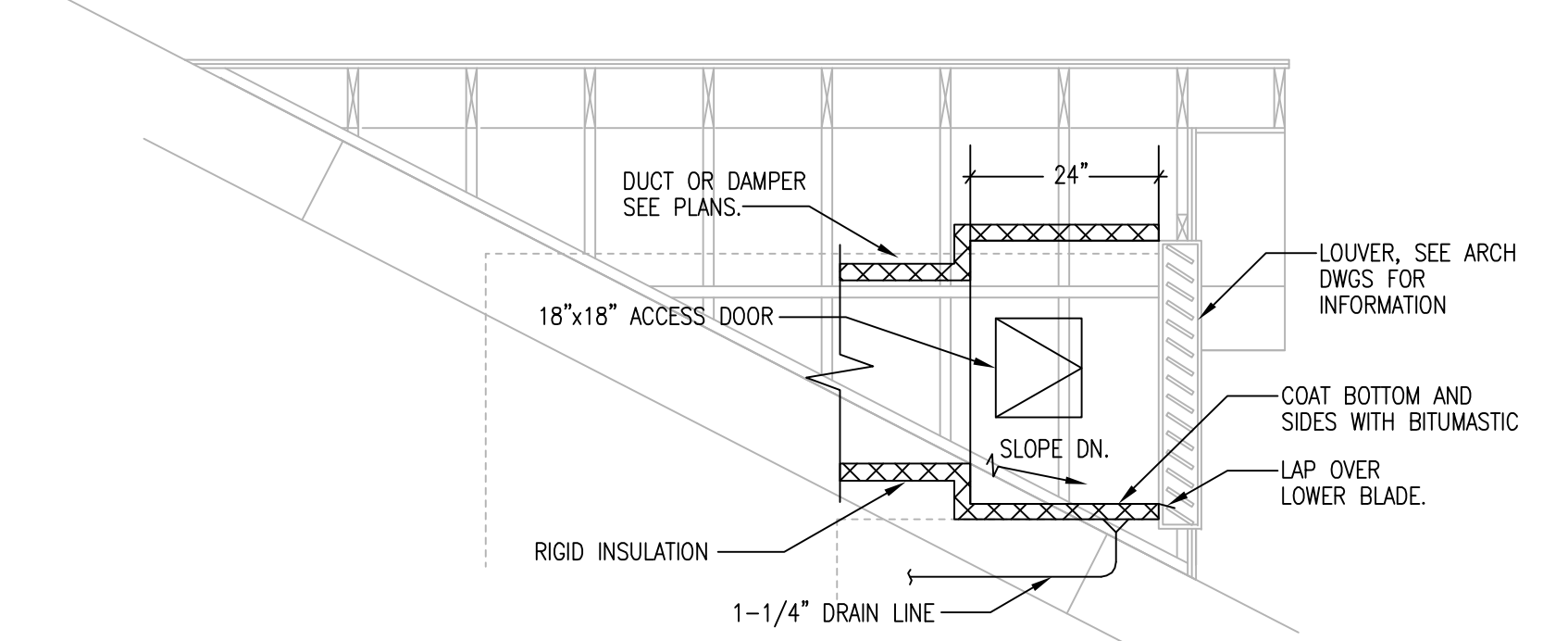
9 END SUCTION PUMP
SCALE: NONE



10 COOLING COIL CONDENSATE TRAP
SCALE: NONE

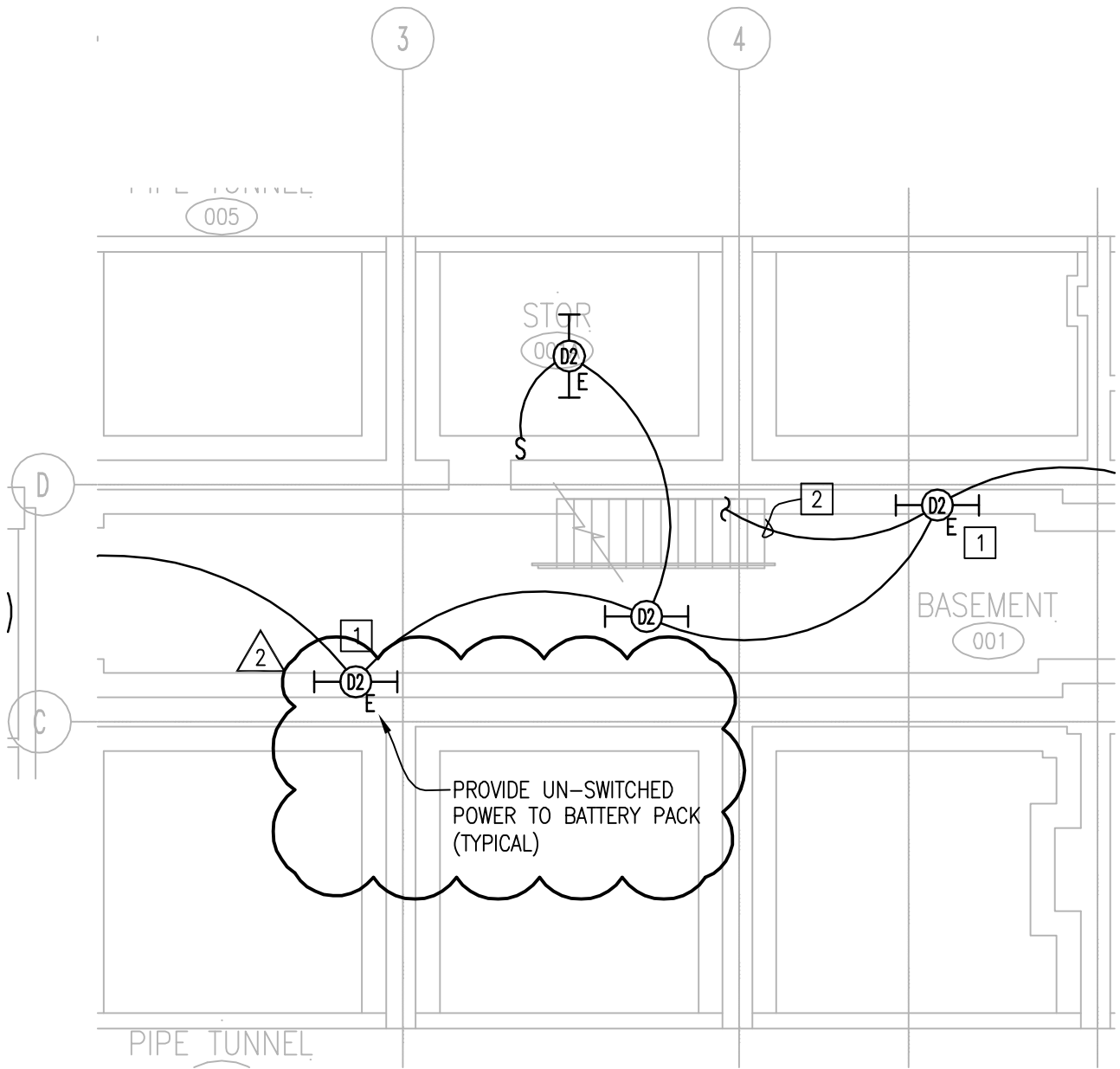


11 INSTANTANEOUS STEAM WATER HEATER
SCALE: NONE



12 LOUVER DETAIL
SCALE: NONE

12 HEATING WATER PIPING SCHEMATIC
SCALE: NONE



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BRACE HALL RENOVATIONS

JOB NO. 003-10126-004

DRAWN BY: DJC

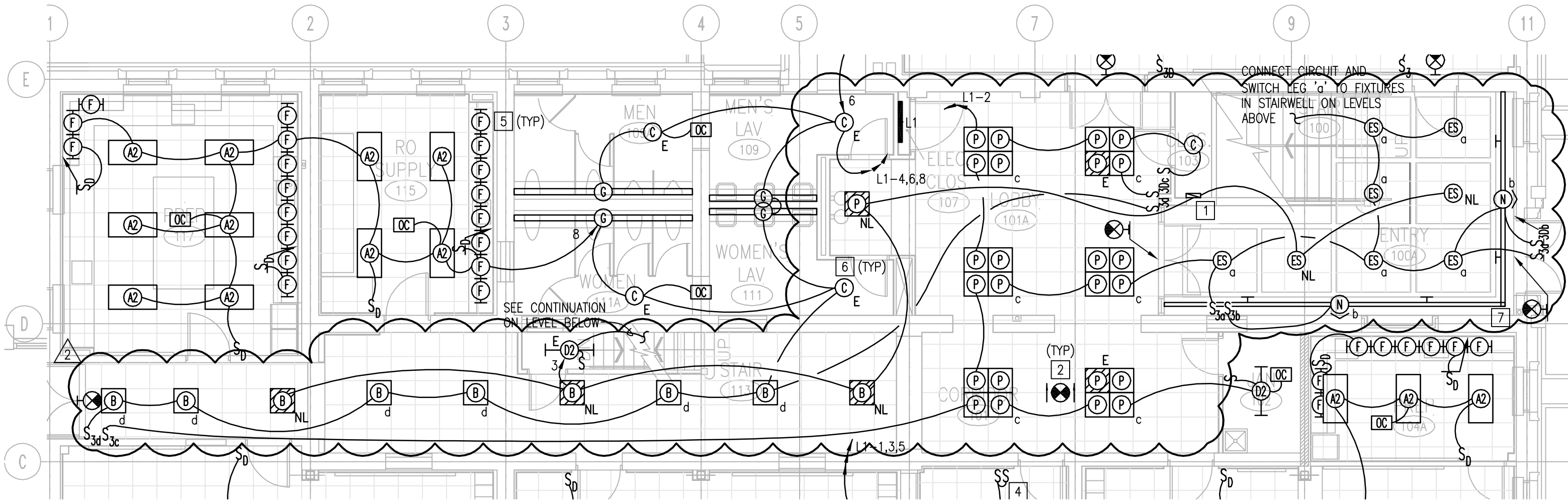
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ADDENDUM 002

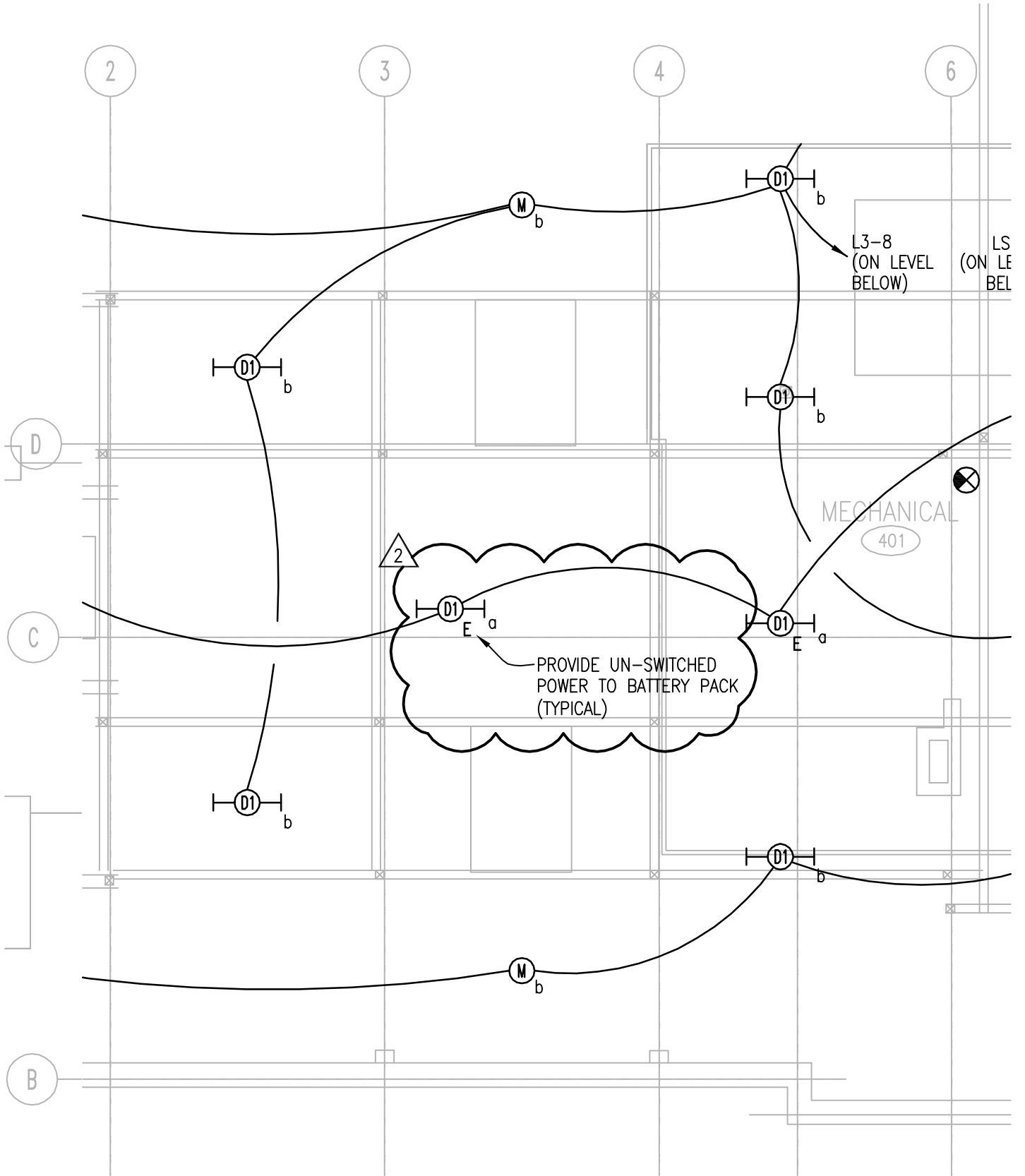
DATE: 09/09/13

DRAWING: **EL100a**



LIGHTING PLAN KEYED NOTES:

- 1 BATTERY INVERTER UNIT. PROVIDE UN-SWITCHED CIRCUITING FROM CIRCUIT LSB-3 TO FIXTURE TYPE 'ES' DESIGNATED AS NIGHT LIGHT.
PRODUCT NO.: PURE WAVE - PW 12 LC V1
- 2 CONNECT ALL EXIT LIGHTS TO EMERGENCY LIGHTING CIRCUIT, LSB-3, IN THE BASEMENT.
- 3 SEE DRAWING 2/EL501 FOR OCCUPANCY SENSOR DETAIL.
- 4 BI-LEVEL SWITCHING, SEE FIXTURE SCHEDULE, SHEET EL501, FOR DETAILS.
- 5 UNDER CABINET TASK LIGHT, COORDINATE WITH MILLWORK. SEE LIGHTING FIXTURE SCHEDULE ON SHEET EL501 FOR DETAILS. PROVIDE SEPARATE SWITCH FOR UNDERCABINET FIXTURES, AS SHOWN ON PLANS.
- 6 FOR FIXTURES DESIGNATED AS 'E' (EMERGENCY) PROVIDE EMERGENCY BATTERY PACK (SEE LIGHTING FIXTURE SCHEDULE, SHEET EL501, FOR DETAILS) AND PROVIDE UN-SWITCHED POWER FROM SAME CIRCUIT TO BATTERY PACK.



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BRACE HALL RENOVATIONS

JOB NO. 003-10126-004
DRAWN BY: DJC
CHECKED BY: JKN



DATE: 09/13/13

DRAWING: **EL104a**

ADDENDUM 002

LIGHTING FIXTURE SCHEDULE

FIX. TYPE	DESCRIPTION	BASIS OF DESIGN		LAMP				MOUNTING					INPUT WATTS	VOLTAGE	REMARKS	
		MANUFACTURER	CATALOG NUMBER	NO.	WATTS	TYPE	CCT	C	W	R	P	U				
N	WALL MOUNT LED WALL GRAZE	SELUX	L36R1 1L35 35 A5 W ** WH 120 DML	1	9	LED	3500K		•					9 W/FT	120	PROVIDE GRAZING OPTIC IN DIRECTION INDICATED ON PLANS BY ARROW. SEE ARCHITECTURAL DRAWING 5/AE111 MOUNTING DETAILS. **PROVIDE FIXTURE LENGTH AS SHOWN ON PLANS
P	2'X2' RECESSED VAULT LED	FOCAL POINT	FVAL 22 CN LL1 L35 LD1 120 G EM* WH	1	28	LED	3500K	•						28	120	
ES	EXISTING SCHOOLHOUSE FIXTURE	-	-	1	42	42W E26 SPIRAL CFL	3500K	•						42	120	PROVIDE E39 TO E26 SCREW BASE ADAPTER. CONNECT NIGHT LIGHT FIXTURES TO EMERGENCY BATTERY UNIT AS SHOWN ON PLANS.
⊗	LED EXIT SIGN	LITHONIA	LE S 1/2 R 120/277 EL N			LED									120	PROVIDE MOUNTING ACCESSORIES, AS NECESSARY, FOR EACH EXIT SIGN LOCATION


* PROVIDE EMERGENCY BATTERY PACK FOR FIXTURES DESIGNATED WITH 'E' OR 'NL' ON PLANS, UNLESS OTHERWISE NOTED.

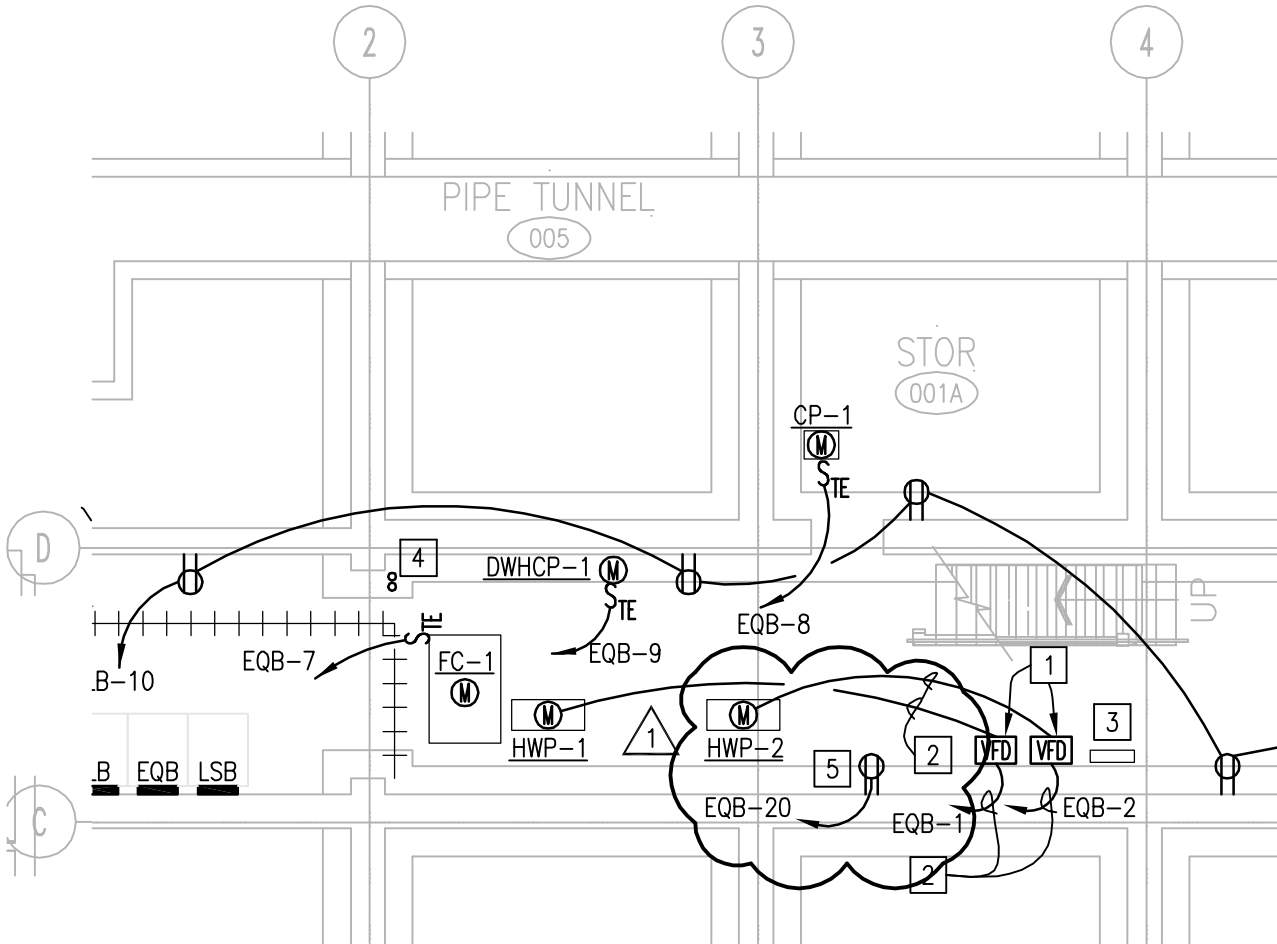
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ARCHITECTURE
ENGINEERING
INTERIORS

8600 Indian Hills Drive Omaha NE 68114 USA
Tel 402-391-8111 Fax 402-391-8564

BRACE HALL RENOVATIONS

JOB NO. 003-10126-004  ADDENDUM 002
DRAWN BY: DJC DATE: 09/13/13
CHECKED BY: JKN DRAWING: EL501a



LIGHTING PLAN KEYED NOTES:

- 1 VARIABLE FREQUENCY DRIVES, FURNISHED BY UNL.
- 2 (3)#8, (1)#8G - 3/4"C.
- 3 TEMPERATURE CONTROLS PANEL FURNISHED BY UNL. PROVIDE 20A/1P CIRCUIT FROM PANEL EQB. SEE MECHANICAL DRAWINGS FOR MORE INFORMATION.
- 4 (2) 4" CONDUITS FROM BASEMENT UP TO ACCESS PANEL IN TELECOMMUNICATIONS CHASE IN FIRST FLOOR CEILING SPACE FOR UNL IT SERVICE.

1

- 5 DEDICATED OUTLET FOR SP-1. SEE MECHANICAL FOR MORE INFORMATION.

LEO A DALY

PLANNING
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BRACE HALL RENOVATIONS

JOB NO. 003-10126-004
DRAWN BY: DJC
CHECKED BY: JKN

1

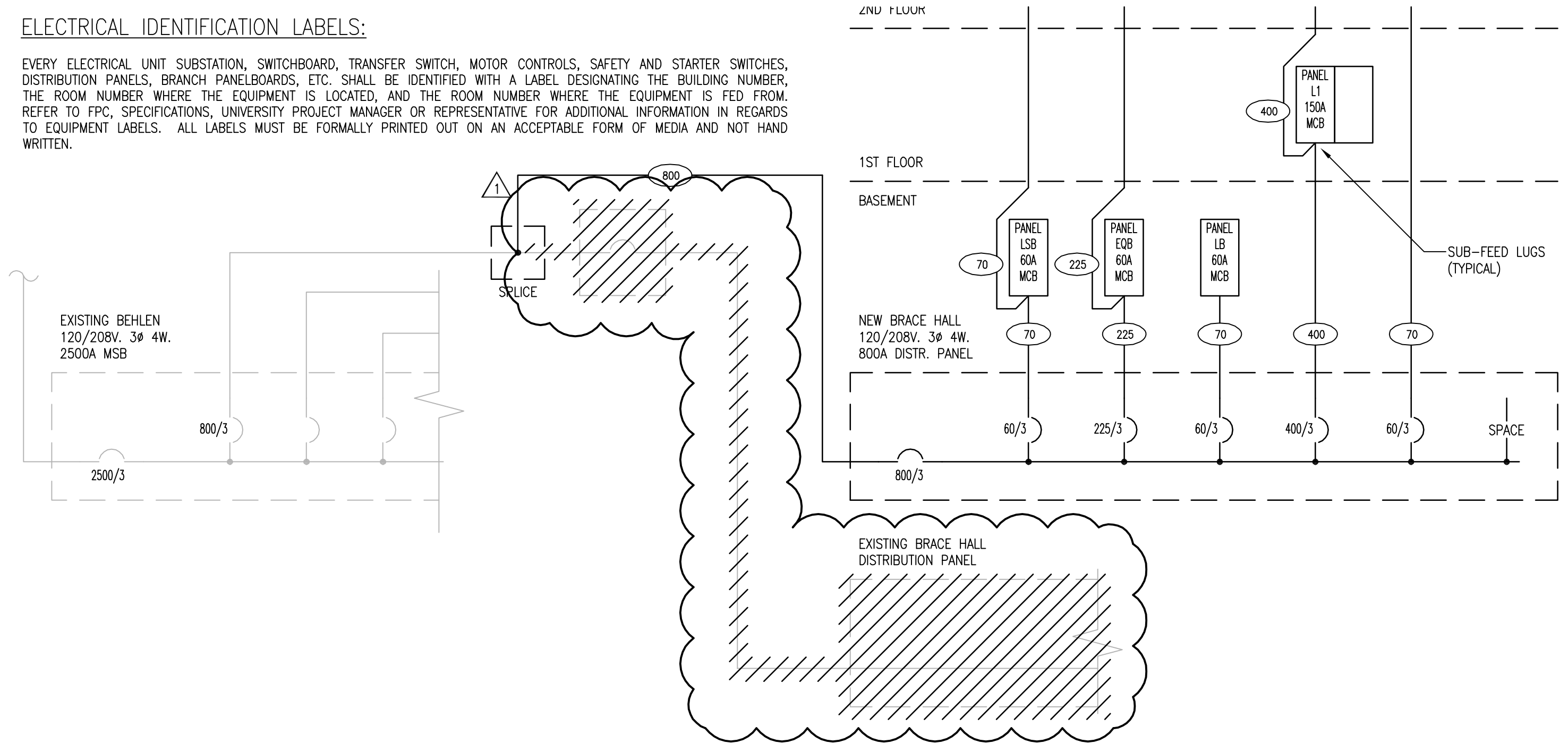
DATE: 09/13/13

DRAWING: EP100a

ADDENDUM 002

ELECTRICAL IDENTIFICATION LABELS:

EVERY ELECTRICAL UNIT SUBSTATION, SWITCHBOARD, TRANSFER SWITCH, MOTOR CONTROLS, SAFETY AND STARTER SWITCHES, DISTRIBUTION PANELS, BRANCH PANELBOARDS, ETC. SHALL BE IDENTIFIED WITH A LABEL DESIGNATING THE BUILDING NUMBER, THE ROOM NUMBER WHERE THE EQUIPMENT IS LOCATED, AND THE ROOM NUMBER WHERE THE EQUIPMENT IS FED FROM. REFER TO FPC, SPECIFICATIONS, UNIVERSITY PROJECT MANAGER OR REPRESENTATIVE FOR ADDITIONAL INFORMATION IN REGARDS TO EQUIPMENT LABELS. ALL LABELS MUST BE FORMALLY PRINTED OUT ON AN ACCEPTABLE FORM OF MEDIA AND NOT HAND WRITTEN.



1 ELECTRICAL ONE-LINE DIAGRAM
EP501 SCALE: NONE

PANEL NO.	<u>EQB</u>	TYPE	<u>EQUIPMENT</u>	LOCATION	<u>ROOM 001</u>
SERVICE VOLTAGE	<u>208Y/120V 3PH 4W</u>	PHASE BUS RATING	<u>100 AMPS</u>	MOUNTING	<u>SURFACE</u>
MAIN BREAKER SIZE	<u>100A MCB</u>	NEUTRAL BUS RATING	<u>100 AMPS</u>	DRAWING NO.	<u>EP100</u>
		SHORT CIRCUIT RATING	<u>10000 AIC</u>		

DESCRIPTION	LOAD AMP	BREAKER		VOLT AMPS			CKT. NO.	CKT. NO.	VOLT AMPS			BREAKER		LOAD AMP	DESCRIPTION
		POLE	AMP	A	B	C			A	B	C	POLE	AMP		
E: HWP-1 (RM 001)	17.5	3	35	2100			1	2	2100			3	35	17.5	E: HWP-2 (RM 001)
----	17.5	----	----		2100		3	4		2100		----	----	17.5	----
----	17.5	----	----			2100	5	6			2100	----	----	17.5	----
E: FC-1 (RM 001)	2.4	1	20	288			7	8	1176			1	20	9.8	E: CP-1 (RM 001A)
E: DWHCP-1 (RM 001)	2.4	1	20		288		9	10		1332		2	20	11.1	E: CU-1 (LEVEL 1 - EXTERIOR)
E: TEMP CONTROLS PANEL (RM 001)	1.0	1	20			120	11	12			1332	----	----	11.1	----
E: RO SYSTEM GENERATOR (RM 115)	6.9	3	15	828			13	14	600			1	20	5.0	R: WATER SOFTENER (RM 115)
----	6.9	----	----		828		15	16		60		1	20	0.5	E: UV LIGHT (RM 115)
----	6.9	----	----			828	17	18			120	1	20	1.0	R: FEED TANK (RM 115)
E: RO CIRC PUMP (RM 115)	3.7	3	15	444			19	20	360			1	20	3.0	R: SP-1 (RM 001)
----	3.7	----	----		444		21	22		0		1	20	0.0	SPARE
----	3.7	----	----			444	23	24			0	1	20	0.0	SPARE
SPARE	0.0	1	20	0			25	26	0			1	20	0.0	SPARE
SPARE	0.0	1	20		0		27	28		0		----	----	0.0	space
SPARE	0.0	1	20			0	29	30			0	----	----	0.0	space
space	0.0	----	----	0			31	32	0			----	----	0.0	space
space	0.0	----	----		0		33	34		0		----	----	0.0	space
space	0.0	----	----			0	35	36			0	----	----	0.0	space
space	0.0	----	----	0			37	38	0			----	----	0.0	space
space	0.0	----	----		0		39	40		0		----	----	0.0	space
space	0.0	----	----			0	41	42			0	----	----	0.0	space

TOTAL PHASE A: 65.8 AMPS 7.9 KVA
TOTAL PHASE B: 59.6 AMPS 7.2 KVA
TOTAL PHASE C: 58.7 AMPS 7.0 KVA

TOTAL CONNECTED LOADS: 22.1 KVA
TOTAL CONNECTED LOADS PLUS SPARES: 22.1 KVA
ESTIMATED DEMAND LOADS: 14.4 KVA



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ADDENDUM 002