

Addendum #2

Project Name: Concordia STEM
Seward, NE
Project No.: 16022-05
Date Issued: May 8, 2018
Bid Date: Thursday, May 17, 2018

This Addendum is issued to all known bidders before receipt of proposals. This Addendum is to authorize the use of the following information in preparing proposals for the above named project. The bidder **must** enter the number of this Addendum on the **Proposal Sheet**.

GENERAL QUESTIONS AND CLARIFICATIONS

ADD 2-1. Carpet Patterns

Question: *The areas of patterned carpet reference Note 4 on the plans, stating to see the manufacturer's layout included in specifications. Where is this layout with the specifications? We cannot find it for reference.*

Response: The attachments have been added to this addendum and are identified as 096813-A "Tile Carpeting Lichen Installation Layouts"

ADD 2-2. VCT Patterns

Question: *The VCT Key shows how the corridors are to be laid out with the VCT. In the specifications it states a random pattern with percentages of each VCT. Which layout is to be used?*

Response: Follow the floor plans.

ADD 2-3. Visual Displays and Writeable Wall Surfaces

Statement: *Owner has provided additional clarifications on what they would like to see in regard to visual displays and writeable wall surfaces. A significant portion of this addendum was used to address these clarifications.*

Response: New specification sections have been added and notations made to the contract drawings. In addition to those items, we have included an attachment identified as "GRAPHIC" to hopefully provide some visual assistance in deciphering the design intent for these types of surfaces.

MODIFICATIONS TO THE DRAWINGS

ADD 2-4. Refer to Sheet G101; Sheet contains additions and or modifications to the keynote list. The following notes are to replace the notes originally listed:

- 097200.B PRESENTATION DRY ERASE MAGNETIC WALLCOVERING ASSEMBLY
- 097200.B2 DRY ERASE MAGNETIC WALLCOVERING ASSEMBLY
- 097200.C EXTRUDED ALUMINUM J-CAP ACCESSORY TRIM
- 097200.C2 EXTRUDED ALUMINUM MARKER TRAY WITH PLASTIC END CAPS – 18" LONG, COORDINATE EXACT LOCATION WITH OWNER IN THE FIELD
- 097260.A TACKABLE WALLCOVERING ASSEMBLY
- 097260.B EXTRUDED ALUMINUM J-CAP ACCESSORY TRIM
- 099737.A DRY ERASE COATING – CLEAR

The following keynotes have been **eliminated** from the project:

- 101100.B2 DIRECT GLUED FRAMELESS TACKBOARD

ADD 2-5. Refer to Sheet A100A:

- Dimensions outside overhead coiling door 048.1 were inadvertently deleted prior to printing. Dimensions have been added back.
- Wall type at Door 049.1 has been modified to MS3.1 to reduce throat depth required for HM frame.
- Dimension has been provided to locate wall at Door 048.3.
- Door 048.2 has been identified.
- Graphic work to upper cabinets along west wall of Workroom 048 has been adjusted.
- Wall Type has been added to south wall of Office 057.
- Wall Type has been added to south wall of Office 062.
- Wall Type has been added to wall at Door 063.1.
- Wall Type at Door 061.1 has been modified to MS3.1 to reduce throat depth required for HM frame.
- Dimensions have been added to plan at Door 061.1.
- Lab 033; Keynote 101100.A has been removed from the south wall.
- Lab 033; Keynotes 097200.B and 097200.C have been added to the south wall.
- Conference 035; Keynotes 101100.A and accompanying markerboards have been removed from the north and east walls.
- Conference 035; Keynote 097200.B has been added to the north wall.
- Conference 035; Keynote 097200.B2 has been added to the east wall.
- Conference 035; Keynote 122413 located on the west wall has been eliminated.
- Classroom 036; Keynote 097200.B has been added to the east wall.
- Classroom 036; Keynote 101100.B and accompanying dimension and tackboard have been added to the south wall adjacent to Door 036.1.
- Classroom 044; Keynotes 097260.A and 097200.B have been added to the east wall.
- Classroom 044; Keynote 101100.B and accompanying tackboard assembly have been removed from the north wall.
- Lab 045; Keynotes 101100.A and 115213.A along with accompanying markerboard assembly have been removed from the south wall.
- Lab 045; Keynote 097200.B has been added to the south wall.
- Lab 046; Keynote 101100.B and accompanying tackboard assembly has been removed from the north and south walls.
- Lab 046; Keynote 097200.B2 has been added to the south and east walls.
- Lab 046; Keynotes 097260.A and 097200.B2 have been added to the north wall.

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- Lab 046; Keynote 097200.B has been added to the west wall.
- Office 060; Keynote 099737.A has been added to the east wall.
- Office 060; Keynote 099737.A has been added to the north wall.
- Rack 066; Keynote 101100.A and accompanying dimensions and markerboard have been added to the west wall.
- Rack 066; Keynote 122413 located on the east wall has been eliminated.
- Corridor 067; Keynote 101100.B and accompanying dimensions and tackboard have been added to the wall outside Workroom 064.

ADD 2-6. Refer to Sheet A100B:

- Corridor 008N; Keynote 101100.B and accompanying dimension and tackboard have been added to the west wall outside of Custodial 012.
- Animal 013; Keynote 101100.A and accompanying dimension and markerboard have been added to the east wall.
- Floor slope and drain elevation has been provided for floor drain in Bio. Entry 016.
- Anatomy 021; Keynote 101100.A and accompanying dimension and markerboard have been added to the east wall.
- Anatomy 021; The GWB control joint and accompanying dimension at the east wall have been removed.
- Biology 024; Keynote 097200.B has been added to the south wall.
- Ecology 025; Keynote 097200.B has been added to the north wall.

ADD 2-7. Refer to Sheet A101A:

- Conference 133; Keynote 097200.B has been added to the south wall.
- Classroom 142; Keynote 101100.B and associated tackboard have been removed from the south wall.
- Classroom 142; The GWB control joint at the south wall has been removed.
- Classroom 142; Keynote 097200.B has been added to the west wall.
- Classroom 142; Keynotes 097200.B2 and 097260.A have been added to the south wall.
- Classroom 142; Keynote 097200.B2 has been added to the north wall.
- Classroom 143; Keynote 101100.B and associated tackboard have been removed from the south wall.
- Classroom 143; The GWB control joint at the south wall has been removed.
- Classroom 143; Keynotes 097200.B2 and 097260.A have been added to the south wall.
- Classroom 143; Keynote 097200.B has been added to the east wall.
- Classroom 143; Keynote 097200.B2 has been added to the north wall.
- Classroom 144; Keynote 101100.B and associated tackboard have been removed from the south wall.
- Classroom 144; The GWB control joint at the south wall has been removed.
- Classroom 144; Keynotes 097200.B2 and 097260.A have been added to the south wall.
- Classroom 144; Keynote 097200.B has been added to the west wall.
- Classroom 150; Keynote 101100.B and associated tackboard have been removed from the east wall.
- Classroom 150; The GWB control joint on the north wall has been shifted east to align with the outside corner of Utility 150A.
- Classroom 150; Sheet Note "Note 5" has been added to the north wall and the sheet note description has been added to the Sheet Specific Notes Legend.
- Classroom 150; The GWB control joint on the south wall has been eliminated.
- Classroom 150; Keynotes 097200.B and 097260.A have been added to the east wall.

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- Classroom 150; Keynote 097200.B2 has been added to the north wall.
- Lecture 151; Keynote 101100.B and associated tackboard have been removed from the south and north walls.
- Lecture 151; The GWB control joint adjacent to the base cabinets in the northwest and southwest corners of the room have been removed.
- Lecture 151; Keynote 097200.B has been added to the west wall.
- Lecture 151; Keynote 097200.B2 and 097260.A have been added to the north wall and the south wall.
- Lecture 151; A dimension has been placed to locate the intended position of the control joint along the south and north walls.
- Corridor 152; Keynote 101100.B and associated tackboard and locating dimensions have been added to the north wall, west end of corridor outside of Collab 166.
- Classroom 153; Keynote 101100.B and associated tackboard have been removed from the north wall.
- Classroom 153; The GWB control joint at the north wall has been removed.
- Classroom 153; Keynotes 097200.B2 and 097260.A have been added to the north wall.
- Classroom 153; Keynote 097200.B has been added to the west wall.
- Classroom 154; Keynote 101100.B and associated tackboard have been removed from the north wall.
- Classroom 154; The GWB control joint at the north wall has been removed.
- Classroom 154; Keynote 097200.B has been added to the east wall.
- Classroom 154; Keynotes 097200.B2 and 097260.A have been added to the north wall.
- Classroom 155; Keynote 101100.B and associated tackboard have been removed from the north wall.
- Classroom 155; The GWB control joint at the north wall has been removed.
- Classroom 155; Keynotes 097200.B2 and 097260.A have been added to the north wall.
- Classroom 155; Keynote 097200.B has been added to the west wall.
- Collab 156; Keynote 099737.A has been added to the south wall.
- Collab 166; Keynote 099737.A has been added to the south wall.

ADD 2-8. Refer to Sheet A101B:

- Corridor 106N; Keynote 101100.B and associated tackboard have been added to the west wall outside of Chase C01 along with control dimensions.
- Collab 110; Keynote 099727.A has been added to the south wall.
- Corridor 118; Keynote 099727.A has been added to the south wall.
- Collab 119; Keynote 099727.A has been added to the west wall.
- Classroom 123; Keynote 097200.B has been added to the north wall.
- Collab 125; Keynote 099737.A has been added to the west and south walls.
- Lab 128; Keynote 101100.C and associated slateboard have been added to the south wall.
- Lab 128; The gas shut-off and fire extinguisher on the south wall are to be relocated so they are between the southwest inside corner and west edge of the new slateboard. Coordinate in the field.
- Lab 130; Keynote 101100.A and associated markerboard have been added to the south wall.
- Lab 130; Keynote 097200.B has been added to the north wall.
- Conference 133; Keynote 097200.B has been added to the south wall.

ADD 2-9. Refer to Sheet A102B:

- Description for Sheet Specific Note 7 has been added to the Legend.
- New Sheet Specific Note 10 has been added to the Legend.

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- Corridor 209N; Keynote 101100.B and associated tackboard and locating dimension have been added to the west wall just outside of Chase C01.
- Collab 211; Keynote 099737.A has been added to the south wall.
- Collab 222; Keynote 099737.A has been added to the west wall.
- Instrument 225; Keynote 101100.A and associated markerboard and locating dimensions have been added to the east wall.
- Chem. Res. 227; Keynote 101100.A and associated markerboard and locating dimensions have been added to the east wall.
- Collab 228; Keynote 099737.A has been added to the west wall as well as at each of the south walls of the seating niches located on the south side of the room.
- Chemistry 229; Keynotes 097200.B and 097200.C have been added to the west wall.
- Stock 230N; Keynote 101100.A and associated markerboard and Sheet Note 10 have been added to the east wall.
- Stock 230S; Keynote 101100.A and associated markerboard and Sheet Note 10 have been added to the east wall.
- Prep 231; Keynote 101100.A and associated markerboard and Sheet Note 10 have been added to the east wall.
- Chemistry 232; Keynote 097200.B has been added to the west wall.
- Research 234; Keynote 101100.A has been added to the west wall.
- Research 235; Keynote 101100.A has been added to the west wall.
- Green Head 236; Keynote 101100.A has been added to the west wall.

ADD 2-10. Refer to Sheet A104:

- Lecture 109; Keynotes 097200.B2 and 097200.C have been added to the west angled walls.
- Lecture 109; Keynote 101100.D has been added to the west wall.

ADD 2-11. Refer to Sheet A106:

- Collaboration 202; Keynotes 097200.B2 and 097200.C have been added to the south wall.
- Prep 205; Keynote 101100.A and associated markerboard and locating dimensions have been added to the south wall.
- Genetics 212; Keynote 097200.B has been added to the north wall.
- A&P Micro 213; Keynote 097200.B has been added to the north wall.

ADD 2-12. Refer to Sheet A120; The following modifications have been made:

- Descriptions for the following Room Finish Schedule Notes have been modified: 10, 11, 18, 29
- Descriptions for the following Room Finish Schedules Notes have been added: 26, 27, 28, 31, 33, 34, 35, 36, 37, 38, 39
- Modifications to finished in the following rooms have been made: 007, 024, 025, 033, 035, 036, 044, 045, 046, 060, 101, 102, 103, 104, 105, 109, 119, 123, 125, 130, 133, 134, 142, 143, 144, 150, 151, 153, 154, 155, 202, 208, 212, 213, 228, 229, 232, ST03
- The following rooms have been removed from the Room Finish Schedule: 211C, C03

ADD 2-13. Refer to Sheet A121:

- Door 010.2 should be changed to a 4'-0" x 7'-0" door.
- Doors 021.2 and 022.1 should be changed to an 'F' door type.

ADD 2-14. Refer to Sheet A600:

- Sheet A600 Sheet Specific Note “Note 7” has been added. Note 7 appears in Detail D8 but description was never placed on the sheet.
- Refer to Detail A1; Writeable Surface note and come accessory keynotes have been modified.

ADD 2-15. Refer to Sheet A601:

- Detail K10; Modify keynotes at writeable wall surface.
- Detail G13; Modify keynotes to reflect changes made to writeable wall surfaces
- Detail G16; Modify keynotes to reflect changes made to writeable wall surfaces

ADD 2-16. Refer to Sheet A801A:

- Classroom 143; VCT-2 has been added as a finished floor surface at the east end of the room.
- Classroom 150; VCT-2 has been added as a finished floor surface at the east end of the room.

ADD 2-17. Refer to Sheet A801B:

- Classroom 123; VCT-2 has been added as a finished floor surface at the north end of the room.

ADD 2-18. Drawing A900B.3. Change fixture to type HCW-4

ADD 2-19. Drawing A960. Add fixture type HCW-4 to schedule.

ADD 2-20. Drawing A963. Update elevation 5 to reflect HCW-4 fixtures at sink.

ADD 2-21. Drawing EQ700. GA-3 sink now refers to plumbing schedule. Sink to be E5 type.

ADD 2-22. Drawing P100B.2. Add fixture E5 tag for sink in the Ecology / AG. room.

ADD 2-23. Drawing P100B.3. Add fixture E5 tag for sink in the Gross Anatomy and General Biology rooms.

ADD 2-24. Drawing P200B.2. Add fixture E5 tag for sink in the Ecology / AG. room.

ADD 2-25. Drawing P200B.3. Add fixture E5 tag for sink in the Gross Anatomy and General Biology rooms.

ADD 2-26. Drawing P700. Add fixture E5 to the plumbing fixture schedule for the free standing, stainless steel sinks in the Gross Anatomy, General Biology and Ecology / AG. Rooms.

MODIFICATIONS TO THE SPECIFICATIONS

ADD 2-27. Refer to Section 000101 “Table of Contents”; Sections not previously included in the TOC have been added.

ADD 2-28. Refer to Section 083323 “Overhead Coiling Doors”, Article 2.3, Paragraphs M.1 and 2; Change text to read as follows:

1. Baked-Enamel or Powder-Coated Finish: Color as selected by Architect from manufacturer's full range with intent to match the exterior brick at existing building and exterior precast at new addition.
2. Interior Curtain-Slat Facing: Color as selected to match color of interior paint selection.

ADD 2-29. Refer to Section 083323 "Overhead Coiling Doors", Article 2.4, Paragraph A.1; Material to change from steel to aluminum. Replace text with the following:

1. Aluminum Door Curtain Slats: ASTM B209 (ASTM B209M) sheet or ASTM B221 (ASTM B221M) extrusions, alloy and temper standard with manufacturer for type of use and finish indicated; thickness of 0.050 inch (1.27 mm); and as required.

ADD 2-30. Refer to Section 083323 "Overhead Coiling Doors", Article 2.4, Paragraph A.3; Material to change from steel to aluminum. Replace text with the following:

3. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face, with minimum aluminum thickness of 0.032 inch (0.80 mm).

ADD 2-31. Refer to Section 083323 "Overhead Coiling Doors", Article 2.5, Paragraph A.1; Material to change from steel to aluminum. Replace text with the following:

1. Aluminum: 0.040-inch- (1.02-mm-) thick aluminum sheet complying with ASTM B209 (ASTM B209M), of alloy and temper recommended by manufacturer and finisher for type of use and finish indicated.

ADD 2-32. Refer to Section 083323 "Overhead Coiling Doors"; Add Article 2.12.

2.12 ALUMINUM FINISHES

- A. Baked-Enamel or Powder-Coat Finish: AAMA 2603. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

ADD 2-33. Refer to Section 087100 "Door Hardware"; The entire specification has been re-issued. Some door sizes have been modified, doors have been added and clarifications made to doors scheduled to receive card access hardware.

- Set 4.0; Changed finishes to dark color used on other exterior openings
- Set 6.0; Added cylinder for overhead coiling doors.
- Added new Set 60.0 for new door 037.1
- The independent DPS has been defined as a Division 08 item. This impacts multiple hardware sets.
- Updates were made to Sets 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0 and 27.0 to reflect adjustments to classroom door functions based on meeting with Owner held on May 1, 2018. This change involved removing key switches, mortise cylinders and 2 cylinder cores plus revising the operation narrative to indicate the desired ability to override the magnetic locks by the emergency management system and access control timer.
- A note has been added to Set 28.0 to accommodate taller hinges at door 010.2 which is scheduled to be changed from a 3'-0" door to a 4'-0" door.

ADD 2-34. Refer to Section 096519 "Resilient Tile Flooring", Article 2.2, Paragraph F; Eliminate the references to percentages of tile and replace with the following:

1. Refer to drawing Series A800 Sheets for pattern of VCT.

- ADD 2-35.** Refer to Section 096813-A "Tile Carpeting Lichen Installation Layouts"; This section has been added to the project.
- ADD 2-36.** Refer to Section 097200 "Wall Coverings"; Dry erase wallcovering products have been added. Replace entire section.
- ADD 2-37.** Refer to Section 097260 "Tackable Wall Coverings"; This section has been added to the project.
- ADD 2-38.** Refer to Section 099737 "Dry Erase Coatings"; This section has been added to the project.
- ADD 2-39.** Refer to Section 101100 "Visual Display Units"; This section has been added to the project.
- ADD 2-40.** Specification 123553.19. Add HCW-4

ARCHITECTURAL PRIOR APPROVALS / SUBSTITUTIONS

- ADD 2-41.** The manufacturers listed herein will be considered approved for bidding. However, the proposed substitution must meet the intent of the specifications and will be subject to shop submittal approval during construction. Burden of Proof is on Proposer. Bidders shall bear all responsibility for coordinating and performing related changes in the Work necessitated by such substitution and include such costs in the Bid:

<u>Specification Section</u>	<u>Manufacturer / Proposed Product</u>
a. 096513 – Resilient Base & Accessories	Burke Industries Burke Mercer Cove Base
b. 096513 – Resilient Base & Accessories	Burke Industries Burke Endura Uni-Step Stair Treads Risers with Coordinating Landing Tile
c. 096513 – Resilient Base & Accessories	Burke Industries Burke Mercer Transitions
d. 098433 – Sound-Absorbing Wall Units	Armstrong SoundSoak Wall Units

ATTACHMENTS

- ADD 2-42.** The following attachments are included as part of this addendum:

<u>Attachment</u>	<u>Description</u>	<u># of Pages</u>
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• 083323	Overhead Coiling Doors	6
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• EQ700	Replacement Sheet	1
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• P100B.3	Replacement Sheet	1
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• P200B.3	Replacement Sheet	1
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End of Addendum #2

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The following key represents the team members responsible for preparation of the individual specification sections as identified in the column titled “Author”.

BEN	Benesch
CRB	Clark, Richardson & Biskup
JED	JE Dunn
MEG	ME Group
OA	Olsson Associates
ROY	R.O. Youker, Inc.
SHA	Sinclair Hille Architects
VIR	Vireo

END OF TABLE OF CONTENTS

SECTION 083323 - OVERHEAD COILING DOORS**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. Insulated service doors.
- B. Related Requirements:
 - 1. Section 055000 "Metal Fabrications" for miscellaneous steel supports, door-opening framing, corner guards, and bollards.

1.3 ACTION SUBMITTALS

- A. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.
 - 1. Include plans, elevations, sections, and mounting details.
 - 2. Include details of equipment assemblies, and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include points of attachment and their corresponding static and dynamic loads imposed on structure.
 - 4. For exterior components, include details of provisions for assembly expansion and contraction and for excluding and draining moisture to the exterior.
 - 5. Show locations of controls, locking devices, and other accessories.
 - 6. Include diagrams for power, signal, and control wiring.
- B. Samples for Initial Selection: Manufacturer's finish charts showing full range of colors and textures available for units with factory-applied finishes.
 - 1. Selection will be from full range of available non-standard color options.
 - 2. Include similar Samples of accessories involving color selection.
- C. Samples for Verification: For each type of exposed finish on the following components, in manufacturer's standard sizes:
 - 1. Curtain slats.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For overhead coiling doors to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.
 - 1. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.
- B. Accessibility Standard: Comply with applicable provisions in the ABA standards of the Federal agency having jurisdiction and ICC A117.1.

1.6 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of doors that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain overhead coiling doors from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance, Exterior Doors: Capable of withstanding the following design wind loads:
 - 1. Design Wind Load: As indicated on Drawings.
 - 2. Deflection Limits: Design overhead coiling doors to withstand design wind load without evidencing permanent deformation or disengagement of door components.
 - 3. Operability under Wind Load: Design overhead coiling doors to remain operable under design wind load, acting inward and outward.

2.3 DOOR ASSEMBLY **(083323.A)**

- A. Insulated Service Door: Overhead coiling door formed with curtain of interlocking metal slats.
 - 1. Basis-of-Design Product: Requests for manufacturer substitutions prior to bidding will be reviewed and responded to in conformance with Division 1 requirements. Subject to compliance with requirements, provide **Overhead Door Corporation Series 625** or comparable product pre-approved during bidding:
 - a. Cookson Company.
 - b. Cornell Iron Works, Inc.
 - c. Raynor.

- B. Operation Cycles: Door components and operators capable of operating for not less than 20,000. One operation cycle is complete when a door is opened from the closed position to the fully open position and returned to the closed position.
- C. Air Infiltration: Maximum rate of 0.08 cfm/sq. ft. (0.406 L/s per sq. m) at 15 and 25 mph (24.1 and 40.2 km/h) when tested according to ASTM E 283 or DASMA 105.
- D. Curtain R-Value: 6.0 deg F x h x sq. ft./Btu (1.057 K x sq. m/W).
- E. Door Curtain Material: Aluminum.
- F. Door Curtain Slats: Flat profile slats of 2-5/8-inch (67-mm) center-to-center height.
 - 1. Insulated-Slat Interior Facing: Metal.
 - 2. Gasket Seal. Manufacturer's standard continuous gaskets between slats.
- G. Bottom Bar: Two angles, each not less than 1-1/2 by 1-1/2 by 1/8 inch (38 by 38 by 3 mm) thick; fabricated from hot-dip galvanized steel and finished to match door.
- H. Curtain Jamb Guides: Galvanized steel with exposed finish matching curtain slats.
- I. Hood: Match curtain material and finish.
 - 1. Shape: Round.
 - 2. Mounting: Face of wall.
- J. Locking Devices: Equip door with locking device assembly.
 - 1. Locking Device Assembly: Single-jamb side locking bars, operable from inside and outside with cylinders.
- K. Manual Door Operator: Push-up operation.
- L. Curtain Accessories: Equip door with weatherseals, push/pull handles and pull-down strap.
- M. Door Finish:
 - 1. Baked-Enamel or Powder-Coated Finish: Color as selected by Architect from manufacturer's full range with intent to match the exterior brick at existing building and exterior precast at new addition.
 - 2. Interior Curtain-Slat Facing: Color as selected to match color of interior paint selection.

2.4 DOOR CURTAIN MATERIALS AND CONSTRUCTION

- A. Door Curtains: Fabricate overhead coiling-door curtain of interlocking metal slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:
 - 1. Aluminum Door Curtain Slats: ASTM B209 (ASTM B209M) sheet or ASTM B221 (ASTM B221M) extrusions, alloy and temper standard with manufacturer for type of use and finish indicated; thickness of 0.050 inch (1.27 mm); and as required.
 - 2. Insulation: Fill slats for insulated doors with manufacturer's standard thermal insulation complying with maximum flame-spread and smoke developed indexes of 75 and 450.

respectively, according to ASTM E 84 or UL 723. Enclose insulation completely within slat faces.

3. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face, with minimum aluminum thickness of 0.032 inch (0.80 mm).

- B. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain.

2.5 HOODS

- A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.

1. Aluminum: 0.040-inch- (1.02-mm-) thick aluminum sheet complying with ASTM B209 (ASTM B209M), of alloy and temper recommended by manufacturer and finisher for type of use and finish indicated.

2.6 LOCKING DEVICES

- A. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.

1. Lock Cylinders: As specified in Section 087100 "Door Hardware" and keyed to building keying system.
2. Keys: Two for each cylinder.

2.7 CURTAIN ACCESSORIES

- A. Weatherseals for Exterior Doors: Equip each exterior door with weather-stripping gaskets fitted to entire exterior perimeter of door for a weather-resistant installation unless otherwise indicated.

1. At door head, use 1/8-inch- (3-mm-) thick, replaceable, continuous-sheet baffle secured to inside of hood or field-installed on the header.
2. At door jambs, use replaceable, adjustable, continuous, flexible, 1/8-inch- (3-mm-) thick seals of flexible vinyl, rubber, or neoprene.

- B. Push/Pull Handles: Equip each push-up-operated or emergency-operated door with lifting handles on each side of door, finished to match door.

- C. Pull-Down Strap: Provide pull-down straps for doors more than 84 inches (2130 mm) high.

2.8 COUNTERBALANCE MECHANISM

- A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a

spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.

- B. Counterbalance Barrel: Fabricate spring barrel of manufacturer's standard hot-formed, structural-quality, seamless carbon-steel pipe, of sufficient diameter and wall thickness to support rolled-up curtain without distortion of slats and to limit barrel deflection to not more than 0.03 in./ft. (2.5 mm/m) of span under full load.
- C. Counterbalance Spring: One or more oil-tempered, heat-treated steel helical torsion springs. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Secure ends of springs to barrel and shaft with cast-steel barrel plugs.
- D. Torsion Rod for Counterbalance Shaft: Fabricate of manufacturer's standard cold-rolled steel, sized to hold fixed spring ends and carry torsional load.
- E. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.9 MANUAL DOOR OPERATORS

- A. General: Equip door with manual door operator by door manufacturer.
- B. Push-up Door Operation: Lift handles and pull rope for raising and lowering doors, with counterbalance mechanism designed so that required lift or pull for door operation does not exceed 25 lbf (111 N).

2.10 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM/NOMMA 500 for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.11 STEEL AND GALVANIZED-STEEL FINISHES

- A. Factory Prime Finish: Manufacturer's standard primer, compatible with field-applied finish. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.
- B. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.

2.12 ALUMINUM FINISHES

- A. Baked-Enamel or Powder-Coat Finish: AAMA 2603. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine substrates areas and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install overhead coiling doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- B. Install overhead coiling doors, hoods, controls, and operators at the mounting locations indicated for each door.
- C. Accessibility: Install overhead coiling doors, switches, and controls along accessible routes in compliance with the accessibility standard.

3.3 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.
 - 1. Complete installation and startup checks according to manufacturer's written instructions.
 - 2. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

3.4 ADJUSTING

- A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.
 - 1. Adjust exterior doors and components to be weather resistant.
- B. Lubricate bearings and sliding parts as recommended by manufacturer.
- C. Adjust seals to provide tight fit around entire perimeter.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain overhead coiling doors.

END OF SECTION 083323

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 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Sliding doors.
 - 3. 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.
 - 3. Automatic operators.
 - 4. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section "Hollow Metal Doors and Frames".
 - 2. Division 08 Section "Flush Wood Doors".
 - 3. Division 08 Section "Integrated Door Opening Assemblies".
 - 4. Division 08 Section "Aluminum-Framed Entrances and Storefronts".
 - 5. Division 08 Section "All-Glass Entrances".
 - 6. Division 28 Section "Access Control".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. UL/ULC and CSA C22.2 – Standards for Automatic Door Operators Used on Fire and Smoke Barrier Doors and Systems of Doors.
 - 8. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards:
 - 1. ANSI/BHMA Certified Product Standards - A156 Series
 - 2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 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. 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.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. 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.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
 - 1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
 - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
 - b. Complete (risers, point-to-point) access control system block wiring diagrams.
 - c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.
- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Informational Submittals:
 1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- D. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- E. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

- F. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
1. Function of building, purpose of each area and degree of security required.
 2. Plans for existing and future key system expansion.
 3. Requirements for key control storage and software.
 4. Installation of permanent keys, cylinder cores and software.
 5. Address and requirements for delivery of keys.
- G. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 3. Review sequence of operation narratives for each unique access controlled opening.
 4. Review and finalize construction schedule and verify availability of materials.
 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- H. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving 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 related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. 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".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.
- C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Automatic Operator Warranty: Written warranty, executed by manufacturer, agreeing to repair or replace components of automatic door operators that fail in materials or workmanship within specified warranty period after final acceptance by Owner. Failures include, but are not limited to, the following:
 - 1. Faulty or sporadic operation of automatic door operator, including activation and safety devices.
 - 2. Deterioration of metals, metal finishes, and other materials beyond normal weathering or use.
- E. Special Warranty Periods:
 - 1. Seven years for heavy duty cylindrical (bored) locks and latches.
 - 2. Five years for exit hardware.
 - 3. Twenty five years for manual surface door closer bodies.
 - 4. Five years for motorized electric latch retraction exit devices.
 - 5. Two years for electromechanical door hardware.
 - 6. Two years from date of Substantial Completion for Automatic Operators.

1.8 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. Automatic Operator Maintenance Service: Beginning at Substantial Completion, and running concurrent with the specified warranty period, provide continuous (6) months full maintenance by skilled employees of automatic door operator Installer. Include planned and preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door operation. Provide parts and supplies the same as those used in the manufacture and installation of original equipment.
- C. Extended Automatic Operator Maintenance Support and Service Agreement: Submit for Owner's consideration an optional extended Service Agreement for the installed automatic door operator system. The extended Service Agreement is considered elective and is without manufacturer's requirement stipulating mandatory coverage for owner and/or vendor system support.
 - 1. A published copy of this agreement to be included with the submittal package
 - 2. Support for the installed automatic door operator system is provided through the vendor under a specified, limited 24 hour support program.
 - 3. Automatic door operators and components are to be available on a one-day turn-around time frame from the vendor.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.
 - 1. Quantity: Provide the following hinge quantity, unless otherwise indicated:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.

- d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
 - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
 4. Hinge Options: Comply with the following:
 - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
 5. Acceptable Manufacturers:
 - a. Bommer Industries (BO).
 - b. Hager Companies (HA).
 - c. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK).
- B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.
 1. Acceptable Manufacturers:
 - a. Bommer Industries (BO).
 - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK).
 - c. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
- C. Pin and Barrel Continuous Hinges: ANSI/BHMA A156.26 Grade 1-600 certified pin and barrel continuous hinges with minimum 14 gauge Type 304 stainless steel hinge leaves, concealed teflon coated stainless pin, and twin self-lubricated nylon bearings at each knuckle separation. Factory trim hinges to suit door height and prepare for electrical cut-outs.
 1. Acceptable Manufacturers:
 - a. Markar Products; ASSA ABLOY Architectural Door Accessories (MR).
 - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK).
 - c. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).

- D. Sliding and Folding Door Hardware: Hardware is to be of type and design as specified and should comply with ANSI/BHMA A156.14.
1. Sliding Bi-Passing Pocket Door Hardware: Provide complete sets consisting of track, hangers, stops, bumpers, floor channel, guides, and accessories indicated.
 2. Bi-folding Door Hardware: Rated for door panels weighing up to 125 lb.
 3. Pocket Sliding Door Hardware: Rated for doors weighing up to 200 lb.
 4. Acceptable Manufacturers:
 - a. Hager Companies (HA).
 - b. Johnson Hardware (JO).
 - c. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).

2.3 POWER TRANSFER DEVICES

- A. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
1. Acceptable Manufacturers:
 - a. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE) – EL-CEPT Series.
 - b. Securitron (SU) - EL-CEPT Series.
 - c. Von Duprin (VD) - EPT-10 Series.
- B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.
1. Provide one each of the following tools as part of the base bid contract:
 - a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Electrical Connecting Kit: QC-R001.
 - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Connector Hand Tool: QC-R003.
 2. Acceptable Manufacturers:
 - a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) – QC-C Series.

2.4 DOOR OPERATING TRIM

- A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.
1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
 2. Furnish dust proof strikes for bottom bolts.
 3. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
 4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
 5. Acceptable Manufacturers:
 - a. Door Controls International (DC).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).
- B. Coordinators: ANSI/BHMA A156.3 certified door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.
1. Acceptable Manufacturers:
 - a. Door Controls International (DC).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).
- C. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
 3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
 4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
 5. Acceptable Manufacturers:
 - a. Hiawatha, Inc. (HI).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).
- D. Locking Pull System: Post-mount style door pulls with integrated deadbolt locking system in type and design as specified in the Hardware Sets. Pulls available in multiple head, floor, or combination locking options, with outside keyed rim cylinder operation and inside turn piece activation. Mounting applications for aluminum, glass, steel and wood doors, with customized sizing and configuration options. Pull finishes include brass, bronze, and stainless steel.

1. Acceptable Manufacturers:

- a. Blumcraft (BL) – Locking Ladder Series.
- b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO) – LP Series.

2.5 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years of experience designing secured master key systems and have on record a published security keying system policy.
- B. Cylinders: Original manufacturer cylinders complying with the following:
 - 1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
 - 2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 - 3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
 - 4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 - 5. Keyway: Match Facility Standard.
- C. Keying System: Each type of lock and cylinders to be factory keyed.
 - 1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
 - 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 - 3. Existing System: Key locks to Owner's existing system.
- D. Key Quantity: Provide the following minimum number of keys:
 - 1. Change Keys per Cylinder: Two (2)
 - 2. Master Keys (per Master Key Level/Group): Five (5).
 - 3. Construction Keys (where required): Ten (10).
- E. Construction Keying: Provide construction master keyed cylinders.
- F. Key Registration List (Bitting List):
 - 1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
 - 2. Provide transcript list in writing or electronic file as directed by the Owner.

2.6 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Grade 1 certified.
 - 1. Furnish with solid cast levers, standard 2 3/4" backset, and 1/2" (3/4" at rated paired openings) throw brass or stainless steel latchbolt.

2. Locks are to be non-handed and fully field reversible.
3. Extended cycle test: Locks to have been cycle tested in ordinance with ANSI/BHMA 156.2 requirements to 2 million cycles.
4. Acceptable Manufacturers:
 - a. Sargent Manufacturing (SA) – 10 Line.
 - b. Stanley Best (BE) – 9K Series.

2.7 ELECTROMECHANICAL LOCKING DEVICES

- A. Electromechanical Mortise Locksets, Grade 1 (Heavy Duty): Subject to same compliance standards and requirements as mechanical mortise locksets, electrified locksets to be of type and design as specified below.
1. Electrified Lock Options: Where indicated in the Hardware Sets, provide electrified options including: outside door lock/unlock trim control, latchbolt and lock/unlock status monitoring, deadbolt monitoring, and request-to-exit signaling. Support end-of-line resistors contained within the lock case. Unless otherwise indicated, provide electrified locksets standard as fail secure.
 2. Energy Efficient Design: Provide lock bodies which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.
 3. High Security Monitoring: Provide lock bodies which have built-in request to exit monitoring and are provided with accompanying door position switches. Provide a resistor configuration which is compatible with the access control system.
 4. Acceptable Manufacturers:
 - a. Sargent Manufacturing (SA) - 8200 Series.
 - b. Stanley Best (BE) - 40HW EL/EU Series.

2.8 AUXILIARY LOCKS

- A. Mortise Deadlocks, Large Case: ANSI/BHMA A156.13, Series 1000, Grade 1, certified large case mortise type deadlocks constructed of heavy gauge wrought corrosion resistant steel. One piece stainless steel bolts with a 1" throw. Deadlocks to be products of the same source manufacturer and keyway as other locksets.
1. Acceptable Manufacturers:
 - a. Adams Rite

2.9 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
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: Provide manufacturer's special strike box fabricated for aluminum framing.
 4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.
- B. Standards: Comply with the following:
1. Strikes for Mortise Locks and Latches: BHMA A156.13.
 2. Strikes for Bored Locks and Latches: BHMA A156.2.
 3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
 4. Dustproof Strikes: BHMA A156.16.

2.10 ELECTROMAGNETIC LOCKING DEVICES

- A. Surface Electromagnetic Locks (Heavy Duty): Electromagnetic locks to be surface mounted type conforming to ANSI A156.23, Grade 2 with minimum holding force strength of 1,200 pounds. Locks to be capable of accepting between 12 to 24 volts direct current and be UL listed for use on fire rated door assemblies. Electromagnetic coils are to consume no more than 1.5W during normal operation. Locks are to have an integrated door position switch, tamper switch, and lock bond sensor. Locks are to have integrated motion sensor and/or security camera as indicated in the hardware sets. Locks to be capable of detecting door prop conditions and entering low power mode. Provide mounting accessories as needed to suit opening conditions. Power supply to be by the same manufacturer as the lock with combined products having a lifetime replacement warranty.
1. Acceptable Manufacturers:
 - a. Securitron (SU) – M680E Series.

2.11 CONVENTIONAL EXIT DEVICES

- A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
 2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the

proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.

3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
 4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
 5. Electromechanical Options: Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified in hardware sets. Include any specific controllers when conventional power supplies are not sufficient to provide the proper inrush current.
 6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
 - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
 7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
 8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
 9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
 10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
 11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.
1. Acceptable Manufacturers:
 - a. Sargent Manufacturing (SA) - 80 Series.
 - b. Von Duprin (VD) - 35A/98 XP Series.
- C. Conventional Push Rail Exit Devices, Aluminum Entrances: ANSI/BHMA A156.3, Grade 1 certified panic devices furnished in the functions specified in the Hardware Sets. Push bar to be made of extruded aluminum, maximum projection of 3", available in clad or anodized architectural finishes. Exit device design to fit narrow (minimum 2"), medium, or wide stile aluminum door applications.
1. Acceptable Manufacturers:

a. Adams Rite Manufacturing (AD) – 3600/8000 Series.

D. Removable Mullions: ANSI/BHMA A156.3 removable steel/aluminum mullions with top and bottom retainers and a primed paint or anodized finish.

1. Provide keyed removable feature where specified in the Hardware Sets.
2. Provide stabilizers and mounting brackets as required.
3. Provide electrical quick connection wiring options as specified in the hardware sets.
4. Acceptable Manufacturers:

- a. Corbin Russwin Hardware (RU) - 700/900 Series.
- b. Sargent Manufacturing (SA) - 980S/A Series.
- c. Yale Locks and Hardware (YA) - M200 Series.

2.12 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.

1. Acceptable Manufacturers:
 - a. LCN Closers (LC) - 4040XP Series.
 - b. Sargent Manufacturing (SA) - 281 Series.

2.13 ELECTROMECHANICAL DOOR OPERATORS

- A. General: Provide low energy operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for compliance with UL 325. Coordinate operator mechanisms with door operation, hinges, and activation devices.
 1. Fire-Rated Doors: Provide door operators for fire-rated door assemblies that comply with NFPA 80 for fire-rated door components and are listed and labeled by a qualified testing agency.
- B. Standard: Certified ANSI/BHMA A156.19.
- C. Performance Requirements:
 1. Opening Force if Power Fails: Not more than 15 lbf required to release a latch if provided, not more than 30 lbf required to manually set door in motion, and not more than 15 lbf required to fully open door.
 2. Entrapment Protection: Not more than 15 lbf required to prevent stopped door from closing or opening.
- D. Configuration: Surface mounted or in-ground as required. Door operators to control single swinging and pair of swinging doors.
- E. Operation: Power opening and spring closing operation capable of meeting ANSI A117.1 accessibility guideline. Provide time delay for door to remain open before initiating closing cycle as required by ANSI/BHMA A156.19.
- F. Features: Operator units to have full feature adjustments for door opening and closing force and speed, backcheck, motor assist acceleration from 0 to 30 seconds, time delay, vestibule interface delay, obstruction recycle, and hold open time from 0 up to 30 seconds.
- G. Provide outputs and relays on board the operator to allow for coordination of exit device latch retraction, electric strikes, magnetic locks, card readers, safety and motion sensors and specified auxiliary contacts.
- H. Brackets and Reinforcements: Manufacturer's standard, fabricated from aluminum with nonferrous shims for aligning system components.
- I. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Record 8100 Series, Facility Standard.

2.14 ARCHITECTURAL TRIM

- A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
 - a. Stainless Steel: 300 grade, .050-inch thick.
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Acceptable Manufacturers:
 - a. Hiawatha, Inc. (HI).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).

2.15 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 1. Acceptable Manufacturers:
 - a. Hiawatha, Inc. (HI).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
 1. Acceptable Manufacturers:

- a. Rixson Door Controls (RF).
- b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
- c. Sargent Manufacturing (SA).

2.16 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
 - 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Acceptable Manufacturers:
 - 1. National Guard Products (NG).
 - 2. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
 - 3. Reese Enterprises, Inc. (RE).

2.17 ELECTRONIC ACCESSORIES

- A. Key Switches: Key switches furnished standard with stainless steel single gang face plate with a 12/24VDC bi-color LED indicator. Integral backing bracket permits integration with any 1 1/4" or 1 1/2" mortise type cylinder. Key switches available as momentary or maintained action and in narrow face plate options.
 - 1. Acceptable Manufacturers:
 - a. Security Door Controls (SD) - 800 Series.
 - b. Securitron (SU) - MK Series.

- B. Push-Button Switches: Industrial grade momentary or alternate contact, back-lighted push buttons with stainless-steel switch enclosures. 12/24 VDC bi-color illumination suitable for either flush or surface mounting.
 - 1. Acceptable Manufacturers:
 - a. Security Door Controls (SD) - 400 Series.
 - b. Securitron (SU) - PB Series.
- C. Request-to-Exit Motion Sensor: Request-to-Exit Sensors motion detectors specifically designed for detecting exiting through a door from the secure area to a non-secure area. Include built-in timers (up to 60 second adjustable timing), door monitor with sounder alert, internal vertical pointability coverage, 12VDC or 24VDC power and selectable relay trigger with fail safe/fail secure modes.
 - 1. Acceptable Manufacturers:
 - a. Security Door Controls (SD) - MD-31D Series.
 - b. Securitron (SU) - XMS Series.
 - c. Alarm Controls (AK) – SREX Series.

2.18 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.19 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and 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 work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 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.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

- B. Manufacturer's Abbreviations:

1. MK - McKinney
2. SO - SOSS Invisible Hinges
3. PE - Pemko
4. MR - Markar
5. GS - ASSA ABLOY Glass Solutions
6. RO - Rockwood
7. SA - Sargent
8. SU - Securitron
9. AD - Adams Rite
10. RI - RITE Door
11. BE - Best Access Systems
12. ST - Stanley Works
13. RF - Rixson
14. AK - Alarm Controls
15. NO - Norton

Hardware Sets**Set: 1.0**

Doors: 026.1, 100.1

2	Continuous Hinge	KDFMxx-HD1 PT x Dr Ht		PE
1	Removable Mullion	L980A	US10B	SA
1	Rim Exit Device	55 56 70 8804 864	US10B	SA
1	Rim Exit Device	55 56 8810 864	US10B	SA
1	Cylinder (mullion)	70 980C1	US10B	SA
1	Cylinder Core	1C7xxx (as req'd for building system)	613	BE
1	Door Operator	Stanley Magic Force - 6100	689	ST
2	Door Closer	281 CPS 581-2	EB	SA
2	Drop Plate	281D	EB	SA
1	Threshold	273x292DFGPK x Dr Width		PE
1	Perimeter Seal/Stop	By Door/Frame Supplier		
1	Rain Guard	346D (Dr Width + 4")		PE
2	Sweep	345DNB x Dr Width		PE
1	Electric Power Transfer	EL-CEPT	10B	SU
2	Position Switch	DPS-M-BK		SU
2	Door Switch (mullion mount)	Provided by Operator Supplier		NO
1	Power Supply	Provided by Security Consultant		
1	Wall Mounted Card Reader	Provided By Security Consultant		

Notes:

* Coordinate supply, installation and connection of electrified and access control components.

* Verify electrical requirements and provide power to opening.

* Door is normally closed, secured, monitored and exterior operator switch powered off to prevent access. Presentation of an authorized credential to reader will retract latch of exit device, shunt door position switch and power exterior operator switch to allow access. During designated hours doors may have exit device latch retracted, door position switch shunted and exterior operator switch powered for free egress and access. Inside operator switch is always available for use. Door is to be tied to emergency lock down system for use during emergency events. In the event of a loss of power, door will remain or become closed and secured with exterior operator switch powered off to prevent access. Key override is available for emergency access. Free egress is always available from inside.

Set: 2.0

Doors: 201.2

1	Continuous Hinge	KDFMxx-HD1 x Dr Ht		PE
1	Mortise Deadlock	MS1850S	335	AD
2	Door Pull	RM3301-36 Mtg-Type 5HD	US10B	RO
1	Door Closer	281 OT	EB	SA
1	Threshold	171D		PE
1	Perimeter Seal/Stop	By Door/Frame Supplier		
1	Sweep	345DNB x Dr Width		PE
1	Interior Door Sweep	315DN		PE
1	Motion Sensor Request to Exit	SREX-100		AK
1	Position Switch	DPS-M-BK		SU

Notes:

*Tie door position switch to access control system to monitor for propped door or unauthorized use.

Set: 3.0

Doors: ST04.1, ST05.1

2	Continuous Hinge	KDFMxx-HD1 PT x Dr Ht		PE
1	Removable Mullion	L980A	US10B	SA
1	Rim Exit Device	55 56 70 8804 864	US10B	SA
1	Rim Exit Device	55 56 8810 864	US10B	SA
1	Cylinder (mullion)	70 980C1	US10B	SA
1	Cylinder Core	1C7xxx (as req'd for building system)	613	BE
2	Door Closer	281 CPS 581-2	EB	SA
2	Drop Plate	281D	EB	SA
1	Threshold	273x292DFGPK x Dr Width		PE
1	Mullion Seal	5110BL x Dr Ht		PE
1	Perimeter Seal/Stop	By Door/Frame Supplier		
1	Rain Guard	346D (Dr Width + 4")		PE
2	Sweep	345DNB x Dr Width		PE
1	Electric Power Transfer	EL-CEPT	10B	SU
1	Position Switch	DPS-M-BK		SU
2	Door Wire Harness	Provided By Security Consultant		
2	Frame Wire Harness	Provided By Security Consultant		
1	Power Supply	Provided by Security Consultant		
1	Wall Mounted Card Reader	Provided By Security Consultant		

Notes:

- * Coordinate supply, installation and connection of electrified and access control components.
- * Verify electrical requirements and provide power to opening.
- * Door is normally closed, secured and monitored to prevent access. Presentation of an authorized credential to reader will retract latch of active leaf and shunt door position switch to allow access. During designated hours doors may have both exit device latches retracted and door position switches shunted for free egress and access. Door is to be tied to emergency lock down system for use during emergency events. In the event of a loss of power, doors will remain or become closed and secured to prevent access. Key override is available for emergency access. Free egress is always available from inside.

Set: 4.0

Doors: ST02.1

1	Continuous Hinge	DFM83SLI-HD1 PT		PE
1	Rim Exit Device	55 70 8804 MSL	US10B	SA
1	Door Closer	281 CPS	EB	SA
1	Kick Plate	K105010" (As specified)	US10B	RO
1	Threshold	273x292DFGPK x Dr Width		PE
1	Rain Guard	346D (Dr Width + 4")		PE
1	Gasketing	294DV		PE
1	Sweep	345DNB x Dr Width		PE
1	Electric Power Transfer	EL-CEPT	10B	SU
1	Position Switch	DPS-M-BK		SU
1	Door Wire Harness	Provided By Security Consultant		
1	Frame Wire Harness	Provided By Security Consultant		

Notes:

- * Tie door position switch to access control system to monitor door for propped door and unauthorized use.

Set: 5.0

Doors: 019.1

1	Continuous Hinge	DFM83SLI-HD1 PT		PE
1	Electrified Rim Exit	55 70 8876-24v ETL	US10B	SA
1	Door Closer	281 CPS	EB	SA
1	Kick Plate	K105010" (As specified)	US10B	RO
1	Threshold	273x292DFGPK x Dr Width		PE
1	Rain Guard	346D (Dr Width + 4")		PE
1	Gasketing	294DV		PE
1	Sweep	345DNB x Dr Width		PE
1	Electric Power Transfer	EL-CEPT	10B	SU
1	Position Switch	DPS-M-BK		SU
1	Door Wire Harness	Provided By Security Consultant		
1	Frame Wire Harness	Provided By Security Consultant		
1	Power Supply	Provided by Security Consultant		
1	Wall Mounted Card Reader	Provided By Security Consultant		

Notes:

- * Coordinate supply, installation and connection of electrified and access control components.
- * Verify electrical requirements and provide power to opening.
- * Door is normally closed, secured and monitored to prevent access. Presentation of an authorized credential to reader will unlock trim of exit device and shunt door position switch to allow access. During designated hours doors may have exit device trim unlocked and door position switch shunted for free egress and access. Door is to be tied to emergency lock down system for use during emergency events. In the event of a loss of power, door will remain or become closed and secured to prevent access. Key override is available for emergency access. Free egress is always available from inside.

Set: 6.0

Doors: 018.1, 048.1

1	OH Door Cylinder (verify)	Key to existing system.	US32D	SA
1	OH Door, Track & Hardware	Provided by Door Supplier		
1	OH Door Position Switch	2202		

Notes:

- * Tie door position switch to access control system to monitor propped door and unauthorized use.

Set: 7.0

Doors: XX, ZZ

1	Padlock	11 758		SA
1	Roof Hatch and Hardware	By Roof Hatch Supplier		

Set: 8.0

Doors: 237.1

1	Continuous Hinge	KDFMxx-HD1 x Dr Ht		PE
1	Passage Set	28 10U15 LL	US10B	SA
1	Door Closer	281 CPS 581-2	EB	SA
1	Drop Plate	281D	EB	SA
1	Threshold	171D		PE
1	Perimeter Seal/Stop	By Door/Frame Supplier		
1	Interior Door Sweep	315DN		PE

Notes:

* Prepare door and frame for future connection to access control system per facility standards.

Set: 9.0

Doors: 026.2, 100.2

2	Continuous Hinge	KDFMxx-HD1 PT x Dr Ht		PE
1	Removable Mullion	L980A	US10B	SA
1	Rim Exit Device	55 56 70 8804 864	US10B	SA
1	Rim Exit Device	55 56 8810 864	US10B	SA
1	Cylinder (mullion)	70 980C1	US10B	SA
1	Cylinder Core	1C7xxx (as req'd for building system)	613	BE
2	Overhead Stop	OH10xS x Dr Width	US10B	RO
2	Door Closer	281 CPS 581-2	EB	SA
2	Drop Plate	281D	EB	SA
1	Automatic Opener	Stanley Magic Force - 6100	690	ST
1	Threshold	273x292DFGPK x Dr Width		PE
1	Mullion Seal	5110BL x Dr Ht		PE
1	Perimeter Seal/Stop	By Door/Frame Supplier		
1	Rain Guard	346D (Dr Width + 4")		PE
2	Sweep	345DNB x Dr Width		PE
1	Electric Power Transfer	EL-CEPT	10B	SU
1	Position Switch	DPS-M-BK		SU
2	Door Switch (mullion mount)	Provided by Operator Supplier		NO
2	Door Wire Harness	Provided By Security Consultant		
2	Frame Wire Harness	Provided By Security Consultant		
1	Power Supply	Provided by Security Consultant		
1	Wall Mounted Card Reader	Provided By Security Consultant		

Notes:

* Coordinate supply, installation and connection of electrified and access control components.

* Verify electrical requirements and provide power to opening.

* RHR leaf is active leaf.

* Door is normally closed, secured, monitored and exterior operator switch powered off to prevent access. Presentation of an authorized credential to reader will retract latch of active leaf, shunt door position switch and power exterior operator switch to allow access. During designated hours doors may have both exit device latches retracted, door position switches shunted and exterior operator switch powered for free egress and access. Inside operator switch is always available for use. Door is to be tied to emergency lock down system for use during emergency events. In the event of a loss of power, doors will remain or become closed and secured with exterior operator switch powered off to prevent access. Key override is available for emergency access. Free egress is always available from inside.

Set: 10.0

Doors: 035.1, 202.1, 202.2

1	Bottom Pivot	PV-ENDLOAD	Satin AL	GS
2	Patch Fittings/Door Rails	By Door Glazing Supplier	US32D	GS
1	Cylinder (mortise)	70 41	US32D	SA
1	Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1	Locking Pull	LP3301DBU ADA LC	US32D	RO
1	Concealed Closer	OHC-609-90NHO		GS

Notes:

* Coordinate supply and installation of glass door hardware.

Set: 11.0

Doors: 119.1, 156.1, 166.1, 211.1, 222.1

1	Bottom Pivot	PV-ENDLOAD	Satin AL	GS
2	Patch Fittings/Door Rails	By Door Glazing Supplier	US32D	GS
2	Door Pull (back to back)	RM3301-36 Mtg-Type 13	US32D	RO
1	Concealed Closer	OHC-609-90NHO		GS

Notes:

* Coordinate supply and installation of glass door hardware.

Set: 12.0

Doors: 033.1, 066.1

1	Bottom Pivot	PV-ENDLOAD	Satin AL	GS
2	Patch Fittings/Door Rails	By Door Glazing Supplier	US32D	GS
1	Magnetic Lock	M680EBD	628	SU
2	Bracket	MAG-GDB-V2M	US28	GS
1	Cylinder (mortise)	70 41	US32D	SA
1	Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1	Door Pull (back to back)	RM3301-36 Mtg-Type 13	US32D	RO
1	Concealed Closer	OHC-609-90NHO		GS
1	Keyswitch	MKA		SU
1	Push Button	EEB3N		SU
1	Motion Sensor Request to Exit	SREX-100		AK
1	Power Supply	Provided by Security Consultant		
1	Wall Mounted Card Reader	Provided By Security Consultant		

Notes:

* Coordinate supply and installation of glass door hardware.

Set: 13.0

Doors: 024.1, 126.1, 128.1, 213.1, 229.2

3	Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1	Office Lock	28 70 10G05 LL	US26D	SA
1	Magnetic Lock	M680EBD	628	SU
1	Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1	Door Closer (universal arm)	281 UO	EN	SA
1	Kick Plate	K1050 10" (As specified)	US32D	RO
1	Wall Stop	409	US32D	RO
1	Perimeter Seal	S442BL (head & jambs)		PE
1	Push Button	EEB3N		SU
1	Motion Sensor Request to Exit	SREX-100		AK
1	Power Supply	Provided by Security Consultant		
1	Wall Mounted Card Reader	Provided By Security Consultant		

Notes:

* Coordinate supply, installation and connection of electrified and access control components.

* Verify electrical requirements and provide power to opening.

* After hours door is normally closed, secured by mechanical lock and magnetic lock and door monitored for propped door and unauthorized use. Presentation of an authorized credential to reader will unlock magnetic lock, shunt door position switch and allow momentary use of mechanical lock to access room.

During normal facility access hours, access control system will release magnetic locks and room security will be provided by mechanical lock with key access. Emergency management system to have the ability to remotely secure opening by magnetic lock for protection during identified events. Emergency management system also to be used to remotely override magnetic lock for emergency access. In the event of a loss of power magnetic lock will be de-energized and room security provided by mechanical lock. Free egress is always available from inside by motion sensor or emergency push button when magnetic lock is secured and by lever trim when magnet is de-energized.

Set: 14.0

Doors: 045.1, 226.1, 234.1

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Office Lock	28 70 10G05 LL	US26D	SA
1 Magnetic Lock	M680EBD	628	SU
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer (stop arm)	281 CPS	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE
1 Push Button	EEB3N		SU
1 Motion Sensor Request to Exit	SREX-100		AK
1 Power Supply	Provided by Security Consultant		
1 Wall Mounted Card Reader	Provided By Security Consultant		

Notes:

- * Coordinate supply, installation and connection of electrified and access control components.
- * Verify electrical requirements and provide power to opening.
- * After hours door is normally closed, secured by mechanical lock and magnetic lock and door monitored for propped door and unauthorized use. Presentation of an authorized credential to reader will unlock magnetic lock, shunt door position switch and allow momentary use of mechanical lock to access room. During normal facility access hours, access control system will release magnetic locks and room security will be provided by mechanical lock with key access. Emergency management system to have the ability to remotely secure opening by magnetic lock for protection during identified events. Emergency management system also to be used to remotely override magnetic lock for emergency access. In the event of a loss of power magnetic lock will be de-energized and room security provided by mechanical lock. Free egress is always available from inside by motion sensor or emergency push button when magnetic lock is secured and by lever trim when magnet is de-energized.

Set: 15.0

Doors: 022.1

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Passage Set	28 10U15 LL	US26D	SA
1 Magnetic Lock	M680EBD	628	SU
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer (stop arm)	281 CPS	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE
1 Push Button	EEB3N		SU
1 Motion Sensor Request to Exit	SREX-100		AK
1 Battery Backup	Provided by Security Consultant		SU
1 Power Supply	Provided by Security Consultant		
1 Wall Mounted Card Reader	Provided By Security Consultant		

Notes:

- * Coordinate supply, installation and connection of electrified and access control components.
- * Verify electrical requirements and provide power to opening.
- * After hours door is normally closed, secured by mechanical lock and magnetic lock and door monitored for propped door and unauthorized use. Presentation of an authorized credential to reader will unlock magnetic lock, shunt door position switch and allow momentary use of mechanical lock to access room. During normal facility access hours, access control system will release magnetic locks and room security will be provided by mechanical lock with key access. Emergency management system to have the ability to remotely secure opening by magnetic lock for protection during identified events. Emergency management system also to be used to remotely override magnetic lock for emergency access. In the event of a loss of power magnetic lock will be de-energized and room security provided by mechanical lock. Free egress is always available from inside by motion sensor or emergency push button when magnetic lock is secured and by lever trim when magnet is de-energized.

Set: 16.0

Doors: 122.1, 124.1

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Passage Set	28 10U15 LL	US26D	SA
1 Magnetic Lock	M680EBD	628	SU
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Concealed OH Stop	OH10xS x Dr Width	US32D	RO
1 Door Closer	281 O	EN	SA
1 Mounting Plate	281B	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Wall Stop	409	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE
1 Push Button	EEB3N		SU
1 Motion Sensor Request to Exit	SREX-100		AK
1 Power Supply	Provided by Security Consultant		
1 Wall Mounted Card Reader	Provided By Security Consultant		

Notes:

- * Provide access control rough-in only for door 124.1 access control per facility standards.
- * Coordinate supply, installation and connection of electrified and access control components.
- * Verify electrical requirements and provide power to opening.
- * Refer to template for closer mounting instructions with overhead stop.
- * After hours door is normally closed, secured by mechanical lock and magnetic lock and door monitored for propped door and unauthorized use. Presentation of an authorized credential to reader will unlock magnetic lock, shunt door position switch and allow momentary use of mechanical lock to access room. During normal facility access hours, access control system will release magnetic locks and room security will be provided by mechanical lock with key access. Emergency management system to have the ability to remotely secure opening by magnetic lock for protection during identified events. Emergency management system also to be used to remotely override magnetic lock for emergency access. In the event of a loss of power magnetic lock will be de-energized and room security provided by mechanical lock. Free egress is always available from inside by motion sensor or emergency push button when magnetic lock is secured and by lever trim when magnet is de-energized.

Set: 17.0

Doors: 025.1, 130.1, 212.1, 232.2

3 Hinge (heavy weight)	T4A3786 5" (as specified)	US26D	MK
1 Office Lock	28 70 10G05 LL	US26D	SA
1 Magnetic Lock	M680EBD	628	SU

1	Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1	Door Closer (universal arm)	281 UO	EN	SA
1	Kick Plate	K1050 10" (As specified)	US32D	RO
1	Wall Stop	409	US32D	RO
1	Perimeter Seal	S442BL (head & jambs)		PE
1	Push Button	EEB3N		SU
1	Motion Sensor Request to Exit	SREX-100		AK
1	Power Supply	Provided by Security Consultant		
1	Wall Mounted Card Reader	Provided By Security Consultant		

Notes:

* Coordinate supply, installation and connection of electrified and access control components.

* Verify electrical requirements and provide power to opening.

* After hours door is normally closed, secured by mechanical lock and magnetic lock and door monitored for propped door and unauthorized use. Presentation of an authorized credential to reader will unlock magnetic lock, shunt door position switch and allow momentary use of mechanical lock to access room. During normal facility access hours, access control system will release magnetic locks and room security will be provided by mechanical lock with key access. Emergency management system to have the ability to remotely secure opening by magnetic lock for protection during identified events. Emergency management system also to be used to remotely override magnetic lock for emergency access. In the event of a loss of power magnetic lock will be de-energized and room security provided by mechanical lock. Free egress is always available from inside by motion sensor or emergency push button when magnetic lock is secured and by lever trim when magnet is de-energized.

Set: 18.0

Doors: 016.1, 236.1

3	Hinge (heavy weight)	T4A3786 5" (as specified)	US26D	MK
1	Passage Set	28 10U15 LL	US26D	SA
1	Magnetic Lock	M680EBD	628	SU
1	Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1	Door Closer (universal arm)	281 UO	EN	SA
1	Kick Plate	K1050 10" (As specified)	US32D	RO
1	Wall Stop	409	US32D	RO
1	Perimeter Seal	S442BL (head & jambs)		PE
1	Push Button	EEB3N		SU
1	Motion Sensor Request to Exit	SREX-100		AK
1	Power Supply	Provided by Security Consultant		
1	Wall Mounted Card Reader	Provided By Security Consultant		

Notes:

* Provide access control rough-in only for door 124.1 access control per facility standards.

* Coordinate supply, installation and connection of electrified and access control components.

* Verify electrical requirements and provide power to opening.

* Refer to template for closer mounting instructions with overhead stop.

* After hours door is normally closed, secured by mechanical lock and magnetic lock and door monitored for propped door and unauthorized use. Presentation of an authorized credential to reader will unlock magnetic lock, shunt door position switch and allow momentary use of mechanical lock to access room. During normal facility access hours, access control system will release magnetic locks and room security will be provided by mechanical lock with key access. Emergency management system to have the ability to remotely secure opening by magnetic lock for protection during identified events. Emergency management system also to be used to remotely override magnetic lock for emergency access. In the event of a loss of power magnetic lock will be de-energized and room security provided by mechanical

lock. Free egress is always available from inside by motion sensor or emergency push button when magnetic lock is secured and by lever trim when magnet is de-energized.

Set: 19.0

Doors: 009.1, 013.1, 048.2, 127.1, 129.1, 225.1, 227.1, 231.1, 233.1

3 Hinge (heavy weight)	T4A3786 5" (as specified)	US26D	MK
1 Passage Set	28 10U15 LL	US26D	SA
1 Magnetic Lock	M680EBD	628	SU
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Concealed OH Stop	OH10xS x Dr Width	US32D	RO
1 Door Closer	281 O	EN	SA
1 Mounting Plate	281B	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Wall Stop	409	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE
1 Push Button	EEB3N		SU
1 Motion Sensor Request to Exit	SREX-100		AK
1 Power Supply	Provided by Security Consultant		
1 Wall Mounted Card Reader	Provided By Security Consultant		

Notes:

- * Provide access control rough-in only for door 124.1 access control per facility standards.
- * Coordinate supply, installation and connection of electrified and access control components.
- * Verify electrical requirements and provide power to opening.
- * Refer to template for closer mounting instructions with overhead stop.
- * After hours door is normally closed, secured by mechanical lock and magnetic lock and door monitored for propped door and unauthorized use. Presentation of an authorized credential to reader will unlock magnetic lock, shunt door position switch and allow momentary use of mechanical lock to access room. During normal facility access hours, access control system will release magnetic locks and room security will be provided by mechanical lock with key access. Emergency management system to have the ability to remotely secure opening by magnetic lock for protection during identified events. Emergency management system also to be used to remotely override magnetic lock for emergency access. In the event of a loss of power magnetic lock will be de-energized and room security provided by mechanical lock. Free egress is always available from inside by motion sensor or emergency push button when magnetic lock is secured and by lever trim when magnet is de-energized.

Set: 20.0

Doors: 232.1

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Storeroom Lock	RX 28 70 10G04 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer (universal arm)	281 UO	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Wall Stop	409	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE
1 Electric Power Transfer	EL-CEPT		SU
1 Position Switch	DPS-M/W-GY (As req'd)		SU
1 Door Wire Harness	Provided By Security Consultant		
1 Frame Wire Harness	Provided By Security Consultant		

Notes:

* Tie door position switch to access control system to monitor door for propped door and unauthorized use.

Set: 21.0

Doors: 126.2, 229.1

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Storeroom Lock	RX 28 70 10G04 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer (stop arm, delayed)	DA 281 CPS	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE
1 Electric Power Transfer	EL-CEPT		SU
1 Position Switch	DPS-M/W-GY (As req'd)		SU
1 Door Wire Harness	Provided By Security Consultant		
1 Frame Wire Harness	Provided By Security Consultant		

Notes:

* Tie door position switch to access control system to monitor door for propped door and unauthorized use.

Set: 22.0

Doors: ST03.1, ST04.3, ST05.3

6 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
2 SVR Exit Device (passage, rated, lbr)	12 NB8715 ETL	US32D	SA
2 Door Closer	281 P10	EN	SA
2 Kick Plate	K1050 10" (As specified)	US32D	RO
2 Electromagnetic Holder	989 24VDC	689	RF
1 Perimeter Seal	S442BL (head & jambs)		PE
1 Astragal (adhesive)	S772BL x Dr Ht		PE

Notes:

* Tie electromagnetic holders to fire alarm control panel for release in smoke/fire alarm activation.
* Verify electrical requirements and provide power to opening.

Set: 23.0

Doors: 030.1

2 Continuous Hinge	FM300 7'0 AS	630	MR
2 Integrated CVR Exit Device (eo)	3600T-01	628	AD
1 Recessed Exit (classroom)	D3676-03 D3655-02	628	RI
1 Recessed Exit (eo)	D3676-03 D3655-02	628	RI
1 Cylinder (mortise)	70 41	US32D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
2 Surface Closer	D-DC-351PKT	EN	RI
2 Kick Plate	K1050 10" (As specified)	US32D	RO
2 Electromagnetic Holder	989 24VDC	689	RF
1 Perimeter Seal/Stop	By Door/Frame Supplier		
1 Astragal	Provided by Door Supplier		

Notes:

* Verify conditions for release of electromagnetic holders.

- * Verify electrical requirements and provide power to opening.
- * Verify accessories required for mounting door to magnet.

Set: 24.0

Doors: ST04.2, ST05.2

8 Hinge (heavy weight)	T4A3786 5" (as specified)	US26D	MK
2 Surface Vert Rod Exit	12 NB8710	US32D	SA
2 Door Closer (universal arm)	281 UO	EN	SA
2 Kick Plate	K1050 10" (As specified)	US32D	RO
2 Electromagnetic Holder	989 24VDC	689	RF
1 Perimeter Seal	S442BL (head & jambs)		PE
1 Astragal (adhesive)	S772BL x Dr Ht		PE

Set: 25.0

Doors: 101.1, 201.1

2 Continuous Hinge	FM300 7'0 AS	630	MR
2 Integrated CVR Exit Device (eo)	3600T-01	628	AD
2 Surface Closer	D-DC-351PKT	EN	RI
2 Kick Plate	K1050 10" (As specified)	US32D	RO
2 Electromagnetic Holder	989 24VDC	689	RF
1 Perimeter Seal/Stop	By Door/Frame Supplier		
1 Astragal	Provided by Door Supplier		

Notes:

- * Verify conditions for release of electromagnetic holders.
- * Verify electrical requirements and provide power to opening.
- * Verify accessories required for mounting door to magnet.

Set: 26.0

Doors: 101.2

2 Continuous Hinge	FM300 7'0 AS	630	MR
2 Integrated CVR Exit Device (eo)	3600T-01	628	AD
2 Surface Closer	D-DC-351PKT	EN	RI
2 Kick Plate	K1050 10" (As specified)	US32D	RO
2 Electromagnetic Holder	989 24VDC	689	RF
1 Perimeter Seal/Stop	By Door/Frame Supplier		
1 Astragal	Provided by Door Supplier		

Notes:

- * Verify conditions for release of electromagnetic holders.
- * Verify electrical requirements and provide power to opening.
- * Verify accessories required for mounting door to magnet.

Set: 27.0

Doors: 020.1

6 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
2 Flush Bolt	2945	US26D	RO
2 Dust Proof Strike	570	US26D	RO
1 Passage Set	28 10U15 LL	US26D	SA
1 Magnetic Lock	M680EBD	628	SU

1	Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1	Coordinator	1700	Black	RO
2	Door Closer (stop/ho arm)	281 CPSH	EN	SA
1	Kick Plate	K1050 10" (As specified)	US32D	RO
1	Perimeter Seal	S442BL (head & jambs)		PE
1	Astragal (adhesive)	S772BL x Dr Ht		PE
1	Push Button	EEB3N		SU
1	Motion Sensor Request to Exit	SREX-100		AK
1	Battery Backup	Provided by Security Consultant		SU
1	Power Supply	Provided by Security Consultant		
1	Wall Mounted Card Reader	Provided By Security Consultant		

Notes:

- * Coordinate supply, installation and connection of electrified and access control components.
- * Verify electrical requirements and provide power to opening.
- * After hours doors are normally closed, secured by mechanical lock and magnetic lock and door monitored for propped door and unauthorized use. Presentation of an authorized credential to reader will unlock magnetic lock, shunt door position switch and allow momentary use of mechanical lock to access room. During normal facility access hours, access control system will release magnetic locks and room security will be provided by mechanical lock with key access. Emergency management system to have the ability to remotely secure opening by magnetic lock for protection during identified events. Emergency management system also to be used to remotely override magnetic lock for emergency access. In the event of a loss of power magnetic lock will be de-energized and room security provided by mechanical lock. Free egress is always available from inside by motion sensor or emergency push button when magnetic lock is secured and by lever trim when magnet is de-energized.

Set: 28.0

Doors: 010.1, 010.2, ST01.3

3	Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1	Rim Exit Device (classroom)	70 8813 ETL	US32D	SA
1	Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1	Door Closer (universal arm)	281 UO	EN	SA
1	Kick Plate	K1050 10" (As specified)	US32D	RO
1	Wall Stop	409	US32D	RO
1	Perimeter Seal	S442BL (head & jambs)		PE

Notes:

- * Provide 5" high hinges on doors over 36" in width.

Set: 29.0

Doors: 003.1

3	Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1	Rim Exit Device (classroom)	70 8813 ETL	US32D	SA
1	Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1	Door Closer (stop arm)	281 CPS	EN	SA
1	Kick Plate	K1050 10" (As specified)	US32D	RO
1	Secondary Perimeter Seal	S44BL (head & jambs)		PE
1	Perimeter Seal	S442BL (head & jambs)		PE
1	Corner Pads	ACP112BL/2		PE
1	Automatic Door Bottom	PDB411AE x Dr Width		PE

Set: 30.0

Doors: ST01.1

3 Invisible Hinge	218	626	SO
1 Rim Exit Device (storeroom, rated)	12 70 8804 ETL	US32D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer (stop arm)	281 CPS	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 31.0

Doors: ST01.2, ST02.2, ST02.3

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Rim Exit Device (passage, rated)	12 8815 ETL	US32D	SA
1 Door Closer (universal arm)	281 UO	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Wall Stop	409	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 32.0

Doors: 046.1, 046.2, 149.6, 151.1, 151.2, 156.3

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Rim Exit Device (classroom security)	49 70 8816 ETL	US32D	SA
1 Cylinder (thumb turn)	124 44	US32D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer (universal arm)	281 UO	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Wall Stop	409	US32D	RO
1 Secondary Perimeter Seal	S44BL (head & jambs)		PE
1 Perimeter Seal	S442BL (head & jambs)		PE
1 Corner Pads	ACP112BL/2		PE
1 Automatic Door Bottom	PDB411AE x Dr Width		PE

Set: 33.0

Doors: 109.1, 109.2

3 Hinge (heavy weight)	T4A3786 5" (as specified)	US26D	MK
1 Rim Exit Device (classroom security)	49 70 8816 ETL	US32D	SA
1 Cylinder (thumb turn)	124 44	US32D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer (universal arm)	281 UO	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Wall Stop	409	US32D	RO
1 Secondary Perimeter Seal	S44BL (head & jambs)		PE
1 Perimeter Seal	S442BL (head & jambs)		PE
1 Corner Pads	ACP112BL/2		PE
1 Automatic Door Bottom	PDB411AE x Dr Width		PE

Set: 34.0

Doors: 204.1

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Classroom Lock	28 70 10G37 LL	US26D	SA

1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Wall Stop	409	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 35.0

Doors: 132.1

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Classroom Lock	28 70 10G37 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer (universal arm)	281 UO	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Wall Stop	409	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Notes:

Set: 36.0

Doors: 131.1

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Classroom Lock	28 70 10G37 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer (track arm)	281 OT	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Door Stop	440	US26D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 37.0

Doors: 037.2, 056.1

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Classroom Lock	28 70 10G37 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer (track arm, ho)	281 HT	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Wall Stop	409	US32D	RO
1 Door Stop	440	US26D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Notes:

* Provide wall stop for door 056.1 only.

Set: 38.0

Doors: 004.1, 023.1, 235.1

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Classroom Lock	28 70 10G37 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Concealed OH Stop	OH10xS x Dr Width	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 39.0

Doors: 042.1, 064.1, 205.1, 205.2

3 Hinge (heavy weight)	T4A3786 5" (as specified)	US26D	MK
1 Classroom Lock	28 70 10G37 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Wall Stop	409	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 40.0

Doors: 063.1, 064A.1, 064A.2, ST01.4

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Storeroom Lock	28 70 10G04 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer (universal arm)	281 UO	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Wall Stop	409	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Notes:

Set: 41.0

Doors: 011.1, 038.1, 041.1, 120.1, 147.1, 223.1

3 Hinge	TA2714 (as specified)	US26D	MK
1 Storeroom Lock	28 70 10G04 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer (stop arm)	281 CPS	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 42.0

Doors: 150A.1

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Storeroom Lock	28 70 10G04 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Surface OH Stop	OH90xS x Dr Width	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 43.0

Doors: 210.1

3 Hinge (heavy weight)	T4A3786 5" (as specified)	US26D	MK
1 Office Lock	28 70 10G05 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer	DA 281 O	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 44.0

Doors: 028.1, 029.1, 031.1, 032.1, 036.1, 044.1, 049.1, 050.1, 052.1, 053.1, 054.1, 055.1, 057.1, 059.1, 060.1, 061.1, 062.1, 111.1, 112.1, 113.1, 114.1, 115.1, 116.1, 123.2, 133.1, 135.1, 136.1, 137.1, 138.1, 139.1, 142.1, 143.1, 144.1, 153.1, 154.1, 155.1, 157.1, 159.1, 160.1, 161.1, 162.1, 164.1, 215.1, 216.1, 217.1, 218.1, 219.1, 220.1

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Office Lock	28 70 10G05 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Wall Stop	409	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 45.0

Doors: 129.2, 129.3, 230N.1, 231.2

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Office Lock	28 70 10G05 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer (stop/ho arm)	281 CPSH	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 46.0

Doors: 123.1, 148.1

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Office Lock	28 70 10G05 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Concealed OH Stop	OH10xS x Dr Width	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 47.0

Doors: 012.1, 043.1, 121.1, 149.1, 224.1

3 Hinge (heavy weight)	T4A3786 5" (as specified)	US26D	MK
1 Office Lock	28 70 10G05 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Door Closer (stop arm, delayed)	DA 281 CPS	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 48.0

Doors: 048.3b

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Passage Set	28 10U15 LL	US26D	SA
1 Wall Stop	409	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 49.0

Doors: 021.2

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Passage Set	28 10U15 LL	US26D	SA
1 Door Closer (stop arm)	281 CPS	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 50.0

Doors: 005.1, 006.1, 103.1, 104.1, 206.1, 207.1

3 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Pull Plate	110x70C	US32D	RO
1 Push Plate	70F	US32D	RO
1 Door Closer (universal arm)	281 UO	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Wall Stop	409	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 51.0

Doors: 203.1

4 Invisible Hinge	218	626	SO
1 Door Pull (back to back)	RM3311-24 Mtg-Type 16	US32D	RO
1 Door Closer (universal arm)	281 UO	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Wall Stop	409	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE

Set: 52.0

Doors: 109.3

4 Invisible Hinge	220	626	SO
1 Door Pull (back to back)	RM3311-24 Mtg-Type 16	US32D	RO
1 Door Closer (universal arm)	281 UO	EN	SA
1 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Wall Stop	409	US32D	RO
1 Secondary Perimeter Seal	S44BL (head & jambs)		PE
1 Perimeter Seal	S442BL (head & jambs)		PE
1 Corner Pads	ACP112BL/2		PE
1 Automatic Door Bottom	PDB411AE x Dr Width		PE

Set: 53.0

Doors: 019.2

6 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
2 SVR Exit Device (passage, rated, lbr)	12 NB8715 ETL	US32D	SA
2 Door Closer (stop/ho arm)	281 CPSH	EN	SA
2 Kick Plate	K1050 10" (As specified)	US32D	RO
1 Perimeter Seal	S442BL (head & jambs)		PE
1 Astragal (adhesive)	S772BL x Dr Ht		PE

Set: 54.0

Doors: 014.1

6 Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1 Flush Bolt	2945	US26D	RO
1 Dust Proof Strike	570	US26D	RO
1 Classroom Lock	28 70 10G37 LL	US26D	SA
1 Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1 Concealed OH Holder	OH10xH x Dr Width	US32D	RO
1 Door Closer (ho arm)	281 H	EN	SA
2 Armor Plate	K1050 34" (As specified)	US32D	RO

2	Wall Stop	409	US32D	RO
1	Perimeter Seal	S442BL (head & jambs)		PE
1	Astragal (adhesive)	S772BL x Dr Ht		PE

Set: 55.0

Doors: 018.2

6	Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1	Flush Bolt	2945	US26D	RO
1	Dust Proof Strike	570	US26D	RO
1	Storeroom Lock	28 70 10G04 LL	US26D	SA
1	Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1	Coordinator	1700	Black	RO
2	Door Closer (ho arm)	281 H	EN	SA
2	Armor Plate	K1050 34" (As specified)	US32D	RO
2	Wall Stop	409	US32D	RO
1	Perimeter Seal	S442BL (head & jambs)		PE
1	Astragal (adhesive)	S772BL x Dr Ht		PE

Set: 56.0

Doors: 017.1

6	Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1	Flush Bolt	2945	US26D	RO
1	Dust Proof Strike	570	US26D	RO
1	Storeroom Lock	28 70 10G04 LL	US26D	SA
1	Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1	Coordinator	1700	Black	RO
2	Door Closer	281 PH10	EN	SA
2	Armor Plate	K1050 34" (As specified)	US32D	RO
2	Wall Stop	409	US32D	RO
1	Perimeter Seal	S442BL (head & jambs)		PE
1	Astragal (adhesive)	S772BL x Dr Ht		PE

Set: 57.0

Doors: 015.1

6	Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1	Flush Bolt	2945	US26D	RO
1	Dust Proof Strike	570	US26D	RO
1	Storeroom Lock	28 70 10G04 LL	US26D	SA
1	Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1	Coordinator	1700	Black	RO
2	Door Closer (stop/ho arm)	281 CPSH	EN	SA
2	Kick Plate	K1050 10" (As specified)	US32D	RO
2	Armor Plate	K1050 34" (As specified)	US32D	RO
1	Perimeter Seal	S442BL (head & jambs)		PE
1	Astragal (adhesive)	S772BL x Dr Ht		PE

Set: 58.0

Doors: 021.1

6	Hinge (heavy weight)	T4A3786 (as specified)	US26D	MK
1	Flush Bolt	2945	US26D	RO

1	Dust Proof Strike	570	US26D	RO
1	Passage Set	28 10U15 LL	US26D	SA
1	Coordinator	1700	Black	RO
2	Door Closer (stop/ho arm)	281 CPSH	EN	SA
2	Armor Plate	K1050 34" (As specified)	US32D	RO
1	Perimeter Seal	S442BL (head & jambs)		PE
1	Astragal (adhesive)	S772BL x Dr Ht		PE

Set: 59.0

Doors: 225.2, 227.2

1	Sliding Door Hdwe	PF28200A7284		PE
1	Sliding Door Hdwe	PF134KIT		PE
1	Mortise Deadlock	MS1850SN	628	AD
1	Cylinder (mortise)	70 41	US32D	SA
1	Cylinder (thumb turn)	4066	130	AD
1	Cylinder Core	1C7xxx (as req'd for building system)	626	BE
1	Flush Pull	94Px94L	US26D	RO

Notes:

* Mount stop in track to allow access to pull when in full open position.

Set: 60.0

Doors: 037.1

1	Continuous Hinge	DFM83SLI-HD1 PT		PE
1	Storeroom Lock	RX 70 8204 LE1L	US10B	SA
1	Cylinder Core	1C7xxx (as req'd for building system)	613	BE
1	Door Closer	281 CPS	EB	SA
1	Kick Plate	K105010" (As specified)	US10B	RO
1	Threshold	273x292DFGPK x Dr Width		PE
1	Rain Guard	346D (Dr Width + 4")		PE
1	Gasketing	294DV		PE
1	Sweep	345DNB x Dr Width		PE
1	Electric Power Transfer	EL-CEPT	10B	SU
1	Position Switch	DPS-M-BK		SU
1	Door Wire Harness	Provided By Security Consultant		
1	Frame Wire Harness	Provided By Security Consultant		

Notes:

* Tie door position switch to access control system to monitor door for propped door and unauthorized use.

<u>Mark</u>	<u>Hardware</u>	<u>Mark</u>	<u>Hardware</u>	<u>Mark</u>	<u>Hardware</u>
ST01.1	30.0	048.1	6.0	147.1	41.0
ST01.2	31.0	048.2	19.0	148.1	46.0
ST01.3	28.0	048.3b	48.0	149.1	47.0
ST01.4	40.0	049.1	44.0	149.6	32.0
ST02.1	4.0	050.1	44.0	150A.1	42.0
ST02.2	31.0	052.1	44.0	151.1	32.0
ST02.3	31.0	053.1	44.0	151.2	32.0
ST03.1	22.0	054.1	44.0	153.1	44.0

ST04.1	3.0	055.1	44.0	154.1	44.0
ST04.2	24.0	056.1	37.0	155.1	44.0
ST04.3	22.0	057.1	44.0	156.1	11.0
ST05.1	3.0	059.1	44.0	156.3	32.0
ST05.2	24.0	060.1	44.0	157.1	44.0
ST05.3	22.0	061.1	44.0	159.1	44.0
XX	7.0	062.1	44.0	160.1	44.0
ZZ	7.0	063.1	40.0	161.1	44.0
003.1	29.0	064.1	39.0	162.1	44.0
004.1	38.0	064A.1	40.0	164.1	44.0
005.1	50.0	064A.2	40.0	166.1	11.0
006.1	50.0	066.1	12.0	201.1	25.0
009.1	19.0	100.1	1.0	201.2	2.0
010.1	28.0	100.2	9.0	202.1	10.0
010.2	28.0	101.1	25.0	202.2	10.0
011.1	41.0	101.2	26.0	203.1	51.0
012.1	47.0	103.1	50.0	204.1	34.0
013.1	19.0	104.1	50.0	205.1	39.0
014.1	54.0	109.1	33.0	205.2	39.0
015.1	57.0	109.2	33.0	206.1	50.0
016.1	18.0	109.3	52.0	207.1	50.0
017.1	56.0	111.1	44.0	210.1	43.0
018.1	6.0	112.1	44.0	211.1	11.0
018.2	55.0	113.1	44.0	212.1	17.0
019.1	5.0	114.1	44.0	213.1	13.0
019.2	53.0	115.1	44.0	215.1	44.0
020.1	27.0	116.1	44.0	216.1	44.0
021.1	58.0	119.1	11.0	217.1	44.0
021.2	49.0	120.1	41.0	218.1	44.0
022.1	15.0	121.1	47.0	219.1	44.0
023.1	38.0	122.1	16.0	220.1	44.0
024.1	13.0	123.1	46.0	222.1	11.0
025.1	17.0	123.2	44.0	223.1	41.0
026.1	1.0	124.1	16.0	224.1	47.0
026.2	9.0	126.1	13.0	225.1	19.0
028.1	44.0	126.2	21.0	225.2	59.0
029.1	44.0	127.1	19.0	226.1	14.0
030.1	23.0	128.1	13.0	227.1	19.0
031.1	44.0	129.1	19.0	227.2	59.0
032.1	44.0	129.2	45.0	229.1	21.0
033.1	12.0	129.3	45.0	229.2	13.0
035.1	10.0	130.1	17.0	230N.1	45.0
036.1	44.0	131.1	36.0	231.1	19.0

037.1	60.0	132.1	35.0	231.2	45.0
037.2	37.0	133.1	44.0	232.1	20.0
038.1	41.0	135.1	44.0	232.2	17.0
041.1	41.0	136.1	44.0	233.1	19.0
042.1	39.0	137.1	44.0	234.1	14.0
043.1	47.0	138.1	44.0	235.1	38.0
044.1	44.0	139.1	44.0	236.1	18.0
045.1	14.0	142.1	44.0	237.1	8.0
046.1	32.0	143.1	44.0		
046.2	32.0	144.1	44.0		

END OF SECTION 087100

SECTION 096519 - RESILIENT TILE 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. Vinyl composition floor tile.

1.3 ACTION SUBMITTALS

- A. Shop Drawings: For each type of resilient floor tile.
 - 1. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
 - 2. Show details of special patterns.
- B. Samples for Verification: Full-size units of each color and pattern of floor tile required.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.5 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. Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.

1.7 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.

1.8 FIELD 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 periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After installation and 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.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient floor tile, 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.

2.2 VINYL COMPOSITION FLOOR TILE

- A. Basis-of-Design Product: Requests for manufacturer substitutions prior to bidding will be reviewed and responded to in conformance with Division 1 requirements. Subject to compliance with requirements, provide product indicated or comparable product by manufacturer pre-approved during bidding:
 - 1. Manufacturer: Armstrong
 - 2. Product: Standard Excelon Imperial Texture MultiColor
 - 3. Colors:
 - a. **VCT-1 (096519.A)**; #52513 "Cirque White"
 - b. **VCT-2 (096519.B)**; #51927 "Classics Field Gray"
 - c. **VCT-3 (096519.C)**; #51903 "Classics Blue Gray"
- B. Tile Standard: ASTM F 1066, Class 2, through-pattern tile.

- C. Wearing Surface: Smooth.
- D. Thickness: 0.125 inch (3.2 mm).
- E. Size: 12 by 12 inches (305 by 305 mm).
- F. Patterns: Random pattern mix between VCT-1, VCT-2 and VCT-3
 - 1. Refer to drawing Series A800 Sheets for pattern of VCT.
 - 2. All tiles installed will be installed in a quarter-turn pattern

2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.
- C. Floor Sealer: Provide liquid stain-resistant sealer.
 - 1. Basis-of-Design: Armstrong Flooring S-495 Commercial Floor Sealer
- D. Floor Polish: Provide protective, liquid floor-polish.
 - 1. Basis-of-Design: Armstrong Flooring S-480 Commercial Floor Polish

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.
 - 1. 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.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.
- B. 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 floor tile manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 10 pH.
4. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft. (304.8 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test: ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
 - b. Relative Humidity Test: Using in-situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install floor tiles until materials are the same temperature as space where they are to be installed.
 1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.3 FLOOR TILE INSTALLATION

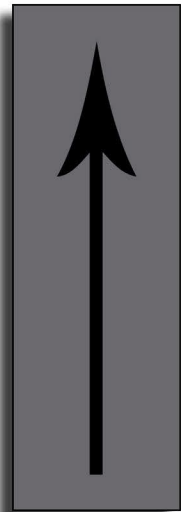
- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less 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 direction alternating in adjacent tiles (basket-weave pattern).
- 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 marking device.

- G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in installation 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 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

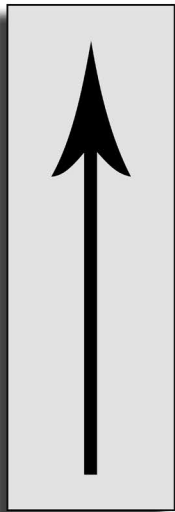
- A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
 - 1. Remove adhesive and other blemishes from surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Sealers and Finish Coats: Remove soil, visible adhesive, and surface blemishes from vinyl composition tile surfaces before applying liquid cleaners, sealers, and finish products.
 - 1. Sealer: Apply two base coats of liquid sealer.
 - 2. Finish: Apply three coats of liquid floor polish.
- E. Cover floor tile until Substantial Completion.

END OF SECTION 096519



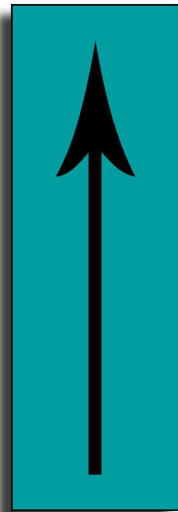
Groundcover 949

CPT-5



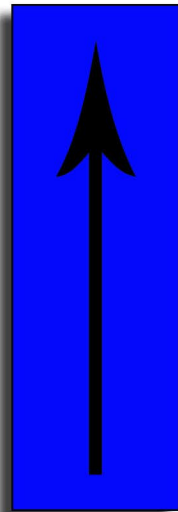
Macro Bloom 937

CPT-7B



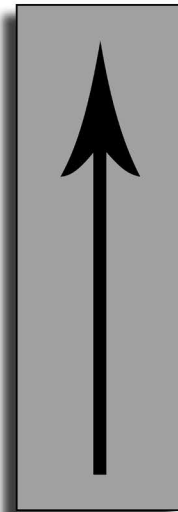
Macro Bloom 945

CPT-6B



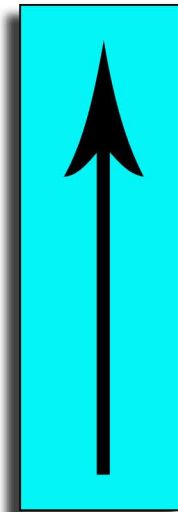
Macro Bloom 975

CPT-4B



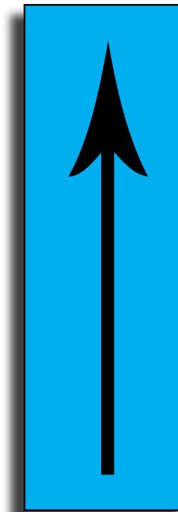
Micro Bloom 937

CPT-7A



Micro Bloom 945

CPT-6A



Micro Bloom 975

CPT-4A

INSTALLATION LAYOUT FOR MOHAWK LICHEN COLLECTION

DESIGN LAYOUT

Patterns and colors shown are for visual ideation only. Design work is not ready for production purposes.

Date : 04/27/18	Made by : EM	Project Name : Concordia University
		Ref. # : V3_Materials

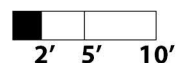


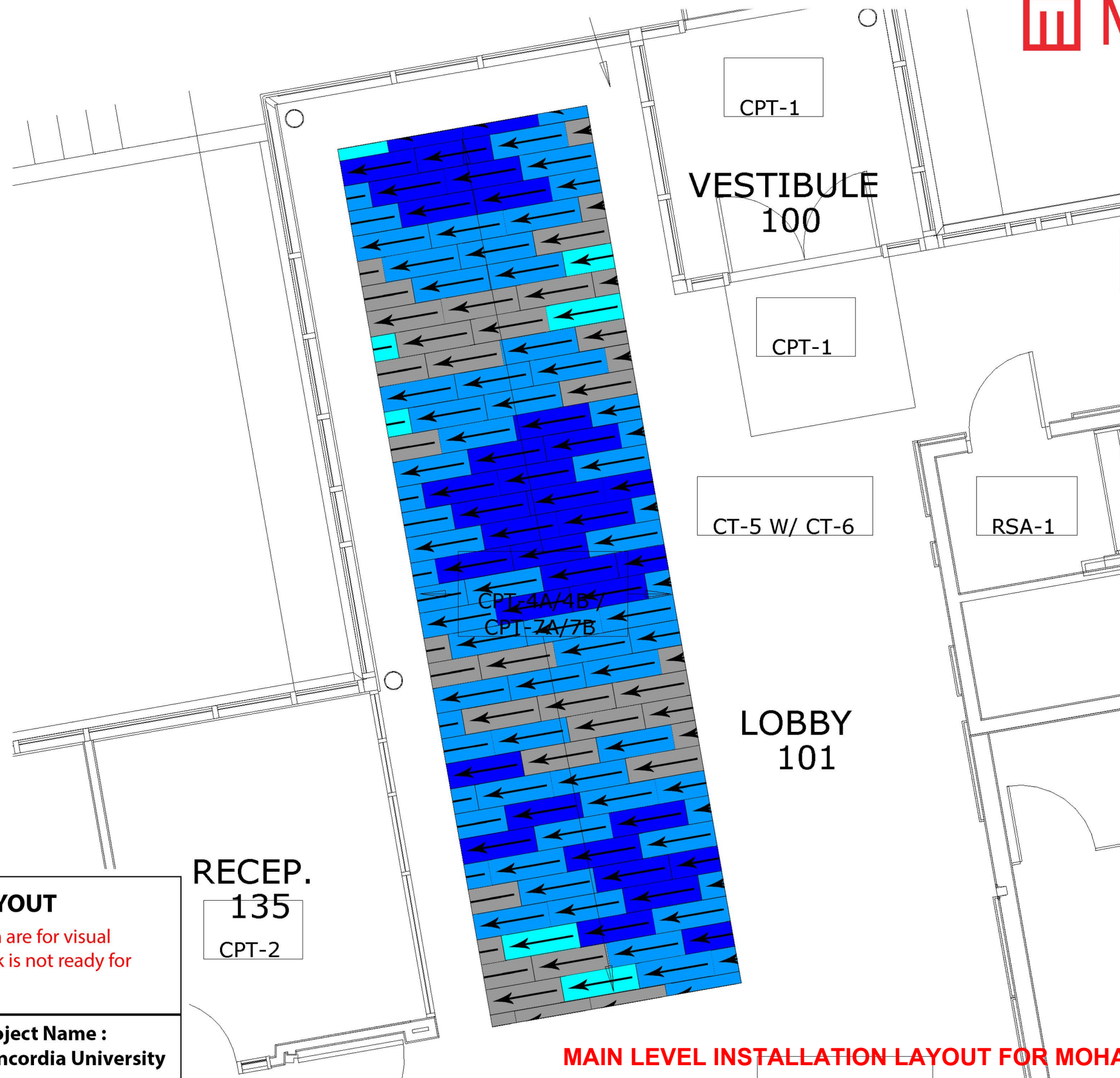
DESIGN LAYOUT

Patterns and colors shown are for visual ideation only. Design work is not ready for production purposes.

Date : 04/27/18	Made by : EM	Project Name : Concordia University
Main Level		Ref. # : V3_1

MAIN LEVEL INSTALLATION LAYOUT FOR MOHAWK LICHEN COLLECTION



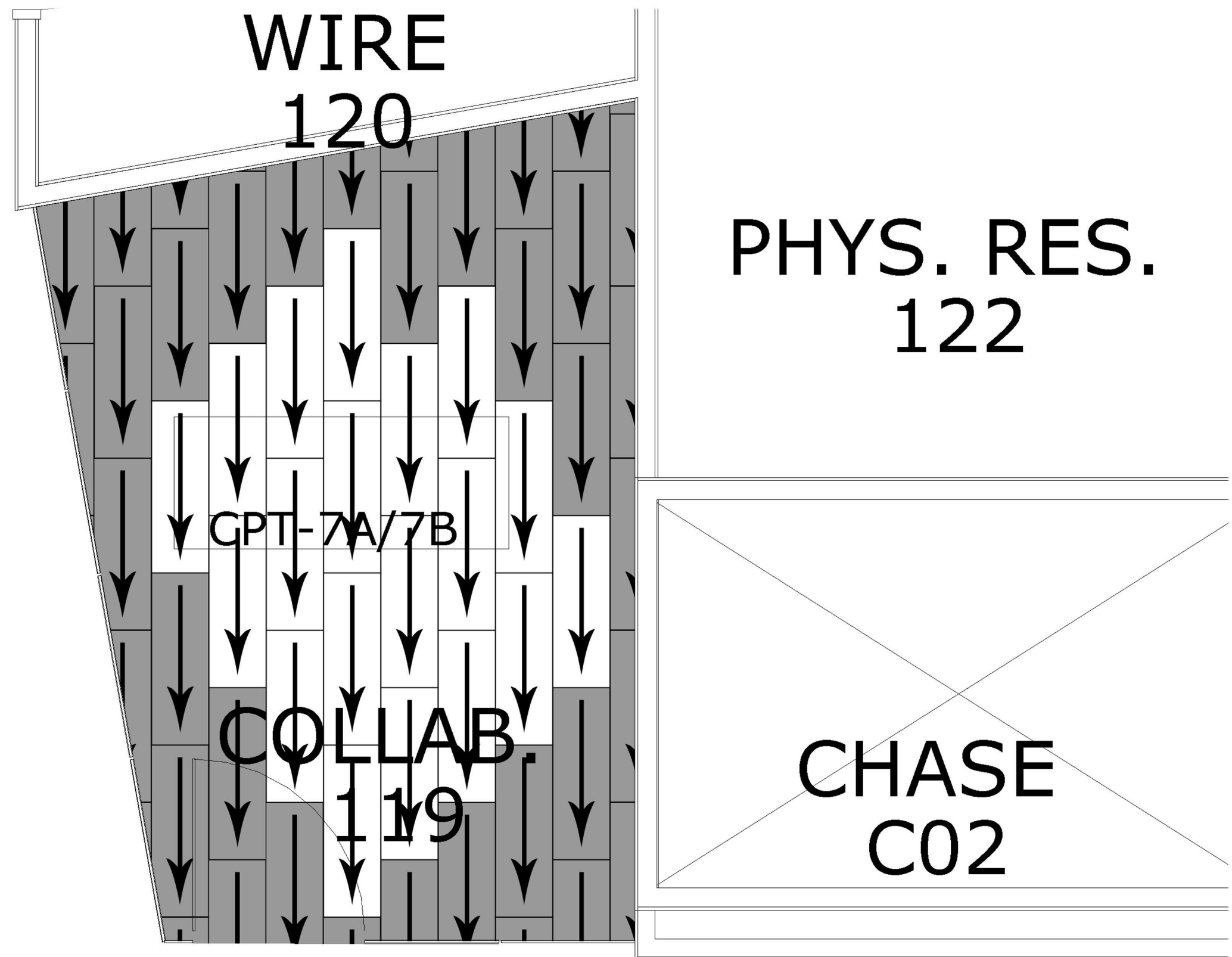


DESIGN LAYOUT

Patterns and colors shown are for visual ideation only. Design work is not ready for production purposes.

Date : 04/27/18	Made by : EM	Project Name : Concordia University
Main Level	Ref. # : V3_2	

MAIN LEVEL INSTALLATION LAYOUT FOR MOHAWK LICHEN COLLECTION



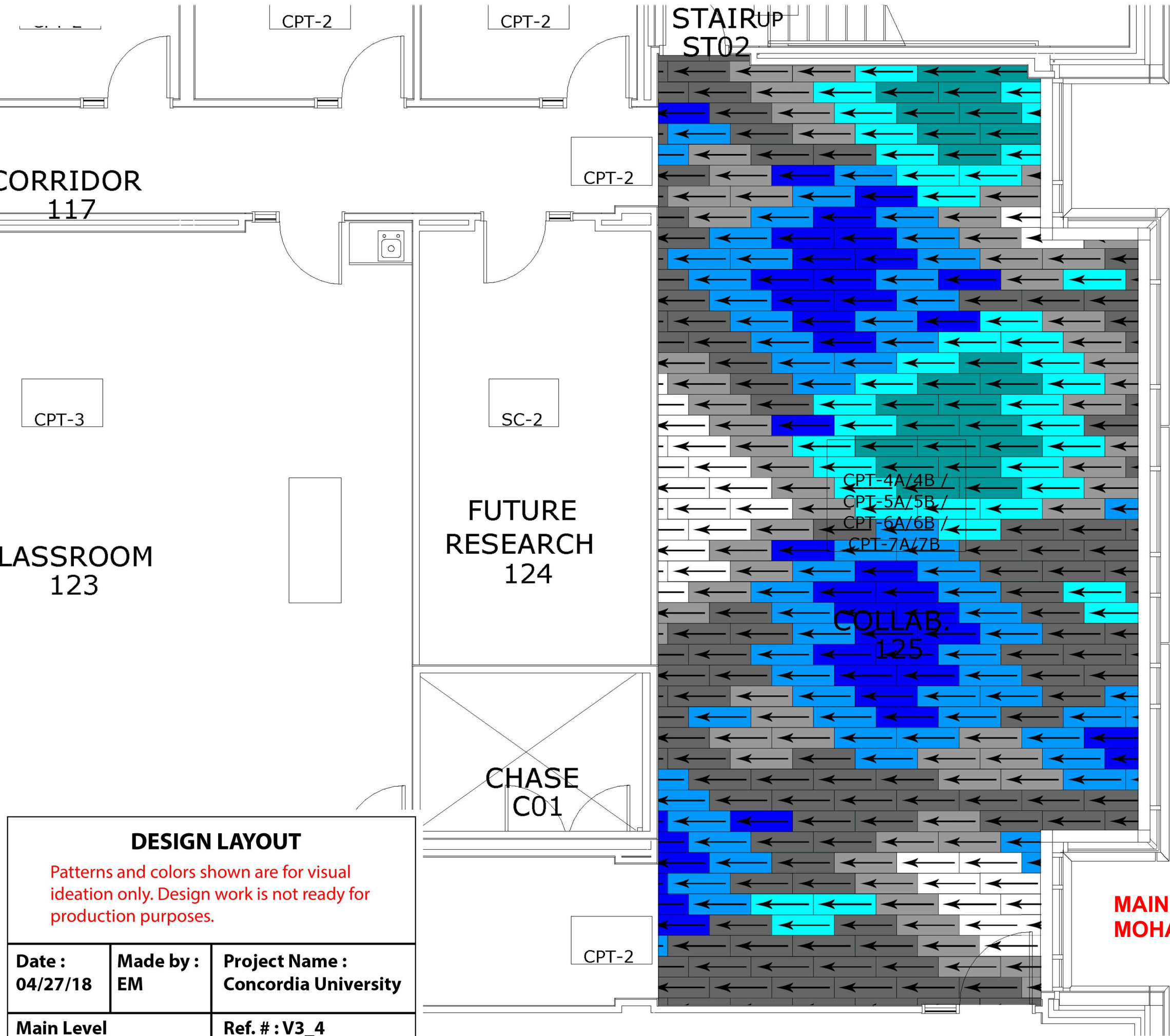
MAIN LEVEL INSTALLATION LAYOUT FOR MOHAWK LICHEN COLLECTION

DESIGN LAYOUT

Patterns and colors shown are for visual ideation only. Design work is not ready for production purposes.

Date : 04/27/18	Made by : EM	Project Name : Concordia University
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Main Level	Ref. # : V3_3
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**MAIN LEVEL INSTALLATION LAYOUT FOR
MOHAWK LICHEN COLLECTION**



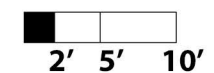
DESIGN LAYOUT

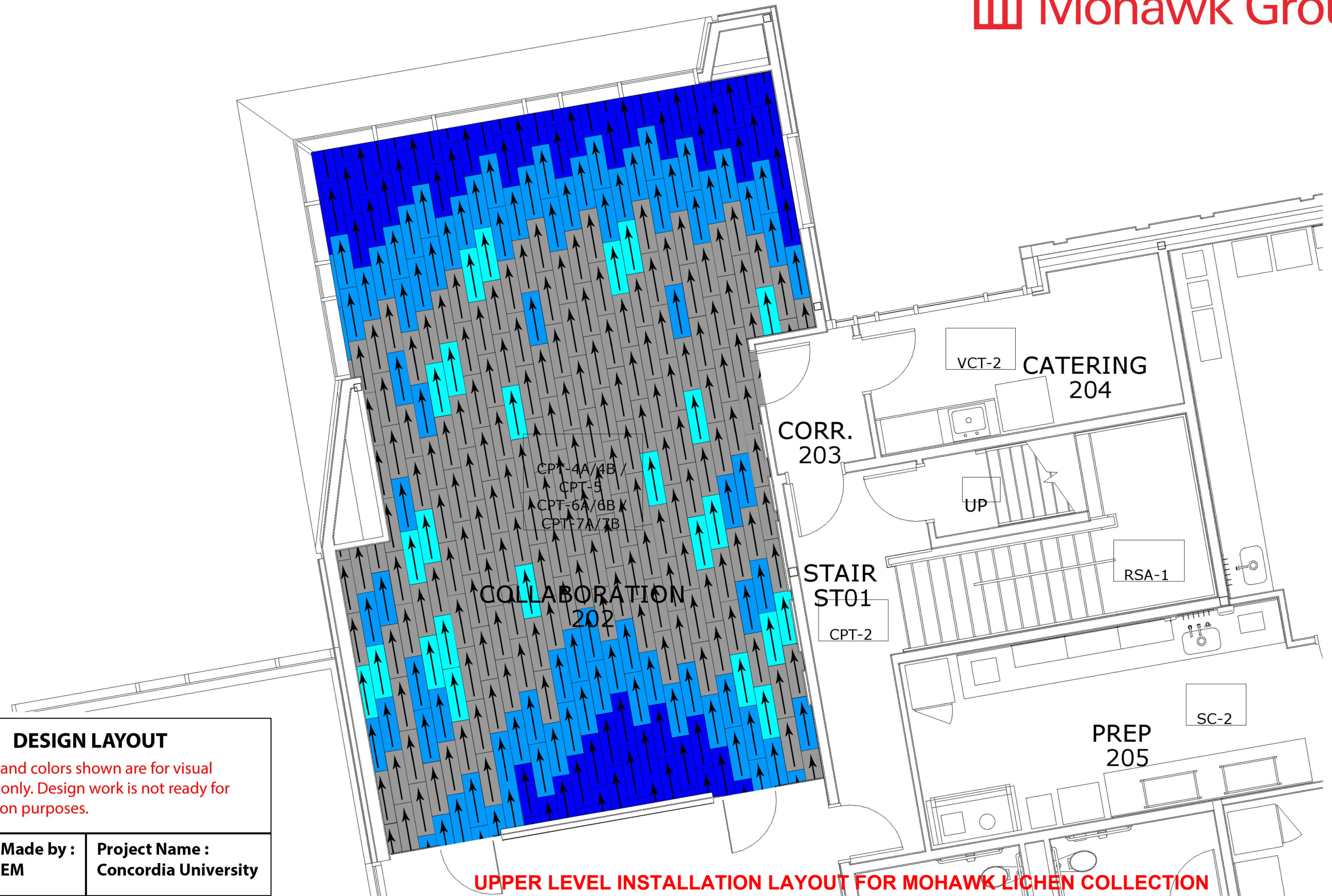
Patterns and colors shown are for visual ideation only. Design work is not ready for production purposes.

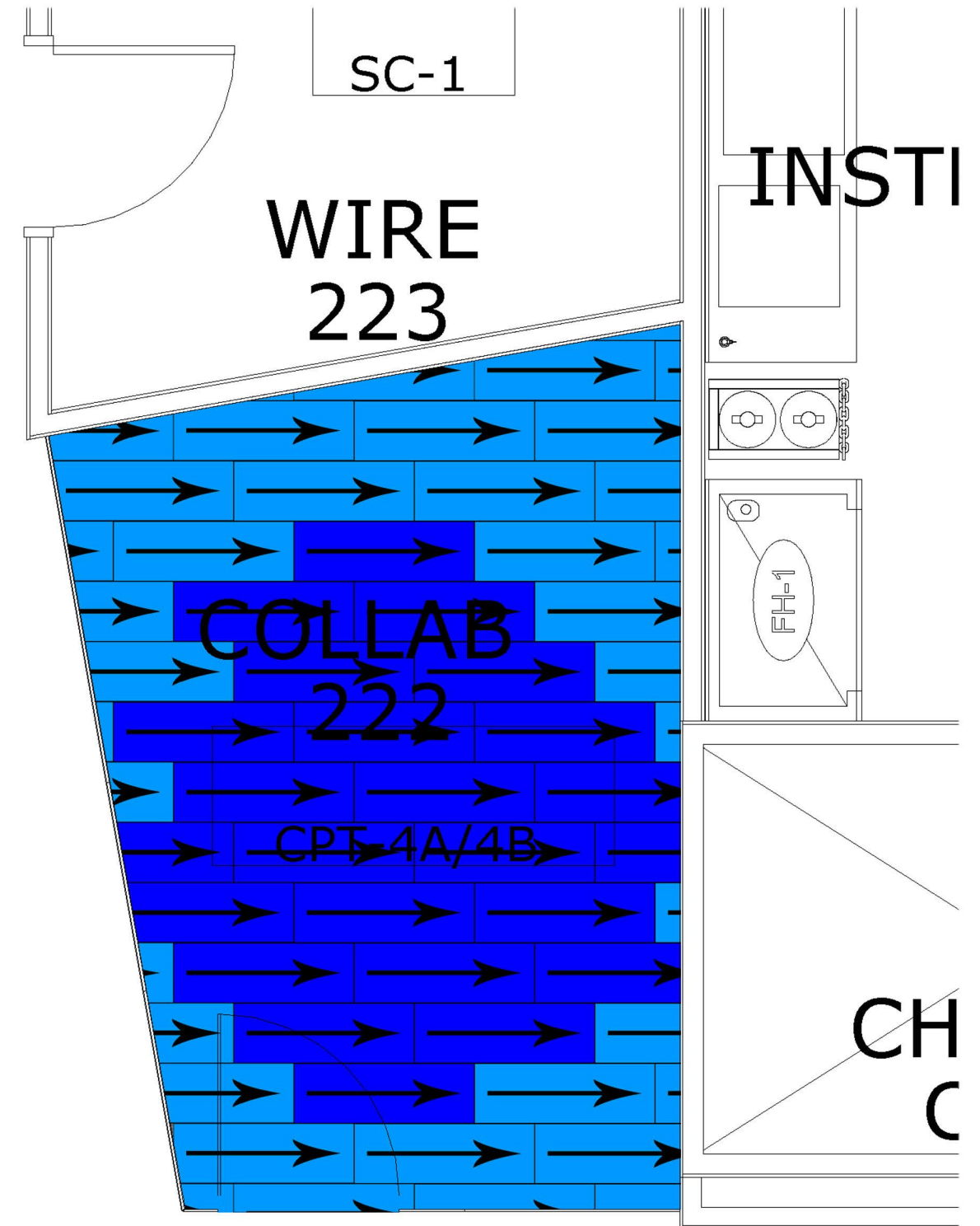
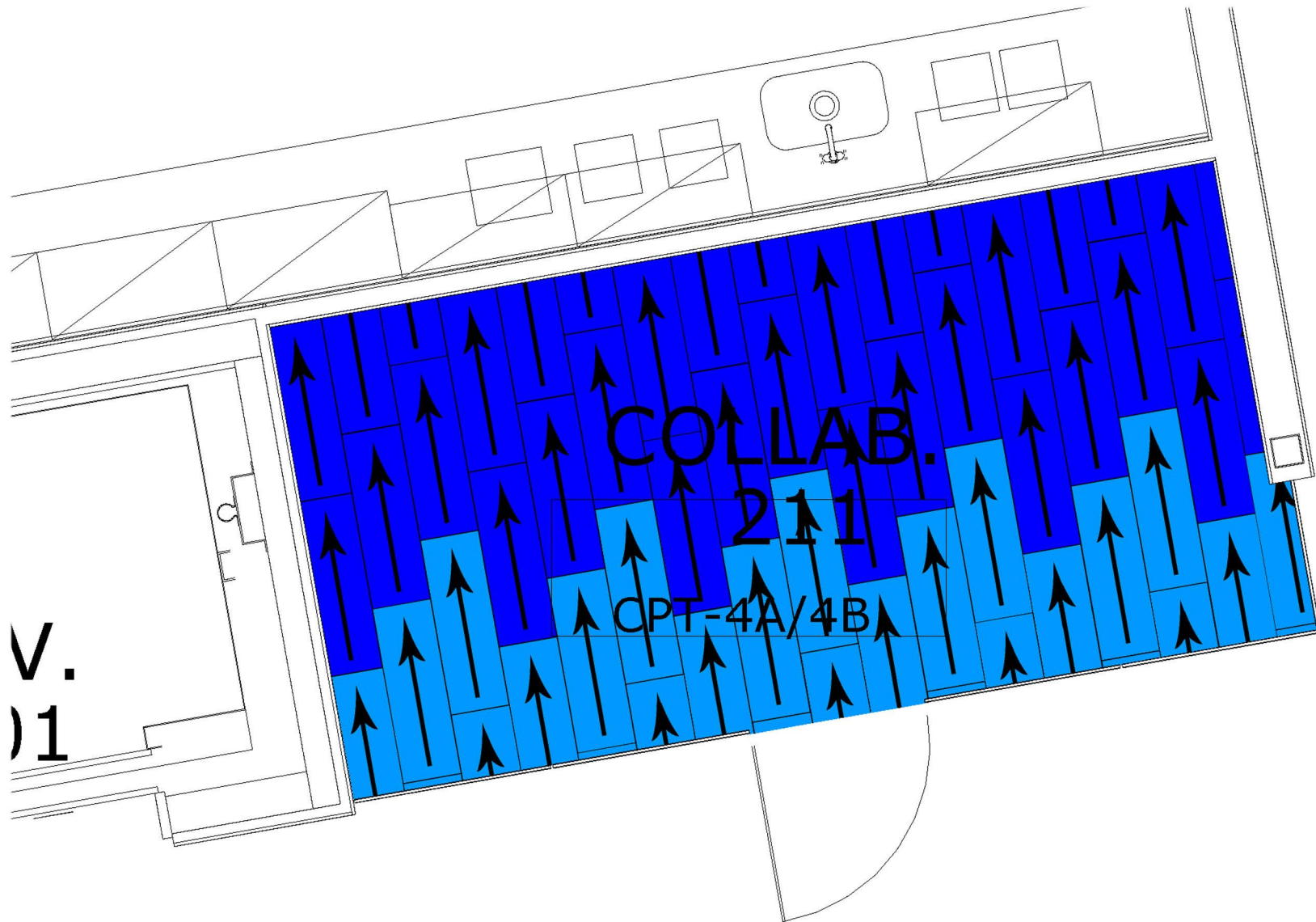
Date : 04/18/18
Made by : EM
Project Name : Concordia University

Upper Level Install Layout
Ref. # : Install_V2_1

UPPER LEVEL INSTALLATION LAYOUT FOR MOHAWK LICHEN COLLECTION







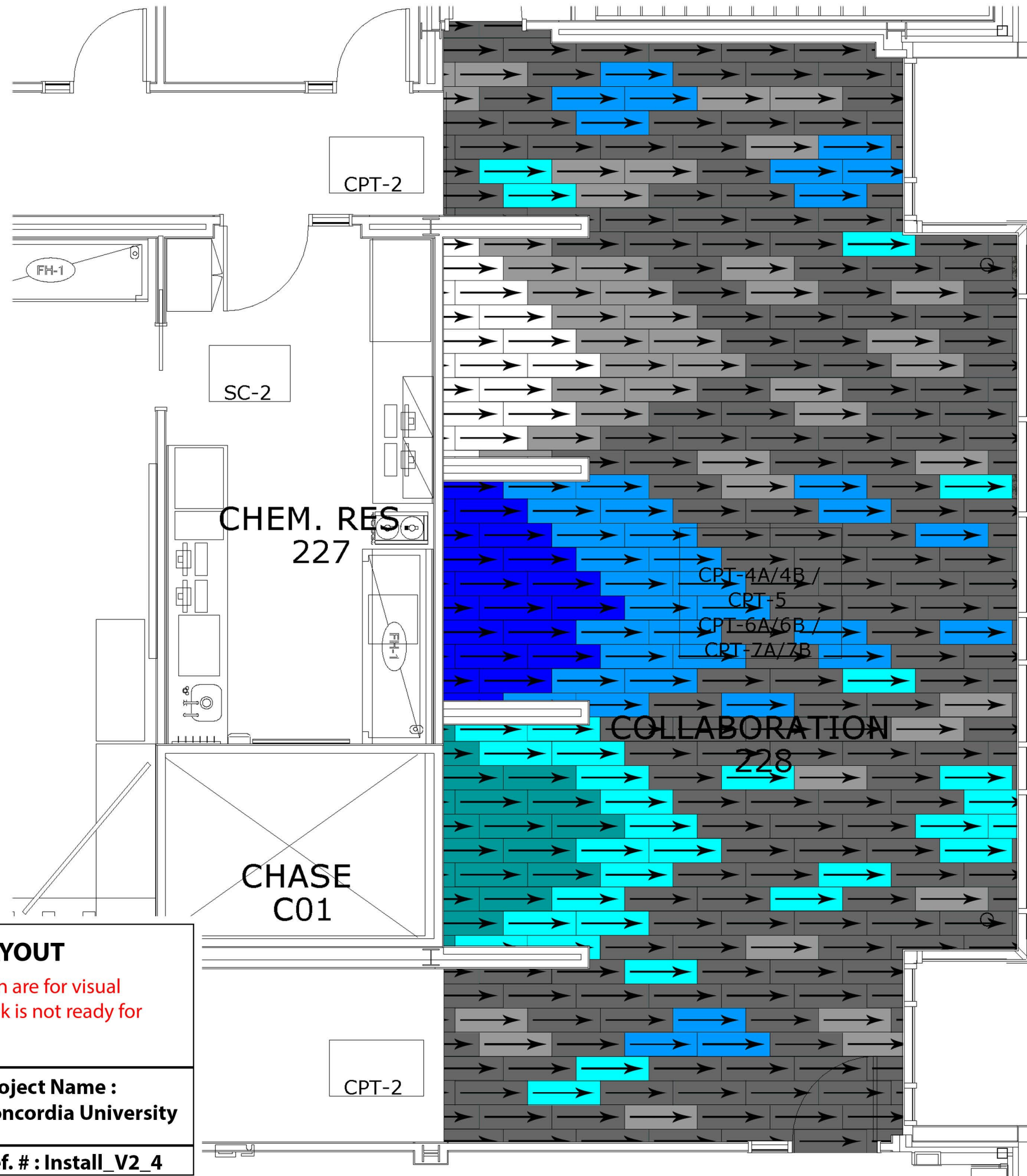
DESIGN LAYOUT

Patterns and colors shown are for visual ideation only. Design work is not ready for production purposes.

Date : 04/18/18	Made by : EM	Project Name : Concordia University
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Upper Level Install Layout	Ref. # : Install_V2_3
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UPPER LEVEL INSTALLATION LAYOUT FOR MOHAWK LICHEN COLLECTION



**UPPER LEVEL INSTALLATION LAYOUT
FOR MOHAWK LICHEN COLLECTION**

DESIGN LAYOUT

Patterns and colors shown are for visual ideation only. Design work is not ready for production purposes.

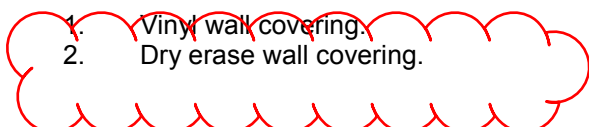
Date : 04/18/18	Made by : EM	Project Name : Concordia University
Upper Level Install Layout		Ref. # : Install_V2_4

SECTION 097200 - WALL COVERINGS**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. Vinyl wall covering.
 - 2. Dry erase wall covering.

1.3 ACTION SUBMITTALS

- A. Shop Drawings: Show location and extent of each wall-covering type. Indicate seams and termination points.
- B. Samples for Verification: For each type of wall covering and for each color, pattern, texture, and finish specified, full width by 36-inch- (914-mm-) long in size.
 - 1. Wall-Covering Sample: From same production run to be used for the Work, with specified treatments applied. Show complete pattern repeat.
- C. Product Schedule: For wall coverings. Use same designations indicated on Drawings.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For wall coverings to include in maintenance manuals.
 - 1. Include precautions against cleaning materials and methods that may be detrimental to finishes and performance of wallcoverings.

1.5 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install wall coverings until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at levels intended for occupants after Project completion during the remainder of the construction period.
- B. Lighting: Do not install wall covering until lighting that matches conditions intended for occupants after Project completion is provided on the surfaces to receive wall covering.

- C. Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall-covering manufacturer for full drying or curing.

1.6 WARRANTY

- A. For dry erase wallcoverings, provide manufacturer's limited ten-year warranty against manufacturing defects.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: As determined by testing identical wall coverings applied with identical adhesives to substrates according to test method indicated below by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 50 or less.

2.2 VINYL WALL COVERING

- A. Basis-of-Design Product: **(097200.A) VWC-1**

1. Manufacturer: Koroseal
2. Category: Type II
3. Product: Digital Wallcovering Media
4. Pattern / Image: Image to be determined. Image intended to be astronomical in nature. Contractor should include in pricing costs associated with purchase of image rights.

- B. Basis-of-Design Product: **(097200.B) VWC-2**

1. Manufacturer: writeWALLS Dry Erase Wallcovering
2. Category: Type II
3. Product: WWPC-MAG60-WHITE
4. Function: Designed for projection, writing and attracting magnets.
5. Width: 60 inches

- C. Basis-of-Design Product: **(097200.B2) VWC-3**

1. Manufacturer: writeWALLS Dry Erase Wallcovering
2. Category: Type II
3. Product: WWMAG60-WHITE
4. Function: Designed for writing and attracting magnets.
5. Width: 60 inches

2.3 ACCESSORIES

- A. Adhesive: Mildew-resistant, nonstaining, strippable adhesive, for use with specific wall covering and substrate application indicated and as recommended in writing by wall-covering manufacturer.
- B. Primer/Sealer: Mildew resistant, complying with requirements in Section 099123 "Interior Painting" and recommended in writing by primer/sealer and wall-covering manufacturers for intended substrate.
- C. Seam Tape: As recommended in writing by wall covering manufacturer.
- D. Aluminum Tray:
 - 1. Basis-of-Design Product: writeWALLS WWAMT clear satin anodized aluminum, box style tray for markers and erasers with associated end caps (WWPEC)
 - 2. Provide 18" wide tray for each location where wallcovering is applied to a wall surface. Coordinate location of tray with Owner in the field.
- E. Aluminum Trims:
 - 1. Basis-of-Design Product: writeWALLS WWJCP-V, J-CAP Trim for wallcovering, clear satin anodized aluminum
 - 2. Provide as indicated on room finish schedule.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for levelness, wall plumbness, maximum moisture content, and other conditions affecting performance of the Work.
- B. ALL LOCATIONS where wallcovering is to be applied shall receive a Level 5 drywall finish.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions for surface preparation.
- B. Clean substrates of substances that could impair bond of wall covering, including dirt, oil, grease, mold, mildew, and incompatible primers.
- C. Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.
 - 1. Gypsum Board: Prime with primer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
- D. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

- E. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.3 WALL-COVERING INSTALLATION

- A. Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated.
- B. Cut wall-covering strips in roll number sequence. Change the roll numbers at partition breaks and corners.
- C. Install strips in same order as cut from roll.
 - 1. For solid-color, even-texture, or random-match wall coverings, reverse every other strip.
- D. Install wall covering without lifted or curling edges and without visible shrinkage.
- E. Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without overlaps or gaps between strips.
- F. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.

3.4 CLEANING

- A. Remove excess adhesive at seams, perimeter edges, and adjacent surfaces.
- B. Use cleaning methods recommended in writing by wall-covering manufacturer.
- C. Replace strips that cannot be cleaned.
- D. Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

END OF SECTION 097200

SECTION 097260 – TACKABLE WALL COVERINGS**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. Cork wall coverings.

1.3 ACTION SUBMITTALS

- A. Shop Drawings: Show location and extent of each wall-covering type. Indicate seams and termination points.
- B. Samples for Verification: For each type of wall covering and for each color, pattern, texture, and finish specified.
- C. Product Schedule: For wall coverings. Use same designations indicated on Drawings.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For wall coverings to include in maintenance manuals.
 - 1. Include precautions against cleaning materials and methods that may be detrimental to finishes and performance of wallcoverings.

1.5 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install wall coverings until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at levels intended for occupants after Project completion during the remainder of the construction period.
- B. Lighting: Do not install wall covering until lighting that matches conditions intended for occupants after Project completion is provided on the surfaces to receive wall covering.
- C. Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall-covering manufacturer for full drying or curing.

1.6 WARRANTY

- A. Provide manufacturer's standard warranty covering the product for a period of five years after Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CORK WALL COVERING

- A. Description: Homogeneous tackable surface material made of primary natural materials consisting of linseed oil, cork, rosin binders and dry pigments mixed and calendared onto a natural jute backing. The uni-color extends throughout the thickness of the material.
- B. Basis-of-Design Product: **(097260.A)**
 - 1. Manufacturer: writeWALLS TackNOW
 - 2. Width: 48 inches
 - 3. Length: As required to comply with locations noted on drawings.
 - 4. Gauge: 6.0mm (1/4")
 - 5. Backing: Jute
 - 6. Pattern and Color: As selected by Architect from manufacturer's standard patterns and colors. One color will be selected for use throughout the building.
 - 7. Adhesive: Forbo Floorign, Inc., L 910W Adhesive.

2.2 ACCESSORIES

- A. Adhesive: Mildew-resistant, nonstaining, strippable adhesive, for use with specific wall covering and substrate application indicated and as recommended in writing by wall-covering manufacturer.
- B. Primer/Sealer: Mildew resistant, complying with requirements in Section 099123 "Interior Painting" and recommended in writing by primer/sealer and wall-covering manufacturers for intended substrate.
- C. Aluminum Trims:
 - 1. Basis-of-Design Product: writeWALLS WWJTRIM, J-TRIM for Tacknow, clear satin anodized aluminum
 - 2. Provide as indicated on room finish schedule and in drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for levelness, wall plumbness, maximum moisture content, and other conditions affecting performance of the Work.
- B. ALL LOCATIONS where wallcovering is to be applied shall receive a Level 5 drywall finish.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions for surface preparation.
- B. Clean substrates of substances that could impair bond of wall covering, including dirt, oil, grease, mold, mildew, and incompatible primers.
- C. Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.
 - 1. Gypsum Board: Prime with primer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
- D. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.
- E. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.3 WALL-COVERING INSTALLATION

- A. Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated.
- B. Adhesive Installation: Cut required length from roll, allowing 2-3 inches overlap. Lay sheets flat to acclimate, preferably 24 hours prior to installation. Back roll sheets once in reverse direction to release roll stretch. Remove the factory edge from both sides of the material. Apply adhesive and place sheet into wet adhesive and roll with a 100 pound roller.
 - 1. Adhesive Material Installation: Use trowel as recommended by manufacturer for specific adhesive. Spread at a rate of approximately 150 ft²/gallon, as recommended by manufacturer
- C. Installation Techniques:
 - 1. Adhere material to substrate without producing open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections in completed installation.
 - 2. Use adhesive applied to substrate in compliance with manufacturer's recommendations, including those for trowel notching, adhesive mixing, and adhesive open and working times.
 - 3. Roll material as required by manufacturer.
- D. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.

3.4 CLEANING

- A. Remove excess adhesive at seams, perimeter edges, and adjacent surfaces.
- B. Use cleaning methods recommended in writing by wall-covering manufacturer.

- C. Replace strips that cannot be cleaned.
- D. Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

END OF SECTION 097260

SECTION 099737 – DRY ERASE COATINGS**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. Field-applied dry erase coatings.

1.3 ACTION SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- B. Product Schedule: Provide schedule that identifies all locations where coating is to be applied. Use same designations indicated on Drawings.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For coatings to include in maintenance manuals.
 - 1. Include precautions against cleaning materials and methods that may be detrimental to finishes and performance of coating.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 3 years manufacturing dry erase coatings.
- B. Mock-ups: Prepare mock-ups for Architect's review and to establish requirements for substrate finish and final coating application, texture and color.
 - 1. Install dry erase coatings mock-up in area designated by Architect.
 - 2. Correct areas, modify method of application/installation, or adjust finish texture as directed by Architect to comply with specified requirements.
 - 3. Maintain mock-ups accessible to serve as a standard of quality for this Section. Accepted mock-ups may remain in place

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original factory wrappings and containers, clearly labeled with manufacturer, product name, and fire hazard classification.
- B. Store materials in original undamaged packages and containers inside a well -ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity. Store at temperatures above 40 degrees F. Do not allow product to freeze.

1.7 PROJECT CONDITIONS

- A. Maintain ambient temperature not less than 50 deg F minimum and 85 deg F maximum 72 hours prior to beginning of installation.
 - 1. Do not install dry erase coatings unless substrate temperature is above 60 degrees F.
 - 2. Do not install dry erase coatings until the space is enclosed and weatherproof.
 - 3. Do not install dry erase coatings until temperature is stabilized and permanent lighting is in place

1.8 WARRANTY

- A. Warranty: Manufacturer's 10 year limited material warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Basis-of-Design Manufacturer: **(099737.A)**
 - 1. Manufacturer: IdeaPaint
40 Broad Street, 1st Floor
Boston, MA 02109
telephone 617-714-1050
website www.ideapaint.com

2.2 PRODUCTS

- A. Dry Erase Coating: CREATE by IdeaPaint, providing a surface suitable for use of dry erase markers.
 - 1. Color: Clear
 - 2. Fire Rating (ASTM E84): Class A, flame spread index 15, smoke developed index 5.
 - 3. Density: Clear. 9.5 lbs/gal Part A, 7.88 lbs/gal Part B
 - 4. Opacity / Hiding Power (ASTM D2805): Clear
 - 5. Sag Resistance (ASTM D4400 Method 6.5.6): Clear 4.4
 - 6. Flow and Leveling (ASTM D2801): Clear 9.
 - 7. Crack Resistance (ASTM D522): Clear. 9.
 - 8. Finish / Gloss (ASTM D523) on drywall board:
 - a. Clear.

- 1) 20 degrees: 63.4
 - 2) 60 degrees: 82.3
 - 3) 85 degrees: 96.1
9. Scrub Resistance (ASTM D2486): Clear. Greater than 5,000 cycles.
 10. Stain Removal / Washability (ASTM D3450): Clear. 98.3 percent
 11. Chemistry Type: A non isocyanate based coating.

- B. Roller Covers: Use product provided by manufacturer – no substitutions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions in which dry erase coatings will be installed.
1. Complete finishing operations, including painting, before beginning installation of dry erase coatings.
 2. Wall surfaces to receive dry erase coatings shall be dry and free from dirt, grease, loose paint, and scale.
 3. Do not proceed with installations until unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Clear.
1. Remove hardware, accessories, plates and similar items to allow dry erase coatings to be installed.
 2. Inspect to make certain surface is acceptable and then wipe all dust. Paint product is a high gloss coating; imperfections and visible seams will telegraph.
 3. Paint: Application of coating is to take place AFTER wall has been painted. Allow latex top coat to dry for at least 24 hours prior to applying IdeaPaint CREATE Clear.
 4. Clean: Wipe surface with a clean, damp cloth to remove dust and environmental debris. Allow surface to completely dry.
 5. Ventilate area thoroughly to aid in curing process and to dissipate mild odor. Allow a high percentage of outside air into current ventilation.

3.3 APPLICATION

- A. Comply with manufacturers printed installation instructions. Mix components in strict accordance with manufacturer's instructions. Pot life is 1 hour maximum.
- B. Apply dry erase coating with specified roller only. Comply with the following:
1. Apply heavy single coat only, using 2 layer method as described. Do not recoat or touch up applied coating once 10 minute return time has passed.
 2. Divide your entire planned surface into areas up to 50 square feet.
 3. Use a 4 inch foam roller to cut in all edges and light switches within the current area.
 4. Using the included 9 inch roller, from one end of the current area to the other, apply in sections up to 4 feet wide by the full height of the surface.

5. Be sure to overlap the edges of each section and use a backrolling technique as you go to even out the application.
 6. Watch for roller marks, drip marks, debris and missed spots, re-roll as needed.
 7. Every 50 square feet or 3-5 minutes, return to the first section of the area you have just finished and apply the second layer using the same method detailed above. This helps to build up a thick and effective IdeaPaint surface.
 8. Do not wait more than 10 minutes to perform the second layer over the first.
 9. Remove masking tape within 1 hour of painting.
- C. Dry erase coating may be applied directly onto clean, dry, smooth surfaces which are:
1. A finished drywall surface.
 2. A latex-based topcoat.
- D. Coating shall cure for a minimum of 7 days after application before use.
- E. Application Rate: 4 mils wet film thickness as measured with a wet film gauge; maximum 50 square feet per quart or 200 square feet per gallon.

3.4 CLEANING AND MAINTENANCE

- A. Regular erasing and cleaning should be done with a standard dry erase eraser or a dry microfiber towel. For more thorough cleaning, a damp microfiber towel may be used or IdeaPaint Cleaner. If damaged, the original surface shall be deglossed by sanding surface and priming before recoating.

END OF SECTION 099737

SECTION 101100 - VISUAL DISPLAY 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. Section Includes:
 - 1. Visual display board assemblies.
 - 2. Sliding visual display units.
 - 3. Natural-slate chalkboards.

1.3 ACTION SUBMITTALS

- A. Shop Drawings: For visual display units.
 - 1. Include plans, elevations, sections, details, and attachment to other work.
 - 2. Show locations of panel joints. Show locations of field-assembled joints for factory-fabricated units too large to ship in one piece.
 - 3. Include sections of typical trim members.
 - 4. Include wiring diagrams for power and control wiring.
- B. Samples for Initial Selection: For each type of visual display unit indicated, for units with factory-applied color finishes, and as follows:
 - 1. Samples of tackboard for selection of color.
- C. Product Schedule: For visual display units. Use same designations indicated on Drawings.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For visual display units and motorized units to include in maintenance manuals.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver factory-fabricated visual display units completely assembled in one piece. If dimensions exceed maximum manufactured unit size, or if unit size is impracticable to ship in one piece, provide two or more pieces with joints in locations indicated on approved Shop Drawings.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install visual display units until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.7 WARRANTY

- A. Special Warranty for Porcelain-Enamel Face Sheets: Manufacturer agrees to repair or replace porcelain-enamel face sheets that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Surfaces lose original writing and erasing qualities.
 - b. Surfaces exhibit crazing, cracking, or flaking.
 - 2. Warranty Period: Life of the building.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain each type of visual display unit from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 25 or less.
 - 2. Smoke-Developed Index: 50 or less.
- B. 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.

2.3 VISUAL DISPLAY BOARD ASSEMBLY **(101100.A, 101100.B, 101100.C, 101100.D)**

- A. Basis-of-Design Product: Subject to compliance with requirements, provide **Claridge Products** or comparable product pre-approved during bidding.
- B. Visual Display Board Assembly: factory fabricated.
 - 1. Assembly: Chalkboard markerboard and tackboard.
 - 2. Corners: Square.
 - 3. Width: As indicated on Drawings.
 - 4. Height: As indicated on Drawings.
 - 5. Mounting Method: Direct to wall.

- C. Chalkboard Panel: Porcelain-enamel-faced chalkboard panel on core indicated.
 - 1. Color: Black.
- D. Markerboard Panel: Claridge Products “LCS Series 4” markerboard panel on core indicated.
 - 1. Color: White.
- E. Tackboard Panel: Claridge Products “Nucork” plastic-impregnated-cork tackboard panel on core indicated.
 - 1. Color and Pattern: As selected by Architect from full range of industry colors.
- F. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch- (1.57-mm-) thick, extruded aluminum; standard size and shape.
 - 1. Aluminum Finish: Clear anodic finish.
- G. Joints: Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, as indicated on approved Shop Drawings.
- H. Chalktray: Manufacturer's standard; continuous.
 - 1. Solid Type: Extruded aluminum with ribbed section and smoothly curved exposed ends.
- I. Display Rail: Manufacturer's standard, extruded-aluminum display rail with plastic-impregnated-cork insert, end stops, and continuous paper holder, designed to hold accessories.
 - 1. Size: 1 inch (25 mm) high by full length of visual display unit.
 - 2. Tackboard Insert Color: As selected by Architect from full range of industry colors.
 - 3. Aluminum Color: Match finish of visual display assembly trim.

2.4 SLIDING VISUAL DISPLAY UNITS

- A. Vertical-Sliding Visual Display Units: Factory-fabricated units consisting of extruded-aluminum tubular frame, fixed rear visual display panel, and aluminum-framed vertical-sliding panels; motor operated; designed for recessed mounting. Provide panels that operate smoothly without vibration or chatter.
 - 1. One-Track Unit: Fabricate unit with fixed rear panel covering entire rear surface. Provide one sliding panel equal to not less than one-half of overall height of unit.
 - 2. Hardware: Manufacturer's standard, neoprene ball-bearing end rollers, four on each side of each sliding panel. Counterbalance each sliding panel with counterweights supported by steel aircraft cable over ball-bearing sheaves; with removable cover plate for access to counterweights. Provide rubber bumpers at top and bottom for each sliding panel.
 - 3. Motorized Operation: Provide not less than one motor with gearhead reducers for each sliding panel, mounted above visual display unit and connected to sliding panels with steel aircraft cable. Provide removable cover plate for access to motor. Equip motors with limit switches to automatically stop motor at each end of travel.
 - a. Electric Motors: UL approved or recognized, totally enclosed, complying with NEMA MG 1, with thermal-overload protection; 1/15 hp, single phase, 110 V, 60 Hz.

- b. Control Station: Three-position, momentary contact, switch-operated control station with open, close, and off functions; with NEMA ICS 6, Type 1 enclosure. Provide one control station(s) for each sliding panel unit.
 - c. Key Switch: Provide supplementary key switch for each control station. Furnish two keys for each control station, keyed alike.
- 4. Overall Width: As indicated on Drawings.
- 5. Overall Height: As indicated on Drawings.

B. Panels and Accessories:

- 1. Sliding Markerboard Panel: Porcelain-enamel-faced markerboard panel on kraft-paper honeycomb core designed to be rigid and to resist warpage, not less than 3/8 inch (9.5 mm) thick.
 - a. Color: White.
- 2. Fixed Rear Chalkboard Panel: Porcelain-enamel-faced chalkboard panel on core indicated.
 - a. Color: Black.
- 3. Accessories: Chalktray.
- 4. Display Rail: Manufacturer's standard, extruded-aluminum display rail with plastic-impregnated-cork insert, end stops, designed to hold accessories.
 - a. Size: 1 inch (25 mm) high by full length of visual display unit.
 - b. Tackboard Insert Color: As selected by Architect from full range of industry colors.
- 5. Aluminum Trim: Factory applied; in manufacturer's standard size and profile; with clear anodic finish.

2.5 CHALKBOARD PANELS

- A. Porcelain-Enamel Chalkboard Panels: High-pressure, factory-laminated chalkboard panels of balanced three-ply construction, consisting of moisture-barrier backing, core material, and porcelain-enamel face sheet with matte finish. Laminate panels under heat and pressure with manufacturer's standard, flexible waterproof adhesive.
 - 1. Face Sheet Thickness: 0.021 inch (0.53 mm) uncoated base metal thickness.
 - 2. Medium-Density Fiberboard Core: 7/16 inch (11 mm) thick; with manufacturer's standard moisture-barrier backing.
 - 3. Laminating Adhesive: Manufacturer's standard moisture-resistant thermoplastic type.

2.6 MARKERBOARD PANELS

- A. Porcelain-Enamel Markerboard Panels: Balanced, high-pressure, factory-laminated markerboard assembly of three-ply construction, consisting of moisture-barrier backing, core material, and porcelain-enamel face sheet with low-gloss finish. Laminate panels under heat and pressure with manufacturer's standard, flexible waterproof adhesive.
 - 1. Face Sheet Thickness: 24 gauge uncoated base metal thickness.

2. Medium-Density Fiberboard Core: 7/16 inch (11 mm) thick; with manufacturer's standard moisture-barrier backing.
3. Laminating Adhesive: Manufacturer's standard moisture-resistant thermoplastic type.

2.7 TACKBOARD PANELS

A. Tackboard Panels:

1. Facing: 1/4-inch- (6-mm-) thick plastic-impregnated cork.
2. Core: 1/4-inch- (6-mm-) thick hardboard.

2.8 MATERIALS

- A. Porcelain-Enamel Face Sheet: PEI-1002, with face sheet manufacturer's standard two- or three-coat process.
- B. Plastic-Impregnated-Cork Sheet: Seamless, homogeneous, self-sealing sheet consisting of granulated cork, linseed oil, resin binders, and dry pigments that are mixed and calendared onto fabric backing; with washable vinyl finish and integral color throughout with surface-burning characteristics indicated.
- C. Hardboard: ANSI A135.4, tempered.
- D. Medium-Density Fiberboard: ANSI A208.2, Grade 130.
- E. Extruded Aluminum: ASTM B 221 (ASTM B 221M), Alloy 6063.
- F. Adhesives for Field Application: Mildew-resistant, nonstaining adhesive for use with specific type of panels, sheets, or assemblies; and for substrate application; as recommended in writing by visual display unit manufacturer.

2.9 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.10 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance of the Work.
- B. Examine roughing-in for electrical power systems to verify actual locations of connections before installation of motorized, sliding visual display units.
- C. Examine walls and partitions for proper preparation and backing for visual display units.
- D. Examine walls and partitions for suitable framing depth where sliding visual display units will be installed.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions for surface preparation.
- B. Clean substrates of substances, such as dirt, mold, and mildew, that could impair the performance of and affect the smooth, finished surfaces of visual display boards.
- C. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, projections, depressions, and substances that will impair bond between visual display units and wall surfaces.
- D. Prepare recesses for sliding visual display units as required by type and size of unit.

3.3 INSTALLATION

- A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.
- B. Factory-Fabricated Visual Display Board Assemblies: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display board assemblies with fasteners at not more than 16 inches (400 mm) o.c. Secure tops and bottoms of boards to walls.
- C. Visual Display Board Assembly Mounting Heights: Install visual display units at mounting heights indicated on Drawings, or if not indicated, at heights indicated below.
 - 1. Mounting Height for Grades 7 and Higher: 36 inches (914 mm) above finished floor to top of chalktray.
- D. Sliding Visual Display Units: Install units at mounting heights indicated. Attach to wall framing with fasteners at not more than 16 inches (400 mm) o.c.

1. Adjust panels to operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.4 CLEANING AND PROTECTION

- A. Clean visual display units according to manufacturer's written instructions. Attach one removable cleaning instructions label to visual display unit in each room.
- B. Touch up factory-applied finishes to restore damaged or soiled areas.
- C. Cover and protect visual display units after installation and cleaning.

3.5 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain motorized, sliding visual display units.

END OF SECTION 101100

SECTION 123553.19 - WOOD 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.
2. Utility-space framing at backs of base cabinets.
3. Filler and closure panels.
4. Laboratory countertops.
5. Tables.
6. Shelves.
7. Laboratory sinks.
8. Laboratory accessories.
9. Water, laboratory gas, and electrical service fittings.

B. Related Requirements:

1. Section 092216 "Non-Structural Metal Framing" for reinforcements in metal-framed partitions for anchoring laboratory casework.
2. Section 096513 "Resilient Base and Accessories" for resilient base applied to wood laboratory casework.
3. Section 115313 "Laboratory Fume Hoods" for fume hoods.

1.3 DEFINITIONS

- A. Exposed Surfaces of Casework: Surfaces visible when doors and drawers are closed, including bottoms of cabinets more than 48 inches 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."
- B. 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 cases 78 inches or more above floor and bottoms of cabinets more than 24 inches but less than 48 inches above floor are defined as semi-exposed.
- C. Concealed Surfaces of Casework: Include sleepers, web frames, dust panels, and other surfaces not usually visible after installation.

- D. MDF: Medium-density fiberboard.
- 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 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
- B. Keying Conference: Conduct conference at Project site. Incorporate keying conference decisions into final keying requirements.

1.5 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.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For laboratory casework. Include plans, elevations, sections, and attachment details.
 - 1. Indicate types and sizes of cabinets.
 - 2. Indicate locations of hardware and keying of locks.
 - 3. Indicate locations and types of service fittings.
 - 4. Indicate locations of blocking and reinforcements required for installing laboratory casework.
 - 5. Include details of utility spaces showing supports for conduits and piping.
 - 6. Include details of support framing system.
 - 7. Include details of exposed conduits, if required, for service fittings.
 - 8. Indicate locations of and clearances from adjacent walls, doors, windows, other building components, and other laboratory equipment.
 - 9. Include coordinated dimensions for laboratory equipment specified in other Sections.
- C. Keying Schedule: Include schematic keying diagram, and index each key set to unique designations that are coordinated with the Contract Documents.
- D. Samples for Verification: Unless otherwise directed, approved full-size Samples may become part of the completed Work, if in an undisturbed condition at time of Substantial Completion. Notify Architect of their exact locations. If acceptable full-size Samples at Project site are not incorporated into the Work, retain and remove them when directed by Architect.
 - 1. One full-size, finished base cabinet complete with hardware, doors, and drawers.
 - 2. One full-size, finished wall cabinet complete with hardware, doors, and adjustable shelves.
 - 3. One Sample each of hinged and sliding doors.

4. 6-inch-square Samples for each type of countertop material.
5. One of each service fitting specified, complete with accessories and specified finish.
6. One of each type of sink and accessory item specified.
7. One of each type of hardware item specified.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer.
- B. 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 and system structural performance specified in "Performance Requirements" Article.
- C. 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.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. 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.
- B. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Cabinet Mounting Clips and Related Hardware: Quantity equal to 5 percent of amount installed, but no fewer than 20 of each type.
 2. Modular Countertop Units: Two extra units of each length and material installed.

1.9 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 W.

1.10 DELIVERY, STORAGE, AND HANDLING

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

1.11 FIELD 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.
- B. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before being enclosed, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1. CIF Laboratory Solutions.
 - 2. Kewaunee Scientific Corporation.
 - 3. Mott Manufacturing Ltd.
- B. Source Limitations: Obtain laboratory casework from single source from single manufacturer unless otherwise indicated.
 - 1. Obtain countertops, sinks, accessories and service fittings from casework manufacturer.
- C. Product Designations: Drawings indicate sizes and configurations of laboratory casework by referencing designated manufacturer's catalog numbers. Other manufacturers' laboratory casework of similar sizes and similar door and drawer configurations and complying with Specifications may be considered. See Section 016000 "Product Requirements."

2.2 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.
 - 2. Suspended Base Cabinets (Internal Load): 160 lb/ft.
 - 3. Work Surfaces (Including Tops of Suspended Base Cabinets): 160 lb/ft.
 - 4. Wall Cabinets (Upper Cabinets): 160 lb/ft.
 - 5. Shelves: 40 lb/sq. ft.

2.3 CASEWORK, GENERAL

- A. Casework Product Standard: Comply with SEFA 8 W, "Laboratory Grade Wood Casework."
- B. Flammable Liquid Storage: Where cabinets are indicated for solvent or flammable liquid storage, provide units that are listed and labeled as complying with requirements in NFPA 30 by a testing and inspecting agency acceptable to authorities having jurisdiction.
- C. 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.

2.4 WOOD CASEWORK

- A. Design: Reveal overlay with square edges.
 - 1. Provide 1/8-inch reveals between doors and drawers that are adjacent.
- B. Wood Species: White maple.

- C. Cut: Plain sliced/sawn.
- D. Matching:
 - 1. Provide veneers for each elevation from a single flitch, book and running matched.
 - a. Provide continuous matching of adjacent drawer fronts within each cabinet and end matching between drawer fronts of adjacent cabinets.
- E. Grain Direction:
 - 1. Vertical on both doors and drawer fronts, with continuous vertical matching.
 - 2. Vertical on end panels.
 - 3. Vertical on knee-space panels.
 - 4. Horizontal on aprons and table frames.
- F. 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. Plywood: Hardwood plywood, either veneer core or particleboard core, made without urea formaldehyde with face veneer of species indicated. Grade A exposed faces, at least 1/50 inch thick, and Grade J cross-bands. Provide backs of same species as faces.
 - 3. Solid Wood: Clear hardwood lumber of species indicated.
- G. Semi-exposed Materials:
 - 1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects, of same species as exposed solid wood.
 - 2. Plywood: Hardwood plywood of same species as exposed plywood. Grade B faces and Grade J cross-bands. Provide backs of same species as faces.
 - 3. Provide solid wood or hardwood plywood for semi-exposed surfaces unless otherwise indicated.
 - 4. Metal for Steel Drawer Pans: Cold-rolled, carbon-steel sheet complying with ASTM A 1008/A 1008M; matte finish; suitable for exposed applications.
- H. Concealed Materials:
 - 1. Solid Wood: Any species, with no defects affecting strength or utility.
 - 2. Plywood: Hardwood plywood. Provide backs of same species as faces.
 - 3. Hardboard.

2.5 WOOD CABINET AND TABLE MATERIALS

- A. General:
 - 1. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.
- B. Hardwood Plywood: HPVA HP-1, particleboard core except where veneer core is indicated.
- C. Hardboard: ANSI A135.4, Class 1 Tempered.

- D. Edge-banding for Wood-Veneered Construction: Minimum 1/8-inch-thick, solid wood of same species as face veneer.

- 1. Select wood edge-banding for grain and color compatible with face veneers.

2.6 AUXILIARY CABINET MATERIALS

- A. Acid Storage-Cabinet Lining: 1/4-inch-thick, polyethylene or polypropylene.
- B. Glass for Glazed and Sliding Doors: Clear laminated tempered glass complying with ASTM C 1172, Kind LT, Condition A, Type I, Class I, Quality-Q3; with two plies not less than 3.0 mm thick and with clear, polyvinyl butyral interlayer.

2.7 COUNTERTOP TABLETOP SHELF AND SINK MATERIALS

- A. Epoxy: Factory-molded, modified epoxy-resin formulation with smooth, nonspecular finish.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Durcon Incorporated.
 - 2. Physical Properties:
 - a. Flexural Strength: Not less than 10,000 psi.
 - b. Modulus of Elasticity: Not less than 2,000,000 psi.
 - 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.
 - 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.
- B. Phenolic Composite: Solid, high-pressure decorative laminate, complying with NEMA LD 3, Grade CGS.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Trespa North America.

2. Chemical Resistance: Composite countertop 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, ethyl acetate, ethyl alcohol, formaldehyde (37 percent), furfural, hydrochloric acid (37 percent), nitric acid (30 percent), phosphoric acid (85 percent), sodium hydroxide (20 percent), sulfuric acid (33 percent), toluene, and zinc chloride.
 3. Color: Black.
- C. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304.
- D. Counter Top Wall Mounting Brackets:
1. Provide 1 ½ inch square tube steel, welded wall bracket, bolted to wall. Bracket depth to match depth of counter top. Space brackets as required by manufacturer to limit deflection of countertop material to L/360. Except where noted otherwise, brackets are to be powder coated.
 - a. Where indicated in drawings, provide stainless steel wall bracket.

2.8 FABRICATION

- A. Construction: Provide wood-faced laboratory casework complying with SEFA 8 W and of the following minimum construction:
1. Bottoms of Base Cabinets and Tall Cabinets: 3/4-inch-thick, hardwood plywood.
 2. Tops and Bottoms of Wall Cabinets and Tops of Tall Cabinets: 1-inch-thick, veneer-core hardwood plywood.
 3. Ends of Cabinets: 3/4-inch-thick, hardwood plywood.
 4. Shelves: 1-inch-thick, veneer-core hardwood plywood.
 5. Base Cabinet Top Frames: 3/4-by-2-inch solid wood with mortise and tenon or doweled connections, glued and pinned or screwed.
 6. Exposed Backs of Cabinets: 3/4-inch-thick, hardwood plywood.
 7. Unexposed Backs of Cabinets: 1/4-inch-thick hardboard dadoed into sides, bottoms, and tops, unless otherwise indicated
 8. Drawer Fronts: 3/4-inch-thick, hardwood plywood or solid hardwood.
 9. Drawer Sides and Backs: 1/2-inch-thick, solid hardwood or hardwood plywood, with glued dovetail or multiple-dowel joints.
 10. Drawer Bottoms: 1/4-inch-thick, PVC-clad hardboard glued and dadoed into front, back, and sides of drawers. Tempered hardboard is not allowed.
 11. Drawer Bodies: Steel drawer pans formed from 0.036-inch-thick metal, metallic phosphate treated, and finished with manufacturer's standard two-coat, baked-enamel finish consisting of prime coat and thermosetting topcoat with a minimum dry film thickness of 1 mil for topcoat and 2 mils for system.
 12. Doors 48 Inches High or Less: 3/4 inch thick, with particleboard or MDF cores, solid-hardwood stiles and rails, and hardwood face veneers and cross-bands.
 13. Doors More Than 48 Inches High: 1-1/8 inches thick, with particleboard cores and hardwood face veneers and cross-bands.
 14. Stiles and Rails of Glazed Doors 48 Inches High or Less: 3/4-inch-thick, solid hardwood.
 15. Stiles and Rails of Glazed Doors More Than 48 Inches High: 1-1/16-inch-thick, solid wood with hardwood face veneers.

- B. Tables: Solid-hardwood legs, not less than 2 inches square with solid-hardwood stretchers as needed to comply with product standard. Bolt stretchers to legs and cross-stretchers, and bolt legs to table aprons. Provide leveling device at bottom of each leg.
 - 1. Leg Shoes: Black vinyl or rubber, open-bottom, slip-on type.
- C. Utility-Space Framing: Steel framing units consisting of two steel slotted channels complying with MFMA-4, not less than 1-5/8 inches square by 0.105-inch nominal thickness, and connected at top and bottom by U-shaped brackets made from 1-1/4-by-1/4-inch steel flat bars. Framing units may be made by welding specified channel material into rectangular frames instead of using U-shaped brackets.
- D. Removable Backs: Provide backs that can be removed from within cabinets at utility spaces.
- E. 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 knee-space panels (modesty panels) at spaces between base cabinets, where cabinets are not installed against a wall or where space is not otherwise closed.
 - 2. Provide utility-space closure panels at spaces between base cabinets where utility space would otherwise be exposed, including spaces below countertops.
 - 3. Provide closure panels at ends of utility spaces where utility space would otherwise be exposed.

2.9 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 semi-exposed surfaces as necessary to match approved Samples. Apply stain in a manner that produces a consistent appearance. Apply wash-coat sealer before applying stain to closed-grain wood species.
 - 1. Stain Color: As selected by Architect from manufacturer's full range.
- C. Chemical-Resistant Finish: Apply laboratory casework manufacturer's standard three-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 W. Acceptance level for chemical spot test shall be no more than four Level 3 conditions.

2.10 HARDWARE

- A. General: Provide laboratory casework manufacturer's standard, commercial-quality, heavy-duty hardware complying with requirements indicated for each type.

- B. Butt Hinges: Stainless-steel, five-knuckle hinges complying with BHMA A156.9, Grade 1, with antifriction bearings and rounded tips. Provide two for doors 48 inches high or less and three for doors more than 48 inches high.
- C. Hinged Door and Drawer Pulls: Stainless-steel back-mounted pulls. Provide two pulls for drawers more than 24 inches wide.
 - 1. Design: Wire pulls.
 - 2. Overall Size: 1-1/4 by 4-1/2 inches.
- D. Sliding Door Pulls: Stainless-steel recessed flush pulls.
 - 1. Design and Size: Round, 3/4-inch diameter by 3/16 inch deep.
- E. Door Catches: Nylon-roller spring catches. Provide two catches on doors more than 48 inches high.
- F. Drawer Slides: Side mounted, epoxy-coated steel, self-closing; designed to prevent rebound when drawers are closed; complying with BHMA A156.9, Type B05091.
 - 1. Provide Grade 1HD-100; for drawers not more than 6 inches high and 24 inches wide.
 - 2. Provide Grade 1HD-200; for drawers more than 6 inches high or 24 inches wide.
 - 3. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Full-extension, ball-bearing type.
- G. Drawer Stops: All regular drawers shall be equipped with integral stops or drawer bumpers on each side of drawer body to prevent drawer head impact with cabinet body.
- H. Cabinet Door Bumper Pads: Non-staining, non-marring, clear polyurethane pads with pressure sensitive, adhesive backing for sound and vibration dampening, preventing direct contact between door and cabinet. Pad should have raised tip in middle of pad. Provide at top and bottom corners along pull edges of doors 36 inches and less in height. Provide at top and bottom corners and at an intermediate location along pull edge of doors greater than 36 inches in height.
- I. Door Stops: Provide chain door stops for any tall cabinet door, which will strike an obstruction when opened between 90° and 135°.
 - 1. Provide #30 zinc-plated steel sash chains; cut to length to all door to open 1-1/2 inch from obstruction.
 - 2. Provide zinc chromate wire screw eyes. Open eye as required to attach chain. Through-bolting not allowed.
- J. Label Holders: Stainless steel, aluminum, or chrome plated; sized to receive standard label cards approximately 1 by 2 inches, attached with screws or rivets. Provide on all drawers.
- K. Locks: Cam type with five-pin tumbler, brass with chrome-plated finish; complying with BHMA A156.11, Type E07281 or Type E07261.
 - 1. Provide a minimum of two keys per lock and two master keys.
 - 2. Provide where indicated.
 - 3. Keying: Key locks alike within each room, key each room separately.
 - 4. Master Key System: Key all locks to be operable by master key.
- L. Sliding-Door Hardware Sets: Laboratory casework manufacturer's standard, to suit type and size of sliding-door units.

- M. Adjustable Shelf Supports: Powder-coated steel shelf rests complying with BHMA A156.9, Type B04013.
- N. Adjustable Wall Shelf Supports: Surface-type steel standards and steel shelf brackets, with epoxy powder-coated finish, complying with BHMA A156.9, Type B04102 and Type B04112.

2.11 COUNTERTOPS, TABLETOPS, SHELVES 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, with continuous drip groove on underside 1/2 inch 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, unless otherwise indicated.
 - 2. Overflows: For each sink except cup sinks, provide overflow of standard beehive or open-top design with separate strainer. Height 2 inches less than sink depth. Provide in same material as strainer.
- C. Epoxy Countertops Tabletops and Sinks:
 - 1. Countertop Fabrication: Fabricate with factory cutouts for sinks, holes for service fittings and accessories, and butt joints assembled with epoxy adhesive and concealed metal splines.
 - a. Countertop Configuration: Unless noted otherwise, provide flat, 1 inch thick, with beveled edge and corners, and with drip groove and applied backsplash.
 - b. Countertop Configuration: Where noted on drawings provide raised (marine) edge, 1 1/4-inch minimum thickness, with integral or applied raised edge having beveled edge and corners, and with applied backsplash.
 - c. Countertop Construction: Uniform throughout full thickness.
 - 2. Tabletop Fabrication:
 - a. Tabletop Configuration: Flat, 1 inch thick, with beveled edge and corners, and with drip groove at perimeter.
 - b. Tabletop Construction: Uniform throughout full thickness.
 - 3. Sink Fabrication: Molded in one piece with smooth surfaces, coved corners, and bottom sloped to outlet; 1/2-inch minimum thickness.
 - a. Provide with polypropylene strainers and tailpieces.
 - b. Provide sinks for drop-in installation with 1/4-inch-thick lip around perimeter of sink.
 - c. Provide manufacturer's recommended adjustable support system for table- and cabinet-type installations.

D. Phenolic-Composite Countertops Tabletops and Shelves:

1. Countertop Fabrication: Fabricate with cutouts for sinks, holes for service fittings and accessories, and butt joints assembled with epoxy adhesive and concealed metal splines.
 - a. Countertop Configuration: Flat, 1 inch thick, with beveled edge and corners, and with drip groove and applied backsplash.
2. Tabletop Fabrication:
 - a. Tabletop Configuration: Flat, 1 inch thick, with beveled edge and corners, and with drip groove at perimeter.
3. Shelf Configuration: Flat, 5/8 inch thick, with beveled edge and corners.

E. Stainless-Steel Countertops: Made from stainless-steel sheet, not less than 0.062-inch nominal thickness, with No. 4 satin finish.

1. Extend top down 1 inch at edges with a 1/2-inch return flange under frame. Apply heavy coating of heat-resistant, sound-deadening mastic to undersurface.
2. Form backsplash coved to and integral with top surface.
3. Provide raised (marine) edge around perimeter of countertops containing sinks and where indicated.
4. Pitch countertops containing sinks two ways to sink without channeling or grooving.
5. Factory punch holes for service fittings.
6. Reinforce underside of countertop with channels, or use thicker metal sheet where necessary to ensure rigidity without deflection.
7. Weld shop-made joints.
8. Where field-made joints are required, provide hairline butt joints mechanically bolted through continuous channels welded to underside at edges of joined ends. Keep field jointing to a minimum.
9. Where stainless-steel sinks or cup sinks occur in stainless-steel countertops, factory weld into one integral unit.
10. After fabricating and welding, grind surfaces smooth, and polish as needed to produce uniform, directionally textured finish with no cross scratches or evidence of welds. Passivate and rinse surfaces; remove embedded foreign matter and leave surfaces clean.

F. Stainless-Steel Shelves: Made from stainless-steel sheet, not less than 0.050-inch nominal thickness, with No. 4 satin finish. Weld shop-made joints. Fold down front edge 3/4 inch; fold up back edge 3 inches. Provide integral stiffening brackets, formed by folding up ends 3/4 inch and welding to upturned back edge. After fabricating, grind welds smooth, and polish as needed to produce uniform, directionally textured finish with no cross scratches or evidence of welds. Passivate and rinse surfaces; remove embedded foreign matter and leave surfaces clean.

- G. Stainless-Steel Sinks: Made from stainless-steel sheet, not less than 0.050-inch nominal thickness. Fabricate with corners rounded and coved to at least 5/8-inch radius. Slope sink bottoms to outlet. Provide double-wall construction for sink partitions, with top edge rounded to at least 1/2-inch diameter. Provide continuous butt-welded joints. After fabricating and welding, grind surfaces smooth, and polish as needed to produce uniform finish with no cross scratches or evidence of welds. Passivate and rinse surfaces; remove embedded foreign matter and leave surfaces clean.
1. Factory punch holes for fittings.
 2. Provide with stainless-steel strainers and tailpieces.
 3. Provide with integral rims except where located in stainless-steel countertops.
 4. Apply 1/8-inch-thick coating of heat-resistant, sound-deadening mastic to under sink surfaces.
- H. Cup Sinks: Epoxy, 3-by-9-inch oval.
1. Provide with polypropylene strainers and integral tailpieces.

2.12 LABORATORY ACCESSORIES

- A. Reagent Shelves: Provide as indicated, fabricated from same material as adjacent countertop unless otherwise indicated.
- B. Pegboards (PG-1): Polypropylene, epoxy, or phenolic-composite pegboards with removable polypropylene pegs and stainless-steel drip troughs with drain outlet.
- C. Coat Hooks: (CH-1) 304 Stainless Steel Satin Finish 24 inches long by 4 inches tall with 5 hooks per section. Basis of Design Product is InterDyne System, Inc. SCR-2404
- D. Cylinder Rack: (CR-1) 2 cylinder capacity rack anchored to floor. 16 inches wide by 26 inches deep by 30 inches high of 2 inch square tube, continuously welded steel rack with 2 levels of welded steel chains. Basis of design product is USA Safety Model BR1X2FS

2.13 WATER AND LABORATORY GAS SERVICE FITTINGS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Broen A/S.
 2. Chicago Faucets; Geberit Company.
 3. Water Saver Faucet Co.
- B. Service Fittings: Provide units that comply with SEFA 7, "Laboratory and Hospital Fixtures - Recommended Practices." Provide fittings complete with washers, locknuts, nipples, and other installation accessories. Include wall and deck flanges, escutcheons, handle extension rods, and similar items.
1. Provide units that comply with "Vandal-Resistant Faucets and Fixtures" recommendations in SEFA 7.
- C. Materials: Fabricated from cast or forged red brass unless otherwise indicated.
- D. Finish: Satin chrome, with clear, acid-resistant epoxy coating.

- E. Water Valves and Faucets: Provide units complying with ASME A112.18.1, with renewable seats, designed for working pressure up to 80 psig.
 - 1. Vacuum Breakers: Provide ASSE 1035 vacuum breakers on water fittings with serrated outlets.
 - 2. Aerators: Provide aerators on water fittings that do not have serrated outlets.
- F. Needle Valves: Provide units with renewable, self-centering, floating cones and renewable seats of stainless steel or Monel metal, with removable serrated outlets.
 - 1. Provide units designed for working pressure up to 100 psig.
- G. Hand of Fittings: Furnish right-hand fittings unless fitting designation is followed by "L."
- H. Remote-Control Valves: Provide needle valves, straight-through or angle type as indicated for fume hoods and where indicated.
- I. Handles: Provide three- or four-arm, forged-brass or blade handles for valves unless otherwise indicated.
- J. Service-Outlet Identification: Provide color-coded plastic discs with embossed identification, secured to each service-fitting handle to be tamper resistant. Comply with SEFA 7 for colors and embossed identification.

2.14 ELECTRICAL SERVICE FITTINGS

- A. Service Fittings, General: Provide units complete with metal housings, receptacles, switches, pilot lights, cover plates, accessories, and gaskets required for mounting on laboratory casework.
 - 1. Receptacles, switches, pilot lights, cover plates, and accessories are specified in Section 262726 "Wiring Devices."
 - 2. Voice and data communication outlets are specified in Section 271500 "Communication Horizontal Cabling."
- B. Receptacles: Comply with NEMA WD 1, NEMA WD 6, and UL 498. Duplex type, Configuration 5 20R.
 - 1. Receptacle Grade: Hospital grade unless otherwise indicated.
 - 2. Color of Receptacles: White unless otherwise indicated or required by NFPA 70.
 - 3. GFCI Receptacles: Straight blade, feed-through type. Comply with UL 943, Class A, Hospital grade, and include indicator light that is illuminated when device is tripped.
- C. Switches: Comply with NEMA WD 1 and UL 20. Provide single-pole, double-pole, or three-way switches as required; rated 120 to 277-V ac; and in amperage capacities to suit units served.
 - 1. Color of Switches: White unless otherwise indicated or required by NFPA 70.
- D. Cover Plates: Provide satin finish, Type 304, stainless-steel cover plates with formed, beveled edges.

- E. Cover-Plate Identification: Use 1/4-inch-high letters unless otherwise indicated. For stainless steel or chrome-plated metal, stamp or etch plate and fill in letters with black enamel.
 - 1. Provide on all cover plates.
 - 2. Provide the following information:
 - a. Voltage and phase for receptacles other than standard 125-V duplex, grounding type.
 - b. Number of the breaker in panelboard that controls device.
- F. Recessed-Type Fittings: Provide with galvanized-steel boxes.
- G. Finishes for Service-Fitting Components: Provide housings or boxes for pedestal- and line-type fittings with manufacturer's standard baked-on, chemical-resistant enamel in color as selected by Architect from manufacturer's full range.

2.15 LABORATORY SAFETY EQUIPMENT

- A. Manufacturers: Products, which comply with this specification section as judged and approved by the Architect, may be provided by the following manufacturers. All laboratory safety fixtures specified in this section shall be provided by a single manufacturer.
 - 1. Water Saver Faucet Co., 701 West Erie Street, Chicago, IL 60610 Tel: 312 666-5500. website: <http://www.wsflab.com/>.
 - 2. Guardian Equipment, 660 N. Union St., Chicago, IL 60610 Tel: 312 733-2626. website: <http://www.gesafety.com/>.
 - 3. Substitutions are not permitted.
- B. General: Laboratory safety equipment shall be certified in accordance with ANSI Z358.1-2004
- C. ES/EW-1: Barrier-free safety station with swing-down eye/face wash, drain pan and emergency shower actuation valve in stainless steel cabinet for recessed mounting: Guardian Model No. G2152, or approved equal, with the following characteristics or modifications.
 - 1. Ceiling-mounted exposed showerhead. Nipple length shall be as required for a complete installation; verify finished ceiling height.
 - 2. Exposed piping, showerhead, nipple, and escutcheon shall be chrome-plated brass with clear epoxy coating.
 - 3. Safety shower actuating arm shall be stainless steel.
 - 4. Showerhead shall have perforated stainless steel spreader.
 - 5. Eyewash heads shall be ABS plastic with flip-top dust covers.
 - 6. Eyewash flow shall be activated by swing-down actuation valve connected to eyewash piping.
 - 7. Eyewash components and safety shower actuating arm shall be mounted in a flanged, recessed-mounted 18 gauge (1.3mm) stainless steel cabinet with No. 4 finish. A stainless steel drain pan shall be integral with eyewash components and shall direct eyewash water to drain outlet in bottom of recessed mounting cabinet.
 - 8. Stay-open brass ball valves concealed behind stainless steel/access panel housing.
 - 9. Fixture shall be furnished with green plastic sign with graphic symbol for safety shower/eyewash.

- D. EW-1: Dual-purpose eye wash/drench hose, deck mounted: Guardian Model No. G5022 VP-BP, or approved equal, with the following characteristics or modifications.
1. Dual-purpose eye wash/drench hose unit with dual gentle spray outlet heads and squeeze handle/valve with locking clip.
 2. Heads shall be equipped with flip top dust cover that automatically releases with water pressure.
 3. Flexible, reinforced PVC hose shall be furnished with swivel fitting at inlet end.
 4. Furnish with in-line backflow preventer at the hose inlet.
 5. Mounting flange and squeeze valve shall be chrome-plated brass with clear epoxy coating.
 6. Mounting shank.

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 the Work.
- 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.
 2. Variation of Bottoms of Upper Cabinets from Level: 1/8 inch in 10 feet.
 3. Variation of Faces of Cabinets from a True Plane: 1/8 inch in 10 feet.
 4. Variation of Adjacent Surfaces from a True Plane (Lippage): 1/32 inch.
 5. Variation in Alignment of Adjacent Door and Drawer Edges: 1/16 inch.
- B. Utility-Space Framing: Secure to floor with two fasteners at each frame. Fasten to partition framing, wood blocking, or metal reinforcements in partitions and to base cabinets.
- C. Base Cabinets: Fasten cabinets to utility-space framing, partition framing, wood blocking, or reinforcements in partitions, with fasteners spaced not more than 16 inches 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 o.c. and at sides of cabinets with not less than two fasteners per side.
- D. Wall Cabinets: Fasten to hanging strips, masonry, partition framing, blocking, or reinforcements in partitions. Fasten each cabinet through back, near top, at not less than 16 inches o.c.
- E. Install hardware uniformly and precisely. Set hinges snug and flat in mortises.

- F. 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 indicated 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. Shop prepare edges for field-made joints.
 - 1. Use concealed clamping devices for field-made joints in plastic-laminate countertops. Locate clamping devices within 6 inches of front and back edges and at intervals not exceeding 24 inches. 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 o.c.
 - 3. Where necessary to penetrate countertops with fasteners, countersink heads approximately 1/8 inch 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. Semi-flush Installation of Stainless-Steel Sinks: Before setting, apply sink and countertop manufacturers' recommended sealant under rim lip and along top. Remove excess sealant while still wet and finish joint for neat appearance.
- C. Drop-in Installation of Epoxy Sinks: Rout groove in countertop to receive sink rim if not shop prepared. Set sink in adhesive and fill remainder of groove with sealant or adhesive. Use procedures and products recommended by sink and countertop manufacturers. Remove excess adhesive and sealant while still wet and finish joint for neat appearance.

- D. Drop-in Installation of Epoxy Cup Sinks: Rout groove in countertop to receive sink rim if not shop prepared. Set sink in adhesive and fill remainder of groove with sealant or adhesive. Use procedures and products recommended by sink and countertop manufacturers. Remove excess adhesive and sealant 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 other 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 plastic or other suitable water-resistant covering. Tape to underside of countertop at a minimum of 48 inches o.c.

3.8 SERVICE-FITTING SCHEDULE

- A. Water Service Fitting, Type HCW-1
 - 1. Fitting Type: Swing gooseneck mixing faucet with vacuum breaker. Wrist blade operation
 - 2. Outlet: Removable Aerator. Aerator should terminate approximately 3" above deck..
 - 3. Mounting: Deck mounted.
 - 4. Additional Requirements: Adjustable volume control
- B. Water Service Fitting, Type HCW-2:
 - 1. Fitting Type: Pre-rinse Unit with flexible, spring loaded hose and self-closing squeeze valve and vacuum breaker
 - 2. Outlet: Aerator.

3. Mounting: Wall mounted.
 4. Additional Requirements: Squeeze Valve
- C. Water Service Fitting, Type HCW-3:
1. Fitting Type: Swing-spout mixing faucet with vacuum breaker.
 2. Outlet: Removable Aerator
 3. Mounting: Wall mounted.
 4. Additional Requirements: Adjustable volume control
- D. Water Service Fitting, Type HCW-4:
1. Fitting Type: Rigid Gooseneck mixing faucet with vacuum breaker.
 2. Outlet: Removable Aerator
 3. Mounting: Panel Mount
 4. Additional Requirements: Foot pedal valve operation.
- E. Water Service Fitting, Type CW-1:
1. Fitting Type: Rigid, gooseneck, single-service faucet with vacuum breaker.
 2. Outlet: Aerator.
 3. Mounting: Deck mounted.
 4. Additional Requirements: Self-closing valves.
- F. Water Service Fitting, Type DI-1:
1. Fitting Type: Rigid, gooseneck, single-service faucet.
 2. Outlet: Aerator.
 3. Mounting: Deck mounted.
 4. Additional Requirements: Self-closing valves for reagent-grade water.
- G. Water Service Fitting, Type DI-2:
1. Fitting Type: Pre-rinse Unit with flexible, spring loaded hose and self-closing squeeze valve.
 2. Outlet: Aerator.
 3. Mounting: Wall mounted.
 4. Additional Requirements: Self-closing valves. For reagent-grade water.
- H. Laboratory Gas Service Fitting, Type NG-1:
1. Service: Gas (fuel gas).
 2. Fitting Type: Turret.
 3. Outlets: One.
 4. Outlet Type: Straight.
 5. Valve Type: Needle valve.
- I. Laboratory Gas Service Fitting, Type NG-2:
1. Service: Gas (fuel gas).
 2. Fitting Type: Turret.
 3. Outlets: Two, at 180 degrees.
 4. Outlet Type: Straight.
 5. Valve Type: Needle valve.
- J. Laboratory Gas Service Fitting, Type NG-3:

1. Service: Gas (fuel gas).
2. Fitting Type: Flange type.
3. Outlets: One.
4. Outlet Type: Straight.
5. Valve Type: Needle valve.

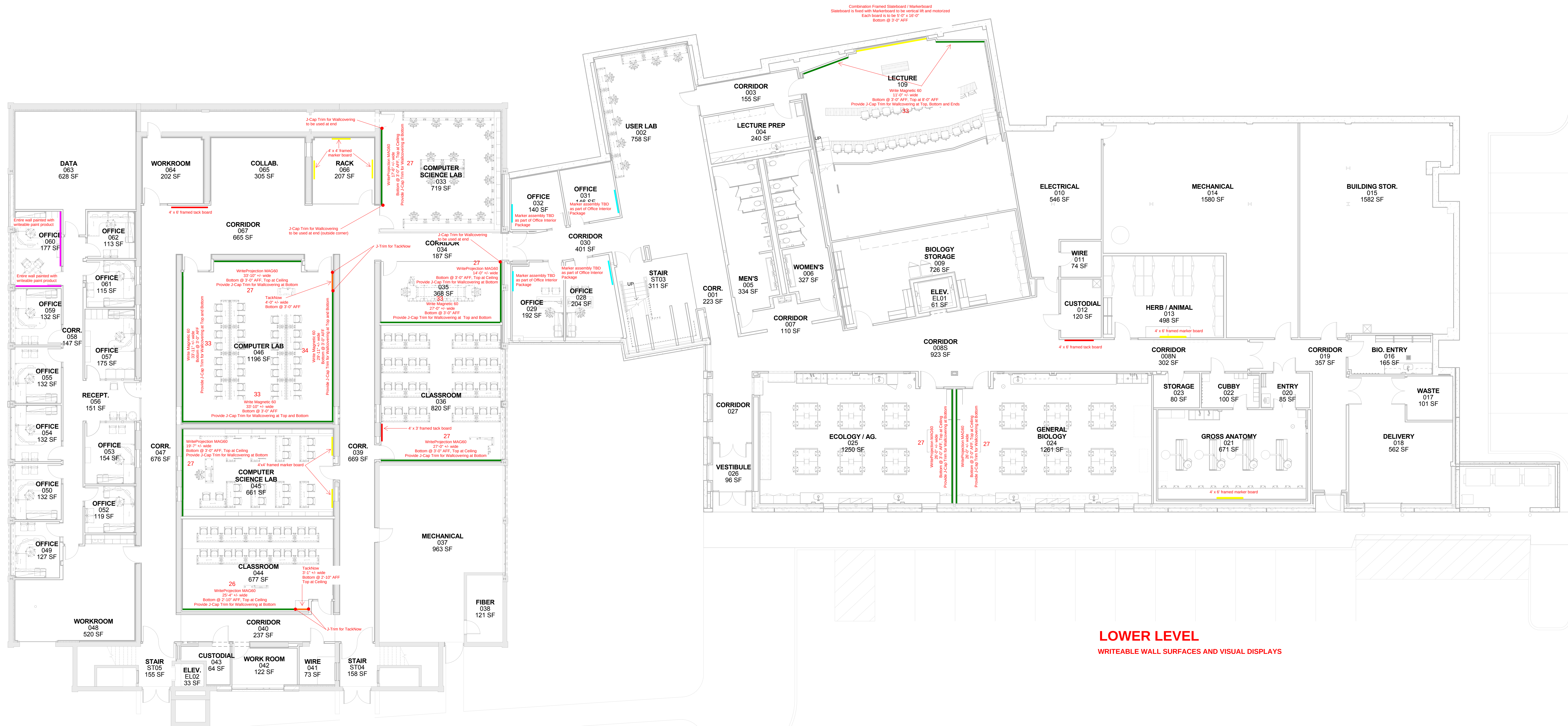
K. Laboratory Gas Service Fitting, Type VAC-1:

1. Service: Vacuum.
2. Fitting Type: Flange type.
3. Outlets: One.
4. Outlet Type: Straight.
5. Valve Type: Needle valve.

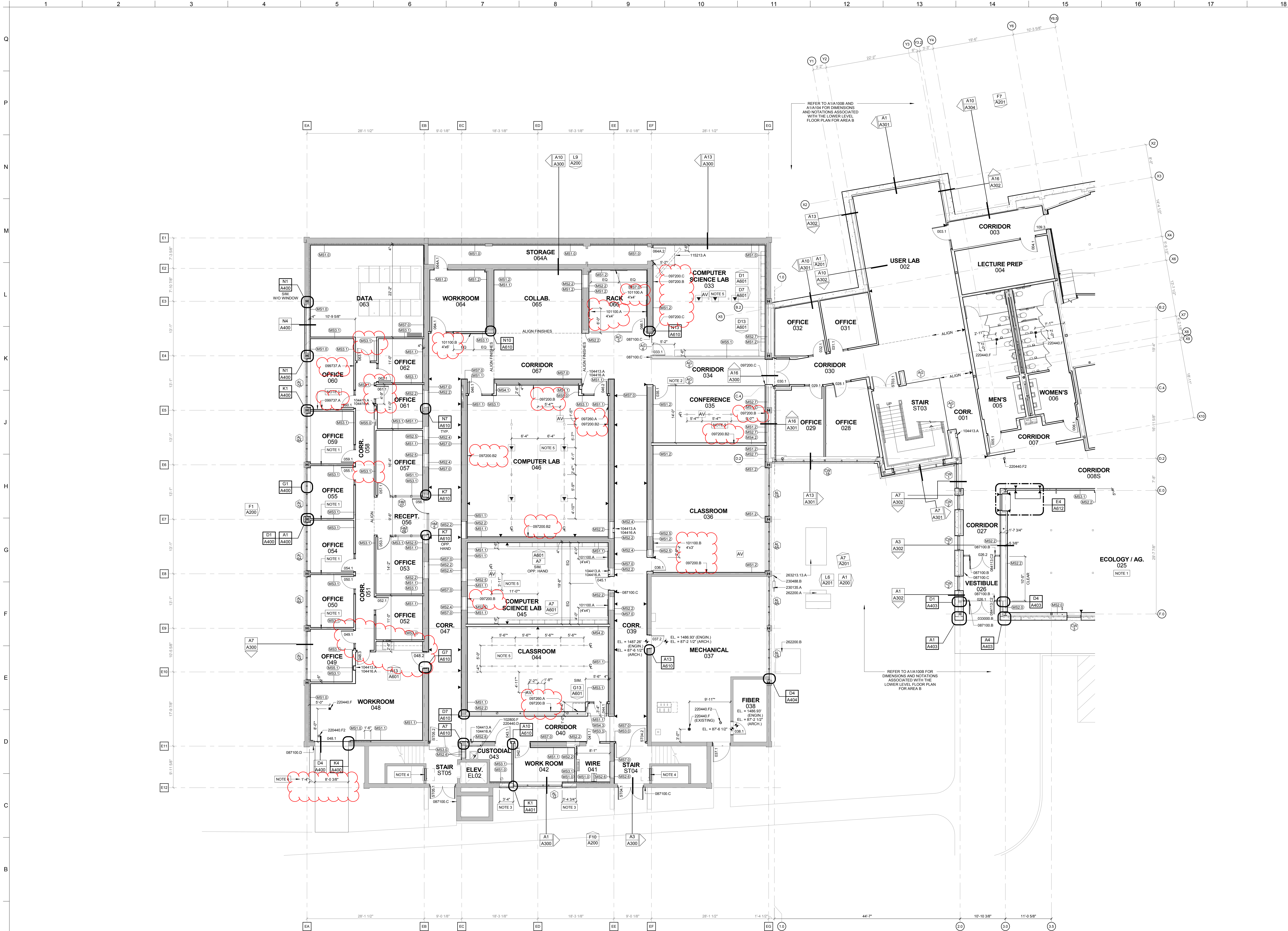
L. Laboratory Gas Service Fitting, Type VAC-2

1. Service: Vacuum.
2. Fitting Type: Turret.
3. Outlets: Two, at 180 degrees.
4. Outlet Type: Straight.
5. Valve Type: Needle valve.

END OF SECTION 123553.19







KEYNOTE LEGEND

033000.B

CONCRETE STRUCTURAL STOOD - REFER TO STRUCTURAL

084113.C2

OPERABLE LEAF CONTROLLED BY ACTUATOR

087100.B

IN-JAMB DOOR ACTUATOR

087100.C

CARD READER - COORDINATE WITH ELECTRICAL

087100.D

DOOR POSITION SWITCH - COORDINATE WITH ELECTRICAL

097200.B

PRESENTATION DRY ERASE MAGNETIC WALLCOVERING ASSEMBLY

097200.B2

DRY ERASE MAGNETIC WALLCOVERING ASSEMBLY

097200.C

EXTRUDED ALUMINUM J-CAP ACCESSORY TRIM

097280.A

TACKABLE WALLCOVERING ASSEMBLY

097312.A

DRY ERASE COATING - CLEAR

101100.A

ALUMINUM FRAMED MARKERBOARD ASSEMBLY

101100.B

ALUMINUM FRAMED TACKBOARD ASSEMBLY

102800.F

UTILITY SHELF WITH MOP HOOKS

104413.A

FULLY RECESSED FIRE EXTINGUISHER CABINET

104413.A

PORTABLE FIRE EXTINGUISHER FOR INSTALLATION IN FIRE PROTECTION CABINET

115213.A

PROJECTION SCREEN - COORDINATE INSTALLATION AND REQUIREMENTS OF SCREEN WITH SUPPLIER PRIOR TO INSTALLATION OF CEILING ASSEMBLY

220440.D

MOP SERVICE BASIN - REFER TO PLUMBING DRAWINGS

220440.F2

FLOOR DRAIN - REFER TO MECHANICAL

220440.F2

CLEANOUT - REFER TO MECHANICAL

230135.A

GAS METER SERVICE - REFER TO PLUMBING

230135.A

NATURAL GAS LINE - REFER TO MECHANICAL DRAWINGS - EXPOSED AND VISIBLE LINES TO BE PAINTED TO MATCH COLOR OF EXISTING LAMESTONE

262200.A

NEW TRANSFORMER - REFER TO ELECTRICAL - PROVIDE CONCRETE PAD AS REQUIRED

262200.B

EXISTING TRANSFORMER - REFER TO ELECTRICAL

262312.13.A

DIESEL-ENGINE DRIVEN GENERATOR - REFER TO ELECTRICAL - PROVIDE CONCRETE PAD AS REQUIRED

NOTE 1

WALL TO BE CENTERED ON CMU BETWEEN EXTERIOR WINDOW JAMBS

NOTE 2

DIMENSION TO FRAMING AT STUD HEADER OVER TOP OF GLASS WALL ASSEMBLY

NOTE 3

INFILL AT EXISTING WINDOW OPENING. TOOTH NEW BRICK VENEER INTO ADJACENT EXISTING BRICK VENEER

NOTE 4

INFILL EXISTING ROUGH-OPENING WITH METAL STUD AND GYPSUM FINISHED FLUSH TO EXISTING SURROUNDING DRYWALL

NOTE 5

COORDINATE FLOOR BOX LOCATIONS WITH FINAL FURNITURE LAYOUT

NOTE 6

COORDINATE WITH NEAREST EXISTING MASONRY COURSING AT FACE BRICK

PROJECT KEY PLAN

AREA A

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16022

SHEET NO.
A100A

Concordia University

STEM Building

Lower Level Floor Plan - Area A

A1 LOWER LEVEL FLOOR PLAN - AREA A

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

PROJECT NO. 16022

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Lower Level Floor Plan - Area A

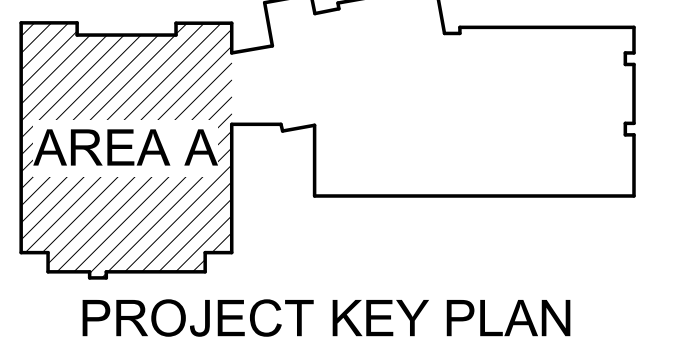


A1 MAIN LEVEL FLOOR PLAN - AREA A

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

KEYNOTE LEGEND	
055000.C2	STEEL LADDER ASSEMBLY
055113.D2	1 1/2" O.D. STEEL PIPE WALL MOUNTED HANDRAIL WITH ATTACHMENT BRACKETS
062023.E	SOLID PROFILED WOOD WALL CAP - MAPLE - EASED EDGES
084113.C2	OPERABLE LEAF CONTROLLED BY ACTUATOR
087100.B	IN-JAMB DOOR ACTUATOR
087100.C	CARD READER - COORDINATE WITH ELECTRICAL PRESENTATION DRY ERASE MAGNETIC WALLCOVERING ASSEMBLY
097200.B2	DRY ERASE MAGNETIC WALLCOVERING ASSEMBLY
098713.A	DRY ERASE COATING - CLEAR
101100.B	ALUMINUM FRAMED TACKBOARD ASSEMBLY
102800.F	UTILITY SHELF WITH MOP HOOKS
104413.A	FULLY RECESSED FIRE EXTINGUISHER CABINET
104416.A	PORTABLE FIRE EXTINGUISHER FOR INSTALLATION IN FIRE PROTECTION CABINET
112100.A	VENDING MACHINE - PROVIDED AND INSTALLED BY OWNER
112800.A	COPY MACHINE - PROVIDED AND INSTALLED BY OWNER
122413.A2	RS-4 SINGLE ROLLER MANUALLY OPERATED SHADE ASSEMBLY (ON OPEN)
220440.F	MOP SERVICE BASIN - REFER TO PLUMBING DRAWINGS
220440.F	FLOOR DRAIN - REFER TO MECHANICAL DRAWINGS
230830.A	ELECTRIC BASEBOARD HEATER - REFER TO MECHANICAL DRAWINGS
260500.A	IN-FLOOR ELECTRICAL DEVICE

SHEET A101A SHEET SPECIFIC NOTES	
NOTE 1	CENTER WALL ASSEMBLY BETWEEN EXISTING EXTERIOR WINDOW OPENINGS
NOTE 2	HATCHED AREA REPRESENTS APPROXIMATE LOCATION OF NEW S-LAB INFL.
NOTE 3	COORDINATE FLOOR BOX LOCATIONS WITH FINAL FURNITURE LAYOUT, TYP.
NOTE 4	ALIGN WALL AND CEILING CONTROL JOINTS IN THIS ROOM TYP.
NOTE 5	ALIGN CONTROL JOINT WITH OUTSIDE CORNER OF WALL AT UTILITY 150A



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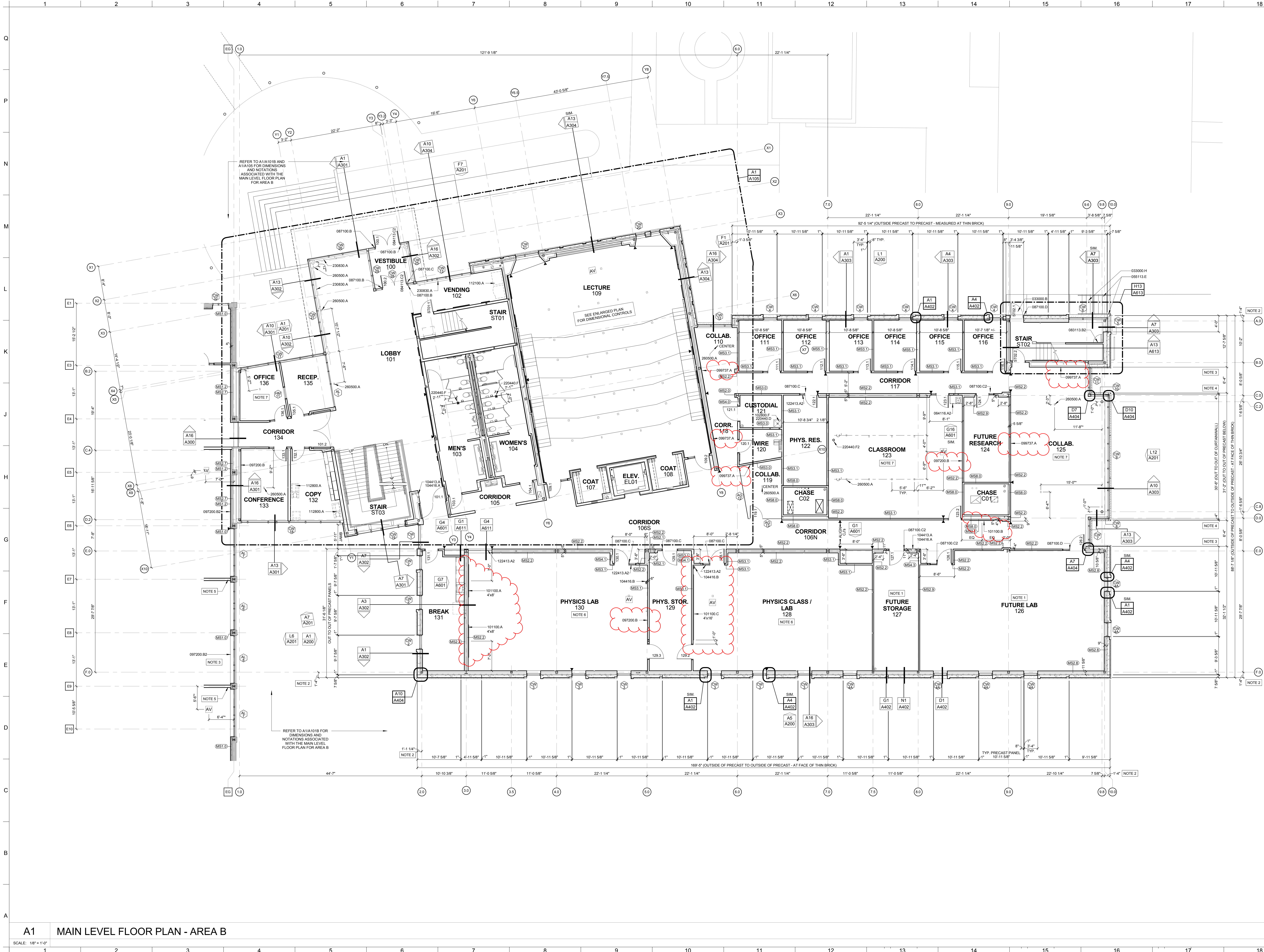
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Main Level Floor Plan - Area A

SHA PROJECT NO. 16022

A101A



KEYNOTE LEGEND

033000 B

CONCRETE STRUCTURAL STOOB - REFER TO STRUCTURAL

033000 H

CAST-IN-PLACE CONCRETE STEPS - REFER TO LANDSCAPE AND CIVIL PLANS

055113 E

1 1/2" O.D. GALVANIZED STEEL PIPE HANDRAIL - RAIL TO TURN DOWN INTO ANCHORING SLEEVE SET IN SLAB - GROUT/PACK RAIL AFTER INSTALLATION

064116 A2

PLASTIC LAMINATE FACED SINK BASE CABINET - 24" DEEP

083113 B2

FIRE-RATED FLUSH DRYWALL ACCESS DOOR - 24" x 30" - INSTALL SO BASE OF DOOR IS AT 6" AFF

084113 C2

OPERABLE LEAF CONTROLLED BY ACTUATOR IN-JAMB DOOR ACTUATOR

087100 B

CARD READER - COORDINATE WITH ELECTRICAL PROVIDE PATHWAYS AND PREP FRAME FOR FUTURE CARD READER - COORDINATE WITH ELECTRICAL

087100 C2

DOOR POSITION SWITCH - COORDINATE WITH ELECTRICAL

087100 D

PRESENTATION DRY ERASE MAGNETIC WALLCOVERING ASSEMBLY

097200 B2

DRY ERASE MAGNETIC WALLCOVERING ASSEMBLY

098713 A

DRY ERASE COATING - CLEAR

101100 A

ALUMINUM FRAMED MARKERBOARD ASSEMBLY

101100 B

ALUMINUM FRAMED TACKBOARD ASSEMBLY

101100 C

ALUMINUM FRAMED SLATEBOARD ASSEMBLY

102800 F

UTILITY SHELF WITH MOP HOOKS

104413 A

FULLY RECESSED FIRE EXTINGUISHER CABINET

104416 A

PORTABLE FIRE EXTINGUISHER FOR INSTALLATION IN FIRE PROTECTION CABINET

104416 B

PORTABLE FIRE EXTINGUISHER WITH MOUNTING BRACKET

112800 A

COPY MACHINE - PROVIDED AND INSTALLED BY OWNER

122413 A2

RS-4 SINGLE ROLLER MANUALLY OPERATED SHADE ASSEMBLY (IN OPEN)

220440 D

MOP SERVICE BASIN - REFER TO PLUMBING DRAWINGS

220440 F2

FLOOR DRAIN - REFER TO MECHANICAL

220440 F2

CLEAN-OUT - REFER TO MECHANICAL

220830 A

ELECTRIC BASEBOARD HEATER - REFER TO MECHANICAL DRAWINGS

260500 A

IN-FLOOR ELECTRICAL DEVICE

SHEET A101B SHEET SPECIFIC NOTES

NOTE 1

INTERIOR SIDE OF WALLS WITHIN ROOMS LABELED "FUTURE" TO REMAIN EXPOSED METAL STUD WITHOUT DRYWALL FINISH.

NOTE 2

GRID DIMENSION TO FACE OF PRECAST TAKEN TO FACE OF THIN BRICK PANEL

NOTE 3

DIMENSION TAKEN TO FACE OF PRECAST PRECAST PANEL

NOTE 4

DIMENSION TAKEN TO FACE OF PRECAST PANEL

NOTE 5

CENTER WALL ASSEMBLY BETWEEN EXISTING EXTERIOR WINDOW OPENINGS

NOTE 6

COORDINATE FLOOR PENETRATIONS FOR POWER, WATER, GAS, ETC. WITH LAB PLANS

NOTE 7

COORDINATE FLOOR BOX LOCATIONS WITH FINAL FURNITURE LAYOUT

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101100 A

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SHA PROJECT NO.

16022

A101B

MAIN LEVEL Floor Plan - Area B

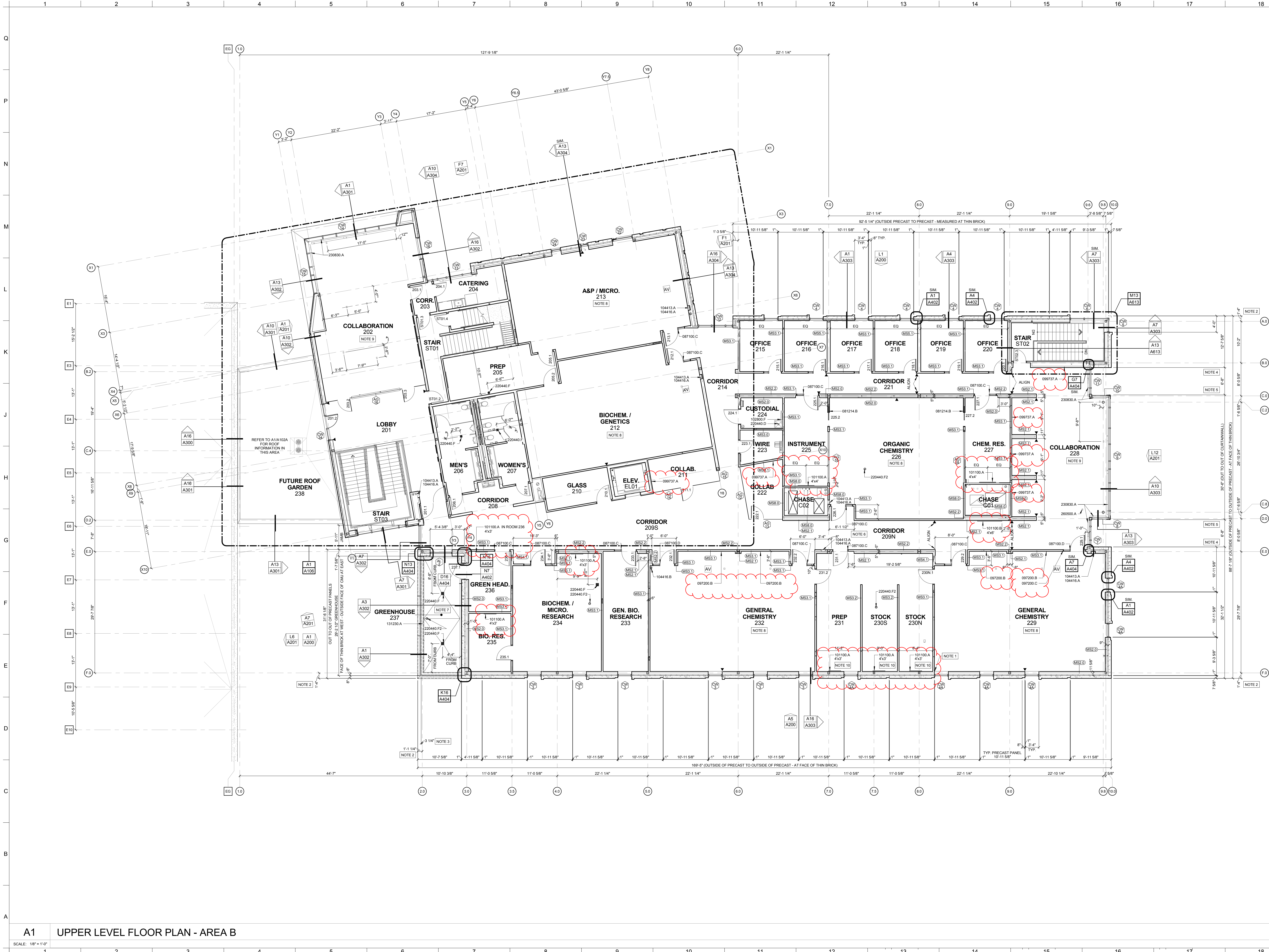
PROJECT KEY PLAN

AREA B

A1 MAIN LEVEL FLOOR PLAN - AREA B

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

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KEYNOTE LEGEND

08124.B	FLUSH POCKET DOOR TRIM
08710.C	CARD READER - COORDINATE WITH ELECTRICAL
08710.D	DOOR POSITION SWITCH - COORDINATE WITH ELECTRICAL
09720.B	PRESENTATION DRY ERASE MAGNETIC WALLCOVERING ASSEMBLY
09720.C	EXTRUDED ALUMINUM J-CAP ACCESSORY TRIM
09737.A	DRY ERASE COATING - CLEAR
101100.A	ALUMINUM FRAMED MARKERBOARD ASSEMBLY
101100.B	ALUMINUM FRAMED TACKBOARD ASSEMBLY
102800.F	UTILITY SHELF WITH MOP HOOKS
104413.A	FULLY RECESSED FIRE EXTINGUISHER CABINET
104415.A	PORTABLE FIRE EXTINGUISHER FOR INSTALLATION IN FIRE PROTECTION CABINET
104416.B	PORTABLE FIRE EXTINGUISHER WITH MOUNTING BRACKET
131230.A	PRE-MANUFACTURED GREENHOUSE ASSEMBLY
220440.D	MOP SERVICE BASIN - REFER TO PLUMBING DRAWINGS
220440.F	FLOOR DRAIN - REFER TO MECHANICAL
220440.F2	CLEANOUT - REFER TO MECHANICAL
220830.A	ELECTRIC BASEBOARD HEATER - REFER TO MECHANICAL DRAWINGS
260500.A	IN-FLOOR ELECTRICAL DEVICE

SHEET A102B SHEET SPECIFIC NOTES

NOTE 1 ALING WALL SUCH THAT FINISHED DRYWALL IS FLUSH TO PRECAST ROUGH OPENING - REFER TO TYPICAL JAMB DETAIL AT WINDOWS

NOTE 2 GRID DIMENSION TO FACE OF PRECAST TAKEN TO FACE OF THIN BRICK PANEL

NOTE 3 DIMENSION FROM GRID TO OUTSIDE FACE OF CMU AT GREENHOUSE

NOTE 4 DIMENSION TAKEN TO FACE OF THIN BRICK PRECAST PANEL

NOTE 5 DIMENSION TAKEN TO OUTSIDE FACE OF CURTAINWALL ASSEMBLY

NOTE 6 CENTER WINDOW PLANE

NOTE 7 SLOPE TOPPING SLAB TO DRAIN. DRAWING TO BE SET 1/2" BELOW FINISHED FLOOR ELEVATION AT PERIMETER OF ROOM

NOTE 8 COORDINATE FLOOR PENETRATIONS FOR POWER, WATER, GAS, ETC. WITH LAB PLANS

NOTE 9 COORDINATE FLOOR BOX LOCATIONS WITH FINAL WORKS CANNOT BE

NOTE 10 COORDINATE LOCATION OF MARKERBOARD WITH PLACEMENT OF LAB EQUIPMENT

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Upper Level Floor Plan - Area B

SHA PROJECT NO. 16022

A102B

PROJECT KEY PLAN

AREA B



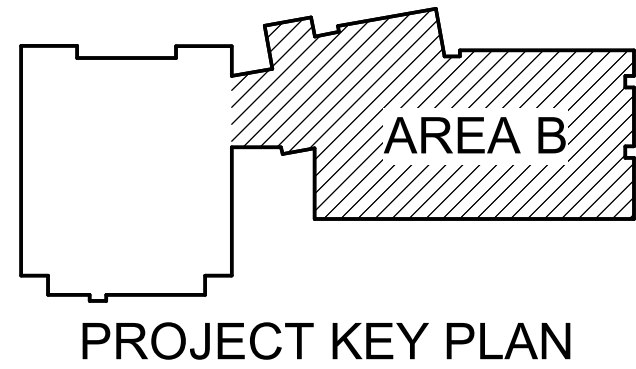
A1 LWER LEVEL AREA B ENLARGED PLAN

SCALE: 1/4" = 1'-0" LOWER LEVEL - COMMON AREA CORE

KEYNOTE LEGEND	
051200.B	STEEL COLUMN - REFER TO STRUCTURAL
055000.C	GALVANIZED STEEL ELEVATOR PIT LADDER
083113.C	TILE READY ACCESS DOOR - INSTALL APPROXIMATELY 24" AFF - 24"X12" - COORDINATE LOCATION WITH TILE INSTALLATION SO DOOR FITS IN A FULL TILE WITHIN TILE COURSEING
084126.F	EXTRUDED CLEAR SILICONE GASKET
093013.A	CT 1: 12X24 CERAMIC WALL TILE - INSTALLED IN A HORIZONTAL STACKED BOND PATTERN AT RESTROOM LAVATORY WALLS AND DRINKING FOUNTAIN WALLS
093013.B	CT 2: 12X24 PORCELAIN WALL TILE - INSTALLED AT RESTROOM WALLS ADJACENT TO LAVATORY WALLS
097200.B2	DRY ERASE MAGNETIC WALL COVERING ASSEMBLY
097200.C	EXTRUDED ALUMINUM J-CAP ACCESSORY TRIM
099123.A	PAINT
101100.D	15-0PH x 16-0W MOTOR OPERATED WALL MOUNTED VERTICAL SLIDING MARKERBOARD / SLATEBOARD COMBINATION UNIT - WITH (1) 5'-0" x 16'-0" OPERABLE MARKER BOARD AND (1) 5'-0" x 16'-0" FIXED SLATEBOARD BACK PANEL
102113.19.A	TOILET ENCLOSURE
102113.19.B	URINAL SCREEN
102800.A	TOILET TISSUE DISPENSER - TYPICAL AT ALL TOILETS
102800.B	GRAB BAR - 42" LENGTH
102800.B2	GRAB BAR - 36" LENGTH
102800.C	SANITARY NAPKIN DISPOSAL WITH SHELF - TYPICAL AT ALL TOILETS IN WOMEN'S RESTROOMS
102800.D	SURFACE MOUNTED SHELF - 4"X6"
102800.E	ROBE / COAT HOOK
102800.G	FRAMED FULL HEIGHT MIRROR - 2460"
102800.H	SEMI-RECESSED WASTE RECEPTACLE
220440.A	3-PERSON LAVATORY ASSEMBLY - REFER TO PLUMBING DRAWINGS
220440.C	ELECTRIC WATER COOLER WITH BOTTLE FILLING STATION - REFER TO PLUMBING DRAWINGS

SHEET A104 SHEET SPECIFIC NOTES

- NOTE 1
FIXED FURNITURE BY OWNER. PROVIDE CONCEALED CONDUIT RACEWAY AT EACH CHASE PANEL FOR ALL TABLE LOCATIONS. CONTRACTOR TO COORDINATE THROUGH FLOOR CONDUIT LOCATIONS WITH FURNITURE SUPPLIER. COORDINATE WITH ELECTRICAL DRAWINGS
- NOTE 2
CERAMIC TILE PATTERN NOTES: CENTER STACKED BOND PATTERN ON SINK WALL AND USE AS CONTROL TO ALIGN FLOOR TILE AND WALL TILE OPPOSITE SINK WALL
- NOTE 3
WALL TYPE MS3.4 FOLLOWS C.I.P. STAIR ALONG EACH SIDE WALL OF LECTURE 109
- NOTE 4
CENTER WALL ON EXTERIOR CURTAIN WALL MULLION RECESSED WALL NICHE FROM FLOOR TO CEILING
- NOTE 5
CENTERED ON LAVATORY FIXTURE WALL. WALL TILE TO WRAP INSIDE NICHE. PROVIDE TS-2 STRAIGHT EDGE PROFILE AT OUTSIDE CORNERS. PROVIDE SEALANT AT ALL VERTICAL INSIDE CORNERS TO MATCH GROUT COLOR
- NOTE 6
CENTER SHELF IN NICHE AND MOUNT AT 4'-6" A.F.F.
- NOTE 7
MOUNT 3 COAT HOOKS EQUALLY SPACED BELOW SHELF IN NICHE 4'-0" A.F.F.



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PROJECT SCHEDULE

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PROJECT ENGINEER: David J. Grasso
DRAWN BY: David J. Grasso
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DATE: 03/03/2018 - Addendum #2
DEL. INT. DEQ: David J. Grasso
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CONCORDIA UNIVERSITY

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Lower Level Area B Enlarged Plan

SHA PROJECT NO. 16022

A104



SHEET A106 SHEET SPECIFIC NOTES

NOTE 1 CERAMIC TILE PATTERN NOTES: CENTER STACKED BOND PATTERN ON SINK WALL AND USE AS CONTROL TO ALIGN FLOOR TILE AND WALL TILE OPPOSITE SINK WALL.

NOTE 2 CENTER SHELF IN NICHE AND MOUNT AT 4'-6" A.F.F.

NOTE 3 MOUNT 3 COAT HOOKS EQUALLY SPACED BELOW SHELF IN NICHE 4'-0" A.F.F.

NOTE 4 RECESSED WALL, NICHE FROM FLOOR TO CEILING CENTERED ON LATCH SIDE OF SINK WALL - 1/2" TILE TO WRAP INSIDE CORNER, PROVIDE TS-2 STRAIGHT EDGE PROFILE AT OUTSIDE CORNERS, PROVIDE SEALANT AT ALL VERTICAL INSIDE CORNERS TO MATCH GROUT COLOR.



PROJECT KEY PLAN

DOOR SCHEDULE												
Door No.	Door Size	F.R.	Elev.	DOOR		Type	FRAME		Fin.	HW Set	NOTES	Door No.
LOWER LEVEL				Matl	WBR		Matl					
0003	3'-6" x 7'-0"	F	WD	STN	HM-6	HM	PNT		29.0			0031
0041	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		38.0			0041
0053	3'-0" x 7'-0"	N	STN	HM-1	HM	PNT		50.0				0053
0061	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		50.0			0061
0068	3'-0" x 6'-6"	N	WD	STN	HM-1	HM	PNT		19.0			0069
0103	3'-0" x 7'-0"	N	STN	HM-1	HM	PNT		23.0				0103
0102	4'-0" x 7'-0"	F	HM	PNT	HM-1	HM	PNT		28.0			0102
0111	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		41.0			0111
0121	3'-0" x 7'-0"	N	STN	HM-1	HM	PNT		47.0				0121
0131	3'-6" x 7'-0"	F	WD	STN	HM-5	HM	PNT		19.0			0131
0141	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		54.0			0141
0151	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		57.0			0151
0161	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		60.0			0161
0171	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		60.0		2	0171
0181	8'-1 3/8" X 8'-0 3/8" M.O.	OHD	AL	PT	OHD	AL	PNT		8.0		4.5	0181
0182	PAR 3'-0" x 7'-0"	N	WD	STN	HM-1	HM	PNT		55.0		2	0182
0191	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		5.0			0191
0192	PAR 3'-0" x 7'-0"	N	WD	STN	HM-1	HM	PNT		53.0			0192
0201	UNEQUAL PAR 2'-0" x 9'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		27.0			0201
0211	UNEQUAL PAR 2'-0" x 9'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		58.0			0211
0212	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		49.0			0212
0221	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		15.0			0221
0231	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		38.0			0231
0241	3'-0" x 7'-0"	F	WD	STN	HM-4	HM	PNT		13.0			0241
0251	3'-0" x 7'-0"	F	WD	STN	HM-5	HM	PNT		17.0			0251
0261	PAR 3'-0" x 7'-0"	FG	DB	DB	AL-4	AL	DB		1.0			0261
0262	PAR 3'-0" x 7'-0"	F	WD	STN	HM-2	HM	PNT		44.0			0262
0281	3'-0" x 7'-0"	F	WD	STN	HM-2	HM	PNT		44.0			0281
0291	3'-0" x 7'-0"	F	WD	STN	HM-3	HM	PNT		44.0			0291
0301	3'-0" x 7'-0"	F	WD	STN	HM-10	HM	PNT		23.0			0301
0311	3'-0" x 7'-0"	F	WD	STN	HM-3	HM	PNT		44.0		3	0311
0321	3'-0" x 7'-0"	F	WD	STN	HM-2	HM	PNT		44.0			0321
0331	GLASS	AG	CLR	AG-4	CLR	GLASS	CLR		12.0			0331
0351	3'-0" x 6'-10"	AG	GLASS	CLR	AG-6	GLASS	CLR		10.0			0351
0361	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		44.0			0361
0371	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		60.0		5	0371
0372	3'-0" x 7'-0"	F	WD	STN	EXISTING FRAME	HM	PNT		37.0			0372
0381	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		41.0			0381
0411	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		41.0			0411
0421	3'-0" x 7'-0"	N	WD	STN	HM-1	HM	PNT		39.0			0421
0431	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		47.0			0431
0441	3'-0" x 7'-0"	F	WD	STN	HM-2	HM	PNT		44.0			0441
0451	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		14.0			0451
0461	3'-0" x 7'-0"	F	WD	STN	HM-2	HM	PNT		32.0			0461
0462	3'-0" x 7'-0"	F	WD	STN	HM-3	HM	PNT		32.0			0462
0463	PAR 3'-0" x 8'-0 3/8" M.O.	OHD	PT	OHD	PT	OHD	PNT		6.0		4.5	0463
0482	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		44.0			0482
0483	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		44.0			0483
0484	3'-0" x 7'-0"	F	WD	STN	HM-2	HM	PNT		44.0			0484
0501	3'-0" x 7'-0"	F	WD	STN	HM-2	HM	PNT		48.0			0501
0521	3'-0" x 7'-0"	F	WD	STN	HM-3	HM	PNT		44.0			0521
0531	3'-0" x 7'-0"	F	WD	STN	HM-8	HM	PNT		44.0			0531
0541	3'-0" x 7'-0"	F	WD	STN	HM-3	HM	PNT		44.0			0541
0551	3'-0" x 7'-0"	F	WD	STN	HM-2	HM	PNT		44.0			0551
0561	3'-6" x 7'-0"	F	WD	STN	HM-1	HM	PNT		37.0			0561
0571	3'-0" x 7'-0"	F	WD	STN	HM-7	HM	PNT		44.0			0571
0591	3'-0" x 7'-0"	F	WD	STN	HM-3	HM	PNT		44.0			0591
0601	3'-0" x 7'-0"	F	WD	STN	HM-3	HM	PNT		44.0			0601
0611	3'-0" x 7'-0"	F	WD	STN	HM-3	HM	PNT		44.0			0611
0621	3'-0" x 7'-0"	F	WD	STN	HM-2	HM	PNT		44.0			0621
0631	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		40.0			0631
0641	3'-0" x 7'-0"	F	WD	STN	HM-5	HM	PNT		39.0			0641
0644.1	3'-0" x 7'-0"	WD	STN	HM-1	HM	PNT		40.0				0644.1
0644.2	3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		40.0			0644.2
109.3	CL-1 GLASS	AG	CLR	AG-3	CLR	GLASS	CLR		12.0			109.3
109.3	CL-2 GLASS	AG	CLR	AG-3	CLR	GLASS	CLR		12.0			109.3
ST03.1	PAR 3'-0" x 7'-0"	F	HM	PNT	HM-1	HM	PNT		22.0			ST03.1
ST04.2	PAR 3'-0" x 7'-0"	F	WD	STN	HM-1	HM	PNT		24.0			ST04.2
ST05.2	PAR 3'-6" x 8'-0"	F	WD	STN	HM-1	HM	PNT		24.0			ST05.2

DOOR SCHEDULE												
Door No.	Door Size	F. R.	Elev.	DOOR		Type	FRAME		HW Set	NOTES	Door No.	
				Matl	Fin.		Matl	Fin.				
MAN LEVEL												
100.1	PAIR 3'0" x 7'0"	F	GS	AL	DB	CW-26	AL	DB	1.0		100.1	
100.2	PAIR 3'0" x 7'0"	F	AG	DB	DB	CW-26	DB	DB	8.0		100.2	
101.1	PAIR 3'3 1/2" x 8'11"***	F	HM	PKMT	HM-10	HM	PKMT	26.0	3		101.1	
101.2	PAIR 3'4 1/2" x 8'11"***	F	HM	PKMT	HM-10	HM	PKMT	26.0	3		101.2	
101.3	3'0" x 7'0"	F	WD	STN	HM-1	HM	PKMT	44.0			101.3	
104.1	3'0" x 7'0"	F	WD	STN	HM-1	HM	PKMT	44.0			104.1	
104.2	3'0" x 7'0"	F	WD	STN	HM-1	HM	PKMT	44.0			104.2	
109.2	3'0" x 7'0"	F	WD	STN	HM-5	HM	PKMT	53.0			109.2	
111.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			111.1	
111.2	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			111.2	
113.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			113.1	
114.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			114.1	
115.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			115.1	
116.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			116.1	
120.1	3'0" x 8'10"	AG	CLR	GLASS	AG-13	CLR	GLASS	1.0			120.1	
120.1	3'0" x 7'0"	F	WD	STN	HM-1	HM	PKMT	41.0			120.1	
121.1	3'0" x 7'0"	F	WD	STN	HM-1	HM	PKMT	47.0			121.1	
121.1	3'0" x 7'0"	F	WD	STN	HM-3	HM	PKMT	16.0			121.1	
123.1	3'0" x 7'0"	F	WD	STN	HM-3	HM	PKMT	46.0			123.1	
123.2	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			123.2	
124.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	16.0			124.1	
126.1	3'0" x 7'0"	F	WD	STN	HM-4	HM	PKMT	13.0			126.1	
126.2	3'0" x 7'0"	F	WD	STN	HM-4	HM	PKMT	21.0			126.2	
127.1	3'0" x 7'0"	N	WD	STN	HM-1	HM	PKMT	19.0			127.1	
128.1	3'0" x 7'0"	F	WD	STN	HM-4	HM	PKMT	13.0			128.1	
129.1	3'0" x 7'0"	N	WD	STN	HM-1	HM	PKMT	16.0			129.1	
129.2	3'0" x 7'0"	F	WD	STN	HM-1	HM	PKMT	45.0			129.2	
130.3	3'0" x 7'0"	F	WD	STN	HM-1	HM	PKMT	45.0			130.3	
130.1	3'0" x 7'0"	F	WD	STN	HM-5	HM	PKMT	17.0			130.1	
131.1	3'0" x 7'0"	N	WD	STN	HM-1	HM	PKMT	36.0			131.1	
132.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			132.1	
133.1	3'0" x 7'0"	F	WD	STN	HM-3	HM	PKMT	44.0			133.1	
135.1	3'0" x 7'0"	F	WD	STN	HM-3	HM	PKMT	44.0			135.1	
136.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			136.1	
137.1	3'0" x 7'0"	F	WD	STN	HM-3	HM	PKMT	44.0			137.1	
138.1	3'0" x 7'0"	F	WD	STN	HM-3	HM	PKMT	44.0			138.1	
139.1	3'0" x 7'0"	F	WD	STN	HM-3	HM	PKMT	44.0			139.1	
142.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			142.1	
143.1	3'0" x 7'0"	F	WD	STN	HM-3	HM	PKMT	44.0			143.1	
144.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			144.1	
147.1	3'0" x 7'0"	F	WD	STN	HM-1	HM	PKMT	44.0			147.1	
148.1	3'0" x 7'0"	F	WD	STN	HM-3	HM	PKMT	46.0			148.1	
149.1	3'0" x 7'0"	F	WD	STN	HM-1	HM	PKMT	47.0			149.1	
150.6	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	32.0			150.6	
150.1	3'0" x 7'0"	F	WD	STN	HM-1	HM	PKMT	42.0			150.1	
151.2	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	32.0			151.1	
151.2	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			151.2	
153.1	3'0" x 7'0"	F	WD	STN	HM-3	HM	PKMT	44.0			153.1	
154.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			154.1	
155.1	3'0" x 7'0"	F	WD	STN	HM-3	HM	PKMT	44.0			155.1	
156.1	3'0" x 8'10"	AG	CLR	GLASS	AG-7	CLR	GLASS	CLR	11.0		156.1	
157.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	32.0			156.3	
157.1	3'0" x 7'0"	F	WD	STN	CLR	HM-3	CLR	44.0			157.1	
158.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			158.1	
159.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			159.1	
161.1	3'0" x 7'0"	F	WD	STN	HM-3	HM	PKMT	44.0			161.1	
162.1	3'0" x 7'0"	F	WD	STN	HM-3	HM	PKMT	44.0			162.1	
164.1	3'0" x 7'0"	F	WD	STN	HM-2	HM	PKMT	44.0			164.1	
166.1	3'0" x 8'10"	AG	CLR	GLASS	CLR	AG-10	CLR	CLR	11.0		166.1	
170.1	3'0" x 7'0"	80	WD	STN	HM-2	HM-10	GLASS	CLR	30.0		170.1	
170.2	3'0" x 7'0"	F	HM	PKMT	HM-1	HM	PKMT	4.0	5		170.2	
170.2	3'0" x 7'0"	80	N	WD	STN	HM-1	HM	PKMT	31.0		170.2	
170.2	PAIR 3'0" x 7'0"	AL	G	AL	G-5	AL	G	3.0			170.1	
170.3	PAIR 3'0" x 7'0"	80	F	HM	PKMT	HM-1	HM	PKMT	22.0		170.3	
170.5	PAIR 3'0" x 7'0"	F	HM	PKMT	AL	AL-5	AL	4.0			170.5	
170.6	PAIR 3'0" x 7'0"	F	HM	PKMT	HM-1	HM	PKMT	22.0			170.6	

DOOR SCHEDULE												
Door No.	Door Size	F. R.	DOOR			FRAME			HW Set	NOTES	Door No.	
			Elev.	Matl	Fin.	Type	Matl	Fin.				
UPPER LEVEL												
2001.1	PAIR 3'-0" X 7'-0" 8'-0"	F	HM	PNT		HM-10	HM	PNT	25.0	3	2001.1	
2001.2	3'-0" X 7'-0"	AG	AL	CLR	CH-30	AL	DB	CLR	20.0		2001.2	
2003.1	3'-0" X 7'-0"	F	WD	STN		HM-12	HM	PNT	51.0		2003.1	
2003.2	3'-0" X 6'-0"	F	WD	STN		AG-16	GLASS	CLR	44.0		2003.2	
2003.3	3'-0" X 6'-0"	AG	GLASS	CLR		AG-16	GLASS	CLR	10.0		2003.3	
2004.1	3'-0" X 7'-0"	N	WD	STN		HM-1	HM	PNT	34.0		2004.1	
2005.1	3'-0" X 7'-0"	F	WD	STN		HM-1	HM	PNT	50.0		2005.1	
2005.2	3'-0" X 7'-0"	F	WD	STN		HM-1	HM	PNT	36.0		2005.2	
2006.1	3'-0" X 7'-0"	N	WD	STN		HM-1	HM	PNT	50.0		2006.1	
2007.1	3'-0" X 7'-0"	F	WD	STN		HM-1	HM	PNT	40.0		2007.1	
2100.1	3'-6" X 7'-0"	N	WD	STN		HM-1	HM	PNT	43.0		2100.1	
2101.1	3'-0" X 7'-0"	F	GLR	GLASS		AG-14	GLASS	CLR	44.0		2101.1	
2121.1	3'-6" X 7'-0"	F	WD	STN		HM-5	HM	PNT	17.0		2121.1	
2131.1	3'-6" X 7'-0"	F	WD	STN		HM-5	HM	PNT	13.0		2131.1	
2141.1	3'-6" X 7'-0"	F	WD	STN		HM-2	HM	PNT	44.0		2141.1	
2161.1	3'-0" X 7'-0"	F	WD	STN		HM-2	HM	PNT	44.0		2161.1	
2171.1	3'-0" X 7'-0"	F	WD	STN		HM-2	HM	PNT	44.0		2171.1	
2181.1	3'-0" X 7'-0"	F	WD	STN		HM-2	HM	PNT	44.0		2181.1	
2191.1	3'-0" X 7'-0"	F	WD	STN		HM-2	HM	PNT	44.0		2191.1	
2201.1	3'-0" X 7'-0"	F	WD	STN		HM-2	HM	PNT	44.0		2201.1	
2221.1	3'-0" X 6'-10"	AG	GLASS	CLR		AG-13	GLASS	CLR	11.0		2221.1	
2231.1	3'-0" X 7'-0"	F	WD	STN		HM-1	HM	PNT	41.0		2231.1	
2241.1	3'-0" X 7'-0"	F	WD	STN		HM-1	HM	PNT	41.0		2241.1	
2251.1	3'-6" X 7'-0"	F	WD	STN		HM-5	HM	PNT	19.0		2251.1	
2252.2	3'-6" X 7'-0"	F	WD	STN		POCKET	HM	PNT	50.0		2252.2	
2261.1	3'-6" X 7'-0"	F	WD	STN		HM-4	HM	PNT	14.0		2261.1	
2271.1	3'-6" X 7'-0"	F	WD	STN		HM-4	HM	PNT	19.0		2271.1	
2272.2	3'-6" X 7'-0"	F	WD	STN		POCKET	HM	PNT	50.0		2272.2	
2281.1	3'-6" X 7'-0"	F	WD	STN		HM-4	HM	PNT	21.0		2281.1	
2282.2	3'-6" X 7'-0"	F	WD	STN		HM-4	HM	PNT	13.0		2282.2	
2301.1	3'-6" X 7'-0"	FG	WD	STN		HM-1	HM	PNT	45.0		2301.1	
2311.1	3'-6" X 7'-0"	N	WD	STN		HM-1	HM	PNT	19.0		2311.1	
2312.2	3'-6" X 7'-0"	FG	WD	STN		HM-1	HM	PNT	19.0		2312.2	
2321.1	3'-6" X 7'-0"	F	WD	STN		HM-4	HM	PNT	20.0		2321.1	
2331.1	3'-6" X 7'-0"	F	WD	STN		HM-5	HM	PNT	17.0		2331.1	
2341.1	3'-6" X 7'-0"	F	WD	STN		HM-5	HM	PNT	17.0		2341.1	
2351.1	3'-6" X 7'-0"	WD	N	HM	HM-1	HM-1	HM	PNT	28.0		2351.1	
2361.1	3'-6" X 7'-0"	F	WD	STN		HM-1	HM	PNT	18.0		2361.1	
237.1	3'-0" X 7'-11"	FG	AL	AL	AL-5	AL	AL	8.0			237.1	
ST010.2	3'-0" X 7'-0"	60	N	WD	STN	HM-1	HM	31.0			ST010.2	
ST013.3	3'-0" X 7'-0"	60	N	WD	STN	HM-1	HM	28.0			ST013.3	
ST014.4	3'-0" X 7'-0"	60	F	STN	HM-1	HM-1	HM	44.0			ST014.4	
ST023.3	3'-0" X 7'-0"	60	N	WD	STN	HM-1	HM	PNT	31.0		ST023.3	

Q

081113 A

HOLLOW METAL FRAME

081113 B

HOLLOW METAL DOOR

081113 B2

INSULATED HOLLOW METAL DOOR

081214 A

FRAMELESS GLASS FRAME

081416 A

SOLID CORE DOOR WITH WOOD VENEER FACE (FLUSH SLAB)

081416 B

SOLID CORE DOOR WITH WOOD VENEER FACE (FULL GLASS)

081713 A

INTEGRATED METAL DOOR OPENING ASSEMBLY

08323 A

INSULATED COILING SERVICE DOOR

084113 C

ALUMINUM DOOR

084128 E

GLASS DOOR - THICKNESS TO MATCH THICKNESS OF WINDOW ASSEMBLY

P

088000 A

IG-1 1" U1 TRAC-LAR LOW E INSULATING GLASS PROVIDES FULLY TEMPERED AT LOCATIONS IDENTIFIED AND WHERE REQUIRED BY CODE

088000 C

MGT - 1/4" INCH CLEAR PLANT GLASS - PROVIDE FULLY TEMPERED AT LOCATIONS IDENTIFIED AND WHERE REQUIRED BY CODE

088000 D

LG-1 3/8" INCH CLEAR LAMINATED GLASS

088813 A

FG-1 30 MINUTE MONOLITHIC CERAMIC, FIRE-RATED GLAZING

N

DESIGN ARCHITECT:

David J. Giesco
PROJECT ARCHITECT
David E. Quigg

DESIGN SCHEDULE:

03/06/2018 - Addendum #2
03/06/2018 - 03/06/2018
03/06/2018 - 03/06/2018
ISSUED: April 30, 2018

M

PROJECT NO. 17039

PROJECT NAME

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482.477.7640
ENGR. PROJ. NO. 17039

L

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J

PROJECT CONSULTANTS

	DESIGN ARCHITECT: Daniel J. Grasso	PROJECT ARCHITECT: David E. Quade	DRAWN BY: KNT, DEL, DEQ	ISSUED: April 30, 2018	REVISION SCHEDULE: 06/09/2018 - Addendum #2
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PROJECT CONSULTANTS

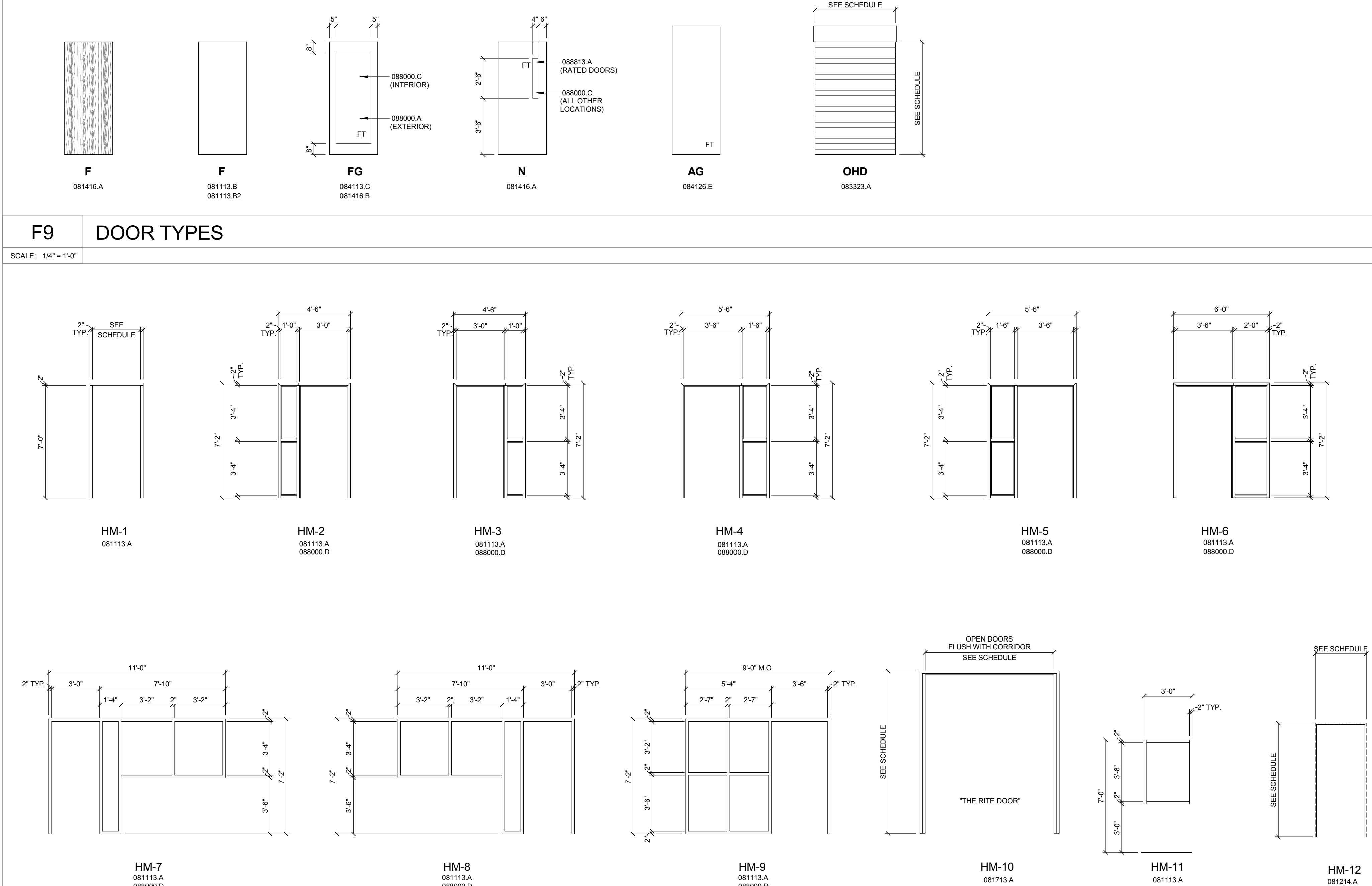
CLARK RICHARDSON & BISKUP
CONSULTING ENGINEERS, INC. ■
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DOOR SCHEDULE NOTES

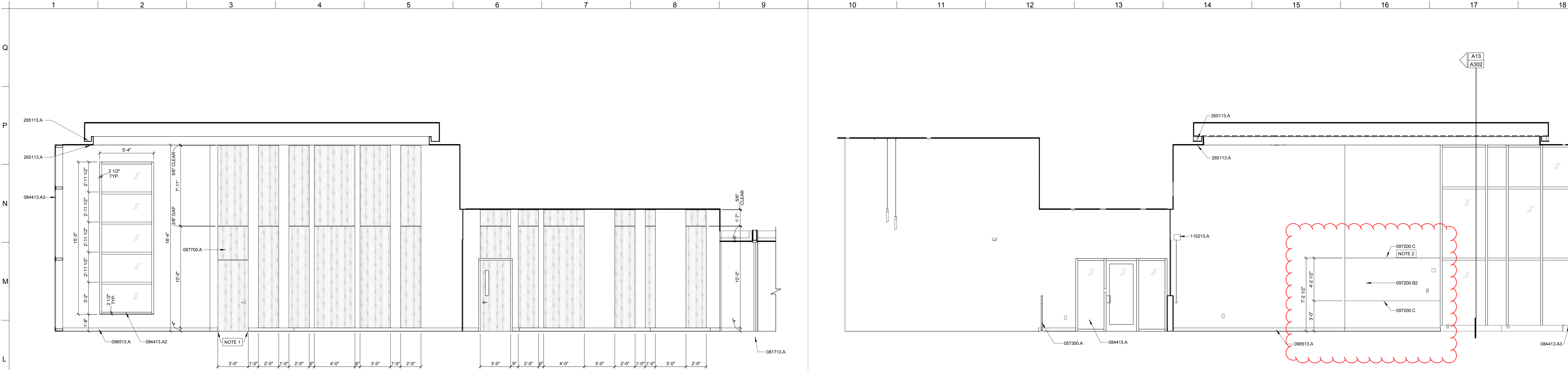
- 1 UNLESS NOTED OTHERWISE, COLOR OF ALL PAINTED HM FRAMES TO MATCH ADJACENT WALL
2 180 DEGREE SWING
3 SCHEDULED WIDTH IS NOMINAL. FABRICATOR TO DETERMINE ACTUAL WIDTH. INTENT IS FOR DOORS IN OPEN POSITION TO BE FLUSH WITH FINISHED CORRIDOR WALLS
4 FIELD VERIFY HEIGHT AND WIDTH TO FILL ROUGH OPENING
5 PAINT TO MATCH EXTERIOR WALL - CONFIRM COLOR SELECTION WITH ARCHITECT



HOLLOW METAL FRAME TYPES

ROOM FINISH SCHEDULE

No.	Room Name	Floor Finish	Base	Material	North Wall	Finish	Material	Finish	Material	South Wall	Finish	Material	Finish	Ceiling	Finish	NOTES	No.
001	CORRIDOR	VCT-1/JVCT-2/VCT-3 (1)	TSRWB-1	GWB	PNT-1	-	-	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1/GWB	PNT-1 (19)	-	1.9	001
002	USER LAB	CPT-3 (1)	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	002
003	CORRIDOR	CPT-3	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	003
004	LECTURE PREP	CPT-3	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	004
005	MEN'S RESTROOM	CT-4	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	005
006	WOMEN'S RESTROOM	CT-4	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	006
007	COMMON	CT-4	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	007
008	CORRIDOR	VCT-1/JVCT-2/VCT-3 (1)	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1/GWB	PNT-1 (19)	-	008
009	BIOL. STORAGE	SC-1	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	009
010	ELECTRICAL	SC-1	TSRWB-1 (124)	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	010
011	WIRING CLOSET	SC-1	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	011
012	CLUSTER LAB	SC-1	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	012
013	HERBARIUM AND ANIMAL MUSEUM	SC-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	013
014	MECHANICAL	SC-1	TSRWB-1 (124)	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	014
015	BUILDING STORAGE	SC-1	TSRWB-1 (124)	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	015
016	BIOLOGY ENTRY	SC-1	TSRWB-1 (124)	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	016
017	HAZARDOUS WASTE	SC-1	TSRWB-1 (124)	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	017
018	DELIVERY	SC-1	TSRWB-1 (124)	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	018
019	CPT-1	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	019
020	GROSS ANATOMY VESTIBULE	SC-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	020
021	GROSS ANATOMY LAB	DQS-1 (12)	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	021
022	GROSS ANATOMY ROOING	SC-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	022
023	STORAGE (FUTURE)	VCT-1/JVCT-2/VCT-3 (1)	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	023
024	GENERAL BIOLOGY LAB	SC-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	024
025	ECOLOGICAL LAB	SC-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	025
026	VESTIBULE	CPT-1	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	026
027	CORRIDOR	VCT-1/JVCT-2/VCT-3 (1)	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	027
028	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	028
029	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	029
030	CORRIDOR	VCT-1/JVCT-2/VCT-3 (1)	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	030
031	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	031
032	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	032
033	COMPUTER SCIENCE LAB	CPT-3	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	033
034	CORRIDOR	VCT-1/JVCT-2/VCT-3 (1)	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	034
035	MEDIUM COMPUTER	CPT-3	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	035
036	MEDIUM CLASSROOM	CPT-3	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	036
037	MEDIUM CLASSROOM	EXTG	TSRWB-1	EXTG	-	EXTG	-	EXTG	-	EXTG	-	EXTG	-	APC-1	-	-	037
038	FIBER	EXTG	TSRWB-1	EXTG	-	EXTG	-	EXTG	-	EXTG	-	EXTG	-	APC-1	-	-	038
039	CORRIDOR	VCT-1/JVCT-2/VCT-3 (1)	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	039
040	CORRIDOR	VCT-1/JVCT-2/VCT-3 (1)	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	040
041	WIRING CLOSET	SC-1	TSRWB-1	EXTG/GWB (30)	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	041
042	WORKROOM	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	042
043	CUSTOMOD	SC-1	TSRWB-1	GWB	PNT-1	EXTG/GWB (30)	PNT-1	EXTG/GWB (30)	PNT-1	EXTG/GWB (30)	PNT-1	EXTG/GWB (30)	PNT-1	APC-1	-	-	043
044	SMALL CLASSROOM	CPT-3	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	044
045	COMPUTER SCIENCE LAB	CPT-3	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	045
046	COMPUTER LAB	CPT-3	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	046
047	CORRIDOR	VCT-1/JVCT-2/VCT-3 (1)	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	047
048	WORKROOM	SC-1	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	048
049	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	049
050	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	050
051	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	051
052	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	052
053	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	053
054	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	054
055	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	055
056	COMPUTING SERVICES	CPT-8	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	056
057	RECEPTION	CPT-2	TSRWB-1	GWB	PNT-1	SE	SE	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	057
058	CORRIDOR	CPT-2	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	058
059	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	059
060	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	060
061	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	061
062	OFFICE	CPT-2	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	062
063	DATA	SC-1	TSRWB-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	063
064	WORKROOM	EXTG (30)	TSRWB-1	GWB	PNT-1	EXTG (30)	PNT-1	EXTG (30)	PNT-1	EXTG (30)	PNT-1	EXTG (30)	PNT-1	APC-1	-	-	064
065	STORAGE	EXTG (30)	TSRWB-1	EXTG (30)	PNT-1	EXTG (30)	PNT-1	EXTG (30)	PNT-1	EXTG (30)	PNT-1	EXTG (30)	PNT-1	APC-1	-	-	065
066	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	066
067	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	067
068	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	068
069	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	069
070	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	070
071	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	071
072	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	072
073	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	073
074	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	074
075	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	075
076	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	076
077	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	077
078	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	078
079	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	079
080	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	080
081	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	081
082	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	082
083	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	083
084	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	084
085	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	085
086	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	086
087	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	087
088	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	088
089	COLLABORATION	CPT-8	TSRWB-1	GWB	PNT-1	-	-	GWB	PNT-1	GWB	PNT-1	GWB	PNT-1	APC-1	-	-	



K1 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" NORTH WALL OF COLAB 202

K10 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" SOUTH WALL OF COLAB 202

KEYNOTE LEGEND	
055000.F	COUNTER SUPPORT BRACKET - BASIS-OF-DESIGN: HAFELE HEBSD 287.44.403
057300.A	INTERIOR CABLE RAIL GUARDRAIL ASSEMBLY DESIGNED BY FABRICATOR TO ACCOMMODATE CODE REQUIRED LOADING - REFER TO DETAIL K1006H.4
064116.A	PLASTIC LAMINATE FACED BASE CABINET - 24" DEEP - PROVIDE ADJUSTABLE SHELVING WHERE GRAPHICALLY INDICATED
064116.A2	PLASTIC LAMINATE FACED SINK BASE CABINET - 24" DEEP
064116.A5	PLASTIC LAMINATE FACED BASE CABINET - 24" DEEP - SINGLE DRAWER UNIT WITH ADJUSTABLE SHELVING WHERE GRAPHICALLY INDICATED
064116.A6	PLASTIC LAMINATE FACED BASE CABINET - 24" DEEP - FOUR DRAWER UNIT
064116.C	PLASTIC LAMINATE FACED UPPER CABINET - 12" DEEP - PROVIDE ADJUSTABLE SHELVING WHERE GRAPHICALLY INDICATED
081713.A	INTEGRATED METAL DOOR OPENING ASSEMBLY
084413.A	7' DEEP GLAZED ALUMINUM CURTAIN WALL ASSEMBLY
084413.A2	10' DEEP GLAZED ALUMINUM CURTAIN WALL ASSEMBLY
084413.A3	10' DEEP GLAZED ALUMINUM CURTAIN WALL ASSEMBLY
088000.E	AG-2 5/16" TEMPERED SLIDING GLASS DOORS
088000.E2	LG-2 9/16" LAMINATED 3'-0" x 3'-0" D SEMI-OPAQUE GLASS SHELVES - COORDINATE GLASS OPACITY SELECTION WITH ARCHITECT - VERIFY SHELF SIZE WITH CLEARANCES REQUIRED FOR CABLE SYSTEM
088000.E3	LG-2 9/16" LAMINATED 2'-3" x 14" D SEMI-OPAQUE GLASS SHELVES - COORDINATE GLASS OPACITY SELECTION WITH ARCHITECT - VERIFY SHELF SIZE WITH CLEARANCES REQUIRED FOR CABLE SYSTEM
088000.E4	BOHLE ROBUSTUS FITTINGS SYSTEM DUAL TRACK VERSION C WITH NO VERTICAL JAMB EXTRUSIONS, FLUSH PULLS ON ENDS, AND LOCKS
088000.E5	CABLE SUPPORTS WITH CABLE COUPLER AT TOP AND CABLE COUPLER TENSIONERS WITH ANCHOR PLATE AT BOTTOM. SHELVES HELD BY SIDE CLAMP GRIPPERS. BASIS OF DESIGN: GRIPLOOK
092900.A	5/8" TYPE X GYPSUM WALLBOARD - REFER TO SPECIFICATIONS FOR FURTHER DIRECTION REGARDING SPECIFIC LOCATION OF VARIOUS TYPES OF WALLBOARD
092900.B2	METAL CONTROL JOINT - IDENTIFIED IN DRAWINGS WITH A 1/2" IN CEILING PLANS AND ELEVATIONS - IDENTIFIED WITH TRIANGLE IN FLOOR PLANS
096513.A	4" RESILIENT BASE
097200.B2	DRY ERASE MAGNETIC WALLCOVERING ASSEMBLY
097200.C	EXTRUDED ALUMINUM J-CAP ACCESSORY TRIM
097260.A	TACKABLE WALLCOVERING ASSEMBLY
097260.B	EXTRUDED ALUMINUM J-CAP ACCESSORY TRIM
097700.A	WD-1 WOOD PANEL SYSTEM - NON-ACOUSTICAL
113100.A	REFRIGERATOR - PROVIDED AND INSTALLED BY OWNER
115213.A	PROJECTION SCREEN - COORDINATE INSTALLATION AND REQUIREMENTS OF SCREEN WITH SUPPLIER PRIOR TO INSTALLATION OF CEILING ASSEMBLY
123623.13.A	1 1/2" THICK PLASTIC LAMINATE CLAD COUNTERTOP WITH 4" HIGH LAMINATE CLAD BACKSPLASH
123623.13.B	1 1/2" THICK PLASTIC LAMINATE CLAD COUNTERTOP WITHOUT BACKSPLASH
123661.A	1/2" THICK SOLID SURFACE WINDOW SILL WITH 3/8" OVERHANG FROM FACE OF WALL TYPICAL - RADIUS EXPOSED EDGE - (SS-1)
265113.A	INTERIOR LIGHTING - REFER TO ELECTRICAL

SHEET A601 SHEET SPECIFIC NOTES

- NOTE 1 INTENT IS FOR PANEL TO ALIGN WITH OUTSIDE EDGE OF DOOR OPENING
- NOTE 2 ALIGN WITH TOP OF CURTAIN WALL MULLION
- NOTE 3 16" DEEP COUNTERTOP
- NOTE 4 CABINETS IN ROOM 045 TO BE LOCKABLE
- NOTE 5 HAFELE STEEL WORK SURFACE BRACKET SUPPORTS 3/2" O.C. TYP. COORDINATE WITH STUDS BEHIND RECESSED DISPLAY AREA TO BE FINISHED W/ GYP. BD. (PAINT) ON WALLS AND CEILING
- NOTE 6

G1 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" WALL DISPLAY CASES AT 128

G4 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" WALL DISPLAY CASES AT 131

G7 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" NORTH WALL OF BREAK ROOM 131

G10 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" EAST WALL OF CATERING KITCHEN 204

G13 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" TYPICAL CLASSROOM MILLWORK

G16 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" TYPICAL CLASSROOM MILLWORK WITH SINK

D1 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" WEST ELEVATION - CS LAB 033

D7 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" NORTH ELEVATION - CS LAB 033

D13 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" EAST ELEVATION - CS LAB 033

A1 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" WEST WALL OF CLASSROOM 150

A7 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" EAST WALL OF CS LAB 045

A13 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" WEST WALL OF WORKROOM 048

PROJECT CONSULTANTS

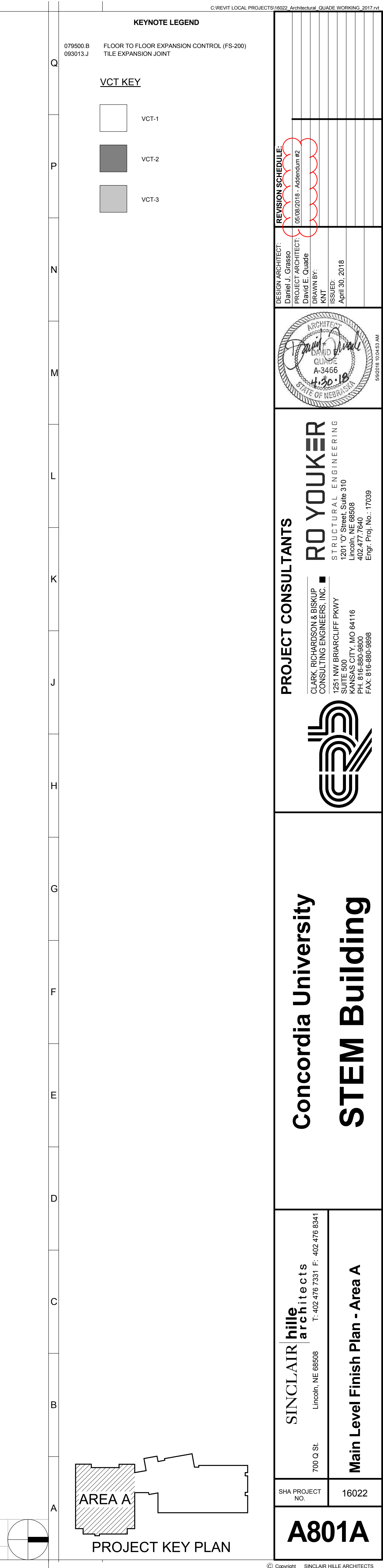
CLARK RICHARDSON & BISKUP
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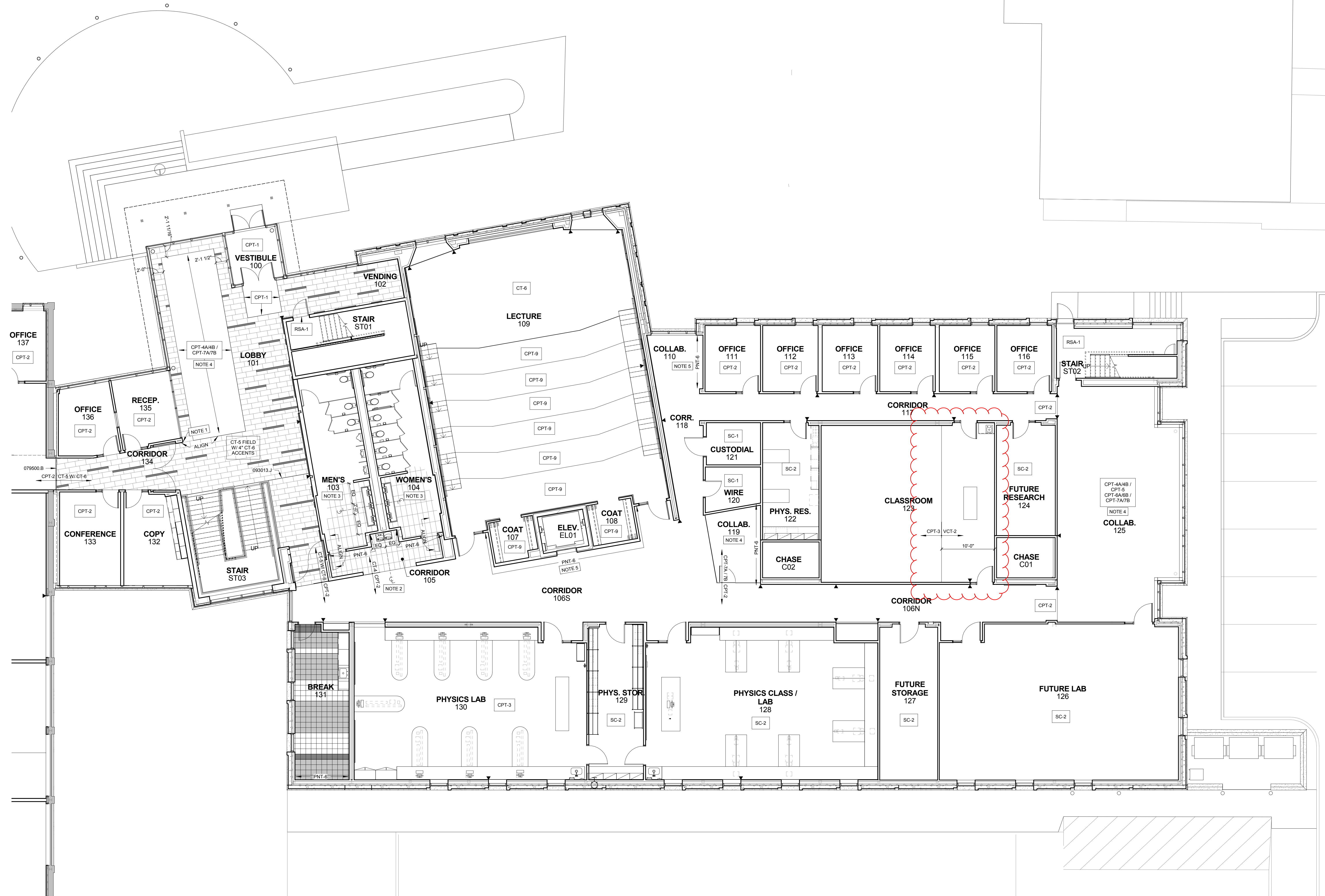
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SHA PROJECT NO. 16022

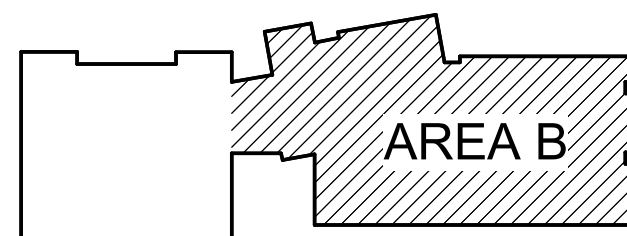
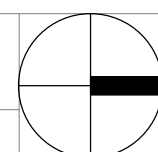
A601





MAIN LEVEL FINISHES PLAN - AREA B

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



PROJECT KEY PLAN

KEYNOTE LEGEND

079500.B FLOOR TO FLOOR EXPANSION CONTROL (FS-200)
093013.J TILE EXPANSION JOINT

SHEET A801B SHEET SPECIFIC NOTES

NOTE 1	BEGIN TILE LAYOUT HERE.
NOTE 2	BEGIN TILE LAYOUT BY CENTERING ON WET WALL.
NOTE 3	BEGIN TILE LAYOUT BY CENTERING ON SINK WALL. ALIGN TILES ON NORTH AND SOUTH WALLS WITH FLOOR TILES.
NOTE 4	SEE MANUFACTURER'S LAYOUT INCLUDED IN SPECIFICATIONS
NOTE 5	PAINT EXTENDS INSIDE CORNER TO INSIDE CORNER.

VCT KEY

 VCT-1
 VCT-2
 VCT-3

PROJECT CONSULTANTS

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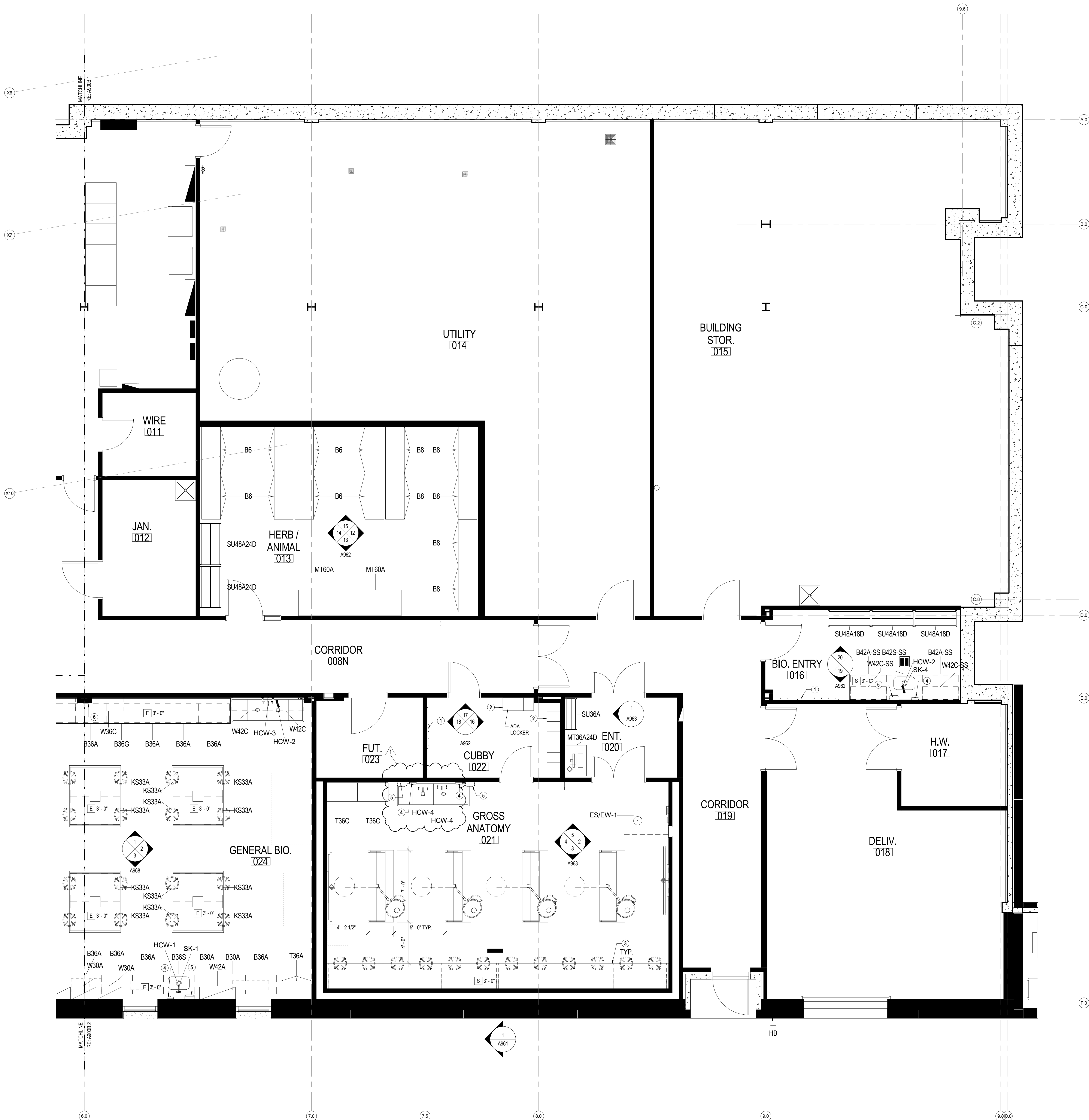
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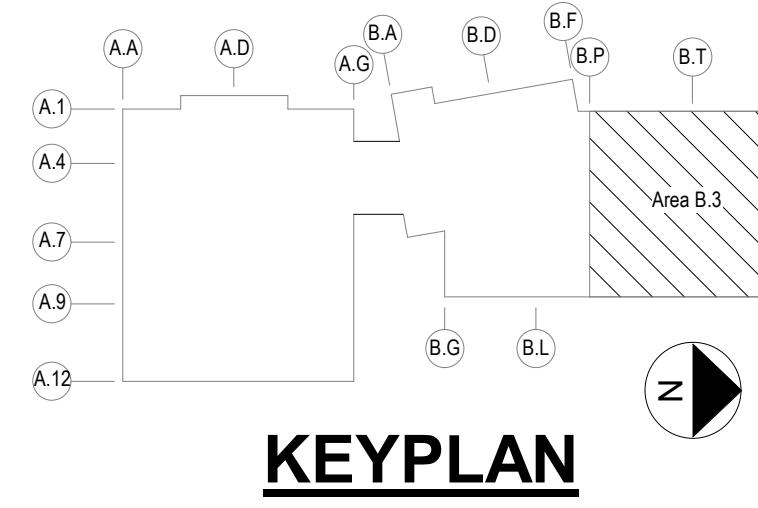
SHA PROJECT NO	16022
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A801B

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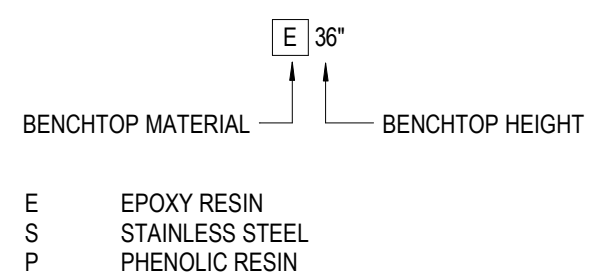
1 Lower Level Laboratory Plan – Area B.3
1/4" = 1'-0"



GENERAL NOTES

- REFER TO ARCHITECTURAL DRAWINGS FOR INFORMATION PERTAINING TO WALLS, OPENINGS, CEILINGS, FINISHES, ETC.
- REFER TO SHEET A960 FOR CASEWORK SCHEDULE.
- REFER TO SHEET EQ700 AND EQ701 FOR EQUIPMENT SCHEDULE.
- PROVIDE FILLER AND END PANELS AS REQUIRED FOR COMPLETE CASEWORK INSTALLATION.

BENCHTOP MATERIALS



- EPOXY RESIN
STAINLESS STEEL
PHENOLIC RESIN

SHEET NOTES

- LAB COAT HOOKS (CH-1).
- DOUBLE TIER LOCKERS.
- STAINLESS STEEL WALL BRACKET.
- SOAP DISPENSER, OWNER FURNISHED.
- PAPER TOWEL DISPENSER, OWNER FURNISHED.
- NOTCH COUNTERTOP AROUND COLUMN SURROUND. PROVIDE 4" BACKSLASH WHERE COUNTERTOP IS NOTCHED.

PROJECT CONSULTANTS

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STEM Building

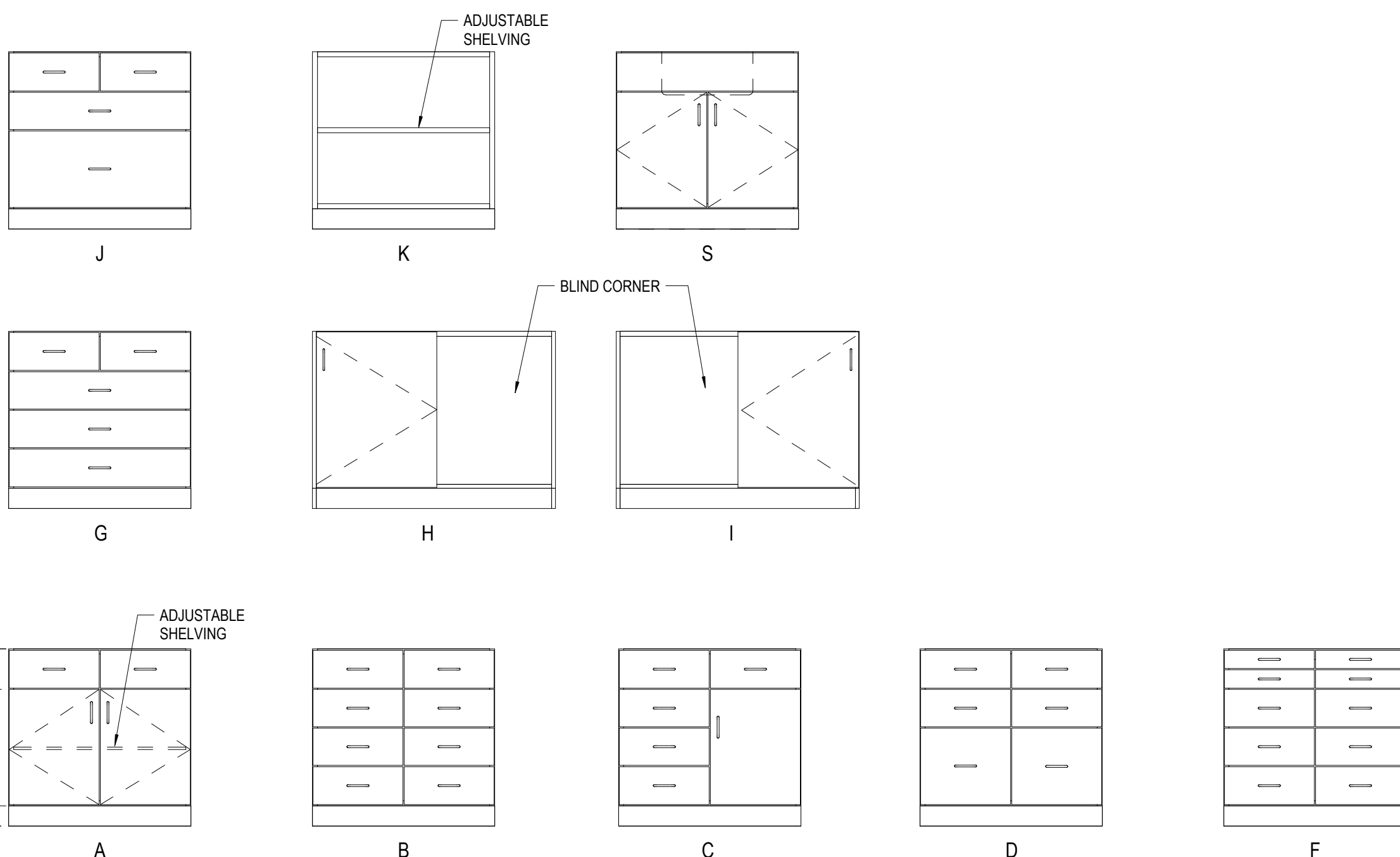
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Lower Level Laboratory Plan – Area B.3

SHA PROJECT NO. 173322.00

A900B.3

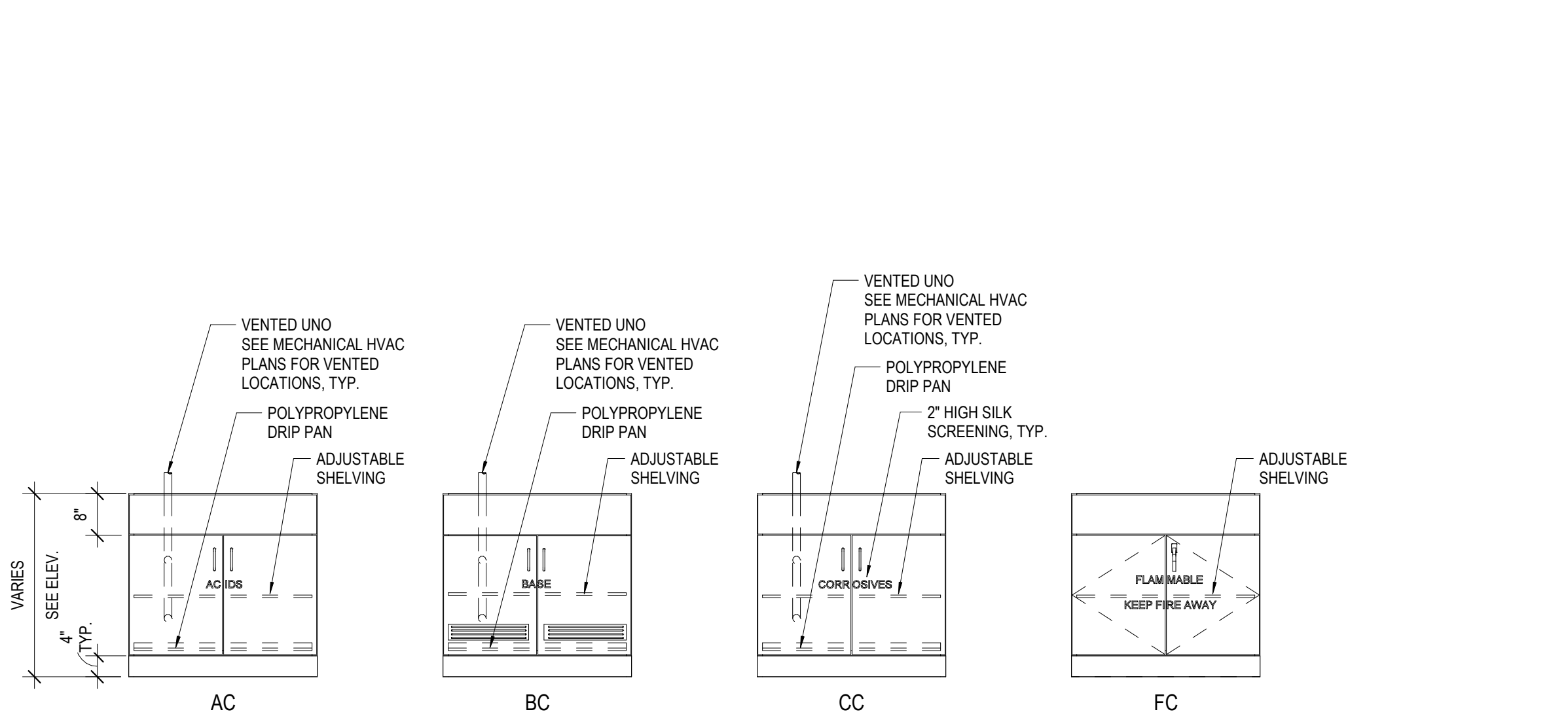
WALL CABINETS - W

15" DEEP UNO
WOOD UNO
-SS MODIFIER INDICATES STAINLESS STEEL



STANDING AND SITTING HEIGHT FLOOR MOUNTED CABINETS - B

30"-36" AFF TO TOP OF COUNTERTOP
WOOD UNO
-SS MODIFIER INDICATES STAINLESS STEEL



SPECIALTY STANDING HEIGHT FLOOR MOUNTED CABINETS - B

34" - 36" AFF TO TOP OF COUNTERTOP

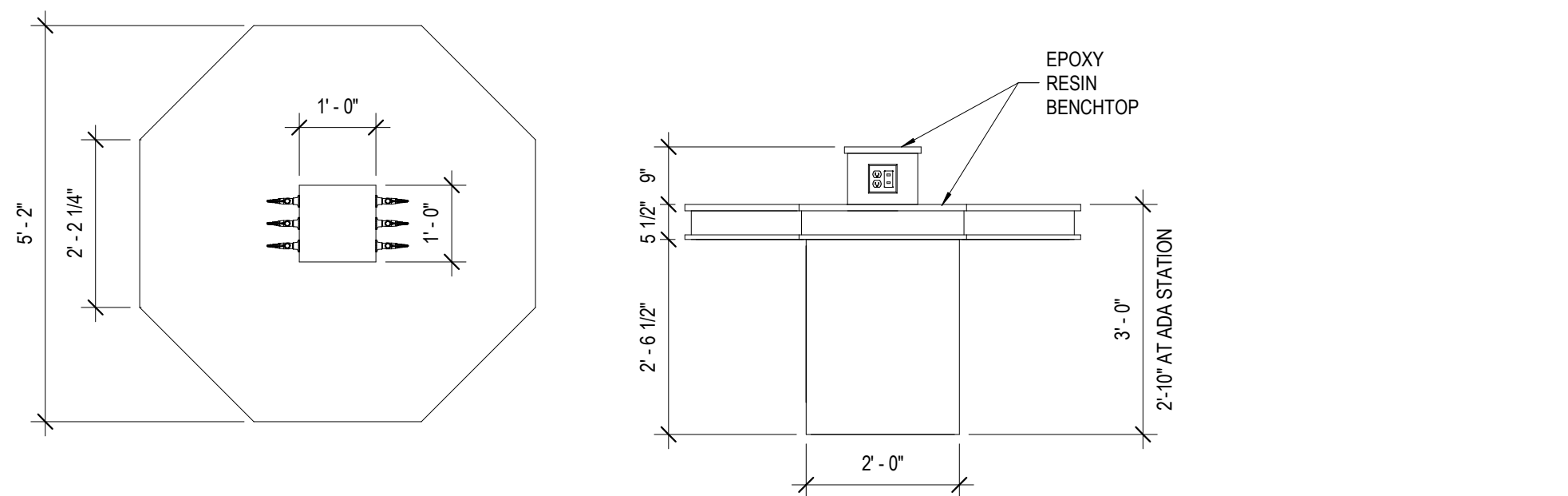


TALL STORAGE CABINETS - T

22" DEEP UNO
WOOD UNO

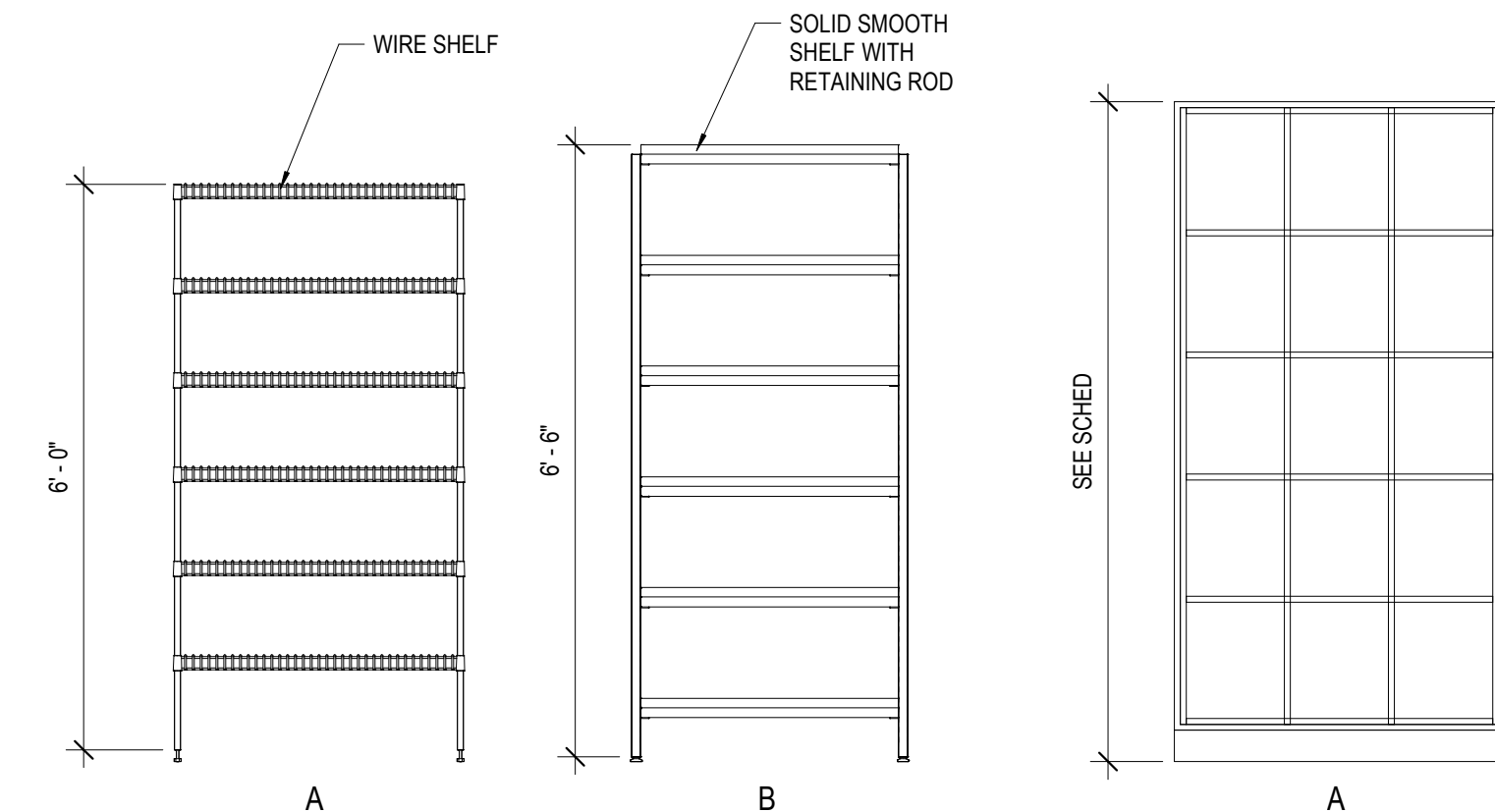
MOVABLE TABLES - MT

30" DEEP UNO
EPOXY TOP UNO
-P MODIFIER INDICATES PHENOLIC TOP



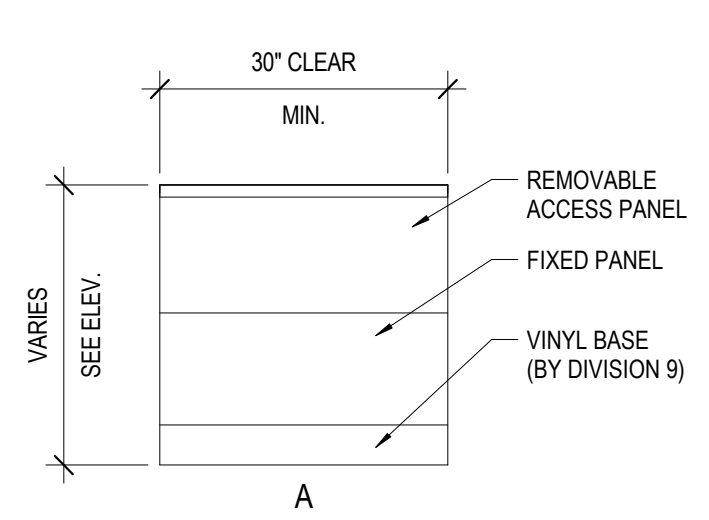
STUDENT STATION - ST

34" - 36" AFF TO TOP OF COUNTERTOP
WOOD UNO



SHELVING UNIT - SU

12" DEEP UNO
STAINLESS STEEL

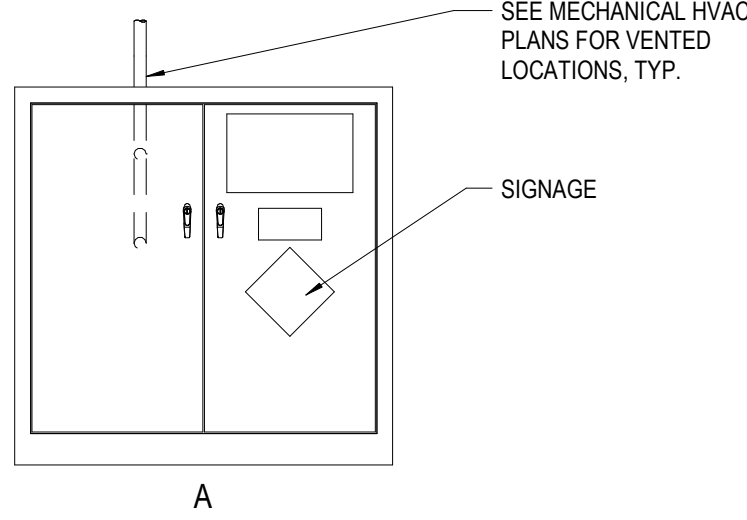


KNEE SPACE - KS

30"-36" AFF TO TOP OF COUNTERTOP

CUBBY STORAGE CABINETS - C

18" DEEP UNO



PLUMBING FIXTURE SCHEDULE

MARK	MOUNTING	DESCRIPTION	REMARKS
CW-1	DECK	CW FIXTURE	
DI-1	DECK	DI FIXTURE	
DI-2	DECK	DI DRENCH FAUCET	
ES/EW-1	WALL	RECESSED SAFETY STATION WITH SHOWER HEAD	
EW-1	DECK	EYEWASH/DRENCH HOSE UNIT	
HCW-1	DECK	HCW FIXTURE	
HCW-2	PANEL	HCW DRENCH FAUCET	
HCW-3	PANEL	HCW FIXTURE	
HCW-4	PANEL	HCW FOOT CONTROLLED FAUCET	
NG-1	DECK	SINGLE BALL VALVE TURRET	NATURAL GAS SERVICE
NG-2	DECK	DOUBLE BALL VALVE TURRET	NATURAL GAS SERVICE
NG-3	VERTICAL	SINGLE BALL VALVE TURRET	NATURAL GAS SERVICE
VAC-1	VERTICAL	SINGLE BALL VALVE TURRET	VACUUM SERVICE

CASEWORK SCHEDULE

MARK	WIDTH	DEPTH	HEIGHT	COMMENTS
B15D	1'-3"	1'-10"	2'-11"	
B15D34H	1'-3"	1'-10"	2'-9"	
B18A	1'-6"	1'-10"	2'-11"	
B18B	1'-6"	1'-10"	2'-11"	
B18B29H	1'-6"	1'-10"	2'-5"	
B18BL	1'-6"	1'-10"	2'-11"	
B24A	2'-0"	1'-10"	2'-11"	
B24A29H	2'-0"	1'-10"	2'-5"	
B24AC	2'-0"	1'-10"	2'-11"	
B24B	2'-0"	1'-10"	2'-11"	
B24FC	2'-0"	1'-10"	2'-11"	
B30A	2'-6"	1'-10"	2'-11"	
B30A-SS	2'-6"	1'-10"	2'-11"	
B30AC	2'-6"	1'-10"	2'-11"	
B30AC34H	2'-6"	1'-10"	2'-9"	
B30B	2'-6"	1'-10"	3'-0"	
B30C	2'-6"	1'-10"	2'-11"	
B30CC	2'-6"	1'-10"	2'-11"	
B30CC34H	2'-6"	1'-10"	2'-9"	
B30F	2'-6"	1'-10"	2'-11"	
B30G	2'-6"	1'-10"	2'-11"	
B30S	2'-6"	1'-10"	2'-11"	
B30S34H	2'-6"	1'-10"	2'-9"	
B30VP	2'-6"	1'-10"	2'-11"	
B33B	2'-9"	1'-10"	2'-11"	
B33B34HL	2'-9"	1'-10"	2'-9"	
B33BL	2'-9"	1'-10"	2'-11"	
B36A	3'-0"	1'-10"	2'-11"	
B36AC	3'-0"	1'-10"	2'-11"	
B36AC34H	3'-0"	1'-10"	2'-9"	
B36B	3'-0"	1'-10"	2'-11"	
B36BC	0'-0"	0'-0"	0'-0"	
B36BC34H	3'-0"	1'-10"	2'-9"	
B36C	3'-0"	1'-10"	2'-11"	
B36CC	3'-0"	1'-10"	2'-11"	
B36CC34H	3'-0"	1'-10"	2'-9"	
B36D	3'-0"	1'-10"	2'-11"	
B36FC	3'-0"	1'-10"	2'-11"	
B36G	3'-0"	1'-10"	2'-11"	
B36K29H	3'-0"	1'-10"	2'-5"	
B36S	3'-0"	1'-10"	2'-11"	
B36S34H	3'-0"	1'-10"	2'-9"	
B42A	3'-6"	1'-10"	2'-11"	
B42A-SS	3'-6"	1'-10"	2'-11"	
B42B	3'-6"	1'-10"	2'-11"	
B42C	3'-6"	1'-10"	2'-11"	
B42D	3'-6"	1'-10"	2'-11"	
B42F	3'-6"	1'-10"	2'-11"	
B42G	3'-6"	1'-10"	2'-11"	
B42S-SS	3'-6"	1'-10"	2'-11"	
B48A	4'-0"	1'-10"	2'-11"	
B48H	4'-0"	1'-9 1/4"	2'-11"	
B48I	4'-0"	1'-9 1/4"	2'-11"	
B48K29H	4'-0"	1'-10"	2'-5"	
C42A	3'-6"	1'-6"	7'-0"	
C66A	5'-6"	1'-6"	7'-0"	
C66A72H	5'-6"	1'-6"	6'-0"	
C84A	7'-0"	1'-6"	7'-0"	
H65A	2'-10"	2'-10"	5'-5"	
H65A-V	2'-10"	2'-10"	5'-5"	
KS21A	1'-9"	1'-10"	2'-11"	
KS21A34H	1'-9"	1'-10"	2'-9"	
KS24A-SS	2'-0"	1'-10"	2'-11"	
KS27A	2'-3"	1'-10"	2'-11"	
KS27A34H	2'-3"	1'-10"	2'-9"	
KS30A	2'-6"	1'-10"	3'-0"	
KS30A29H	2'-6"	1'-10"	2'-5"	
KS33A	2'-9"	1'-10"	2'-11"	
KS33A34H	2'-9"	1'-10"	2'-9"	
KS36A	3'-0"	1'-10"	2'-11"	
KS36A16D	3'-0"	1'-4"	2'-11"	
KS36A34H	3'-0"	1'-10"	2'-9"	
MT36A24D	3'-0"	2'-0"	3'-0"	
MT60A	5'-0"	2'-6"	3'-0"	
MT60A-P	5'-0"	2'-6"	3'-0"	
MT60A-SS	5'-0"	2'-6"	3'-0"	
MT60B24D	5'-0"	2'-0"	3'-0"	
ST	4'-0"	2'-0"	3'-0"	
ST34H	4'-0"	2'-0"	2'-10"	
SU36A	3'-0"	1'-0"	6'-0"	
SU36B	3'-0"	1'-0"	6'-0"	
SU48A18D	4'-0"	1'-6"	6'-0"	
SU48A24D	4'-0"	2'-0"	6'-0"	
SU48B	4'-0"	1'-0"	6'-0"	
T30A	2'-6"	1'-10"	8'-0"	
T36A	3'-0"	1'-10"	8'-0"	
T36A16D	3'-0"	1'-4"	8'-0"	
T36C	3'-0"	1'-10"	8'-0"	
T36T	3'-0"	1'-10"	7'-0"	
T48A	4'-0"	1'-10"	8'-0"	
T48T	4'-0"	1'-10"	7'-0"	
W24C	2'-0"	1'-3"	5'-0"	
W30A	2'-6"	1'-3"	3'-0"	
W30C	2'-6"	1'-3"	3'-0"	
W30C-SS	2'-6"	1'-3"	3'-0"	
W36A	3'-0"	1'-3"	3'-0"	
W36C	3'-0"	1'-3"	3'-0"	
W36D	3'-0"	1'-6"	7'-0"	
W42A	3'-6"	1'-3"	3'-0"	
W42C	3'-6"	1'-3"	3'-0"	
W42C-SS	3'-6"	1'-3"	3'-0"	
W42D	3'-6"	1'-6"	7'-0"	
W48D	4'-0"	1'-6"	7'-0"	

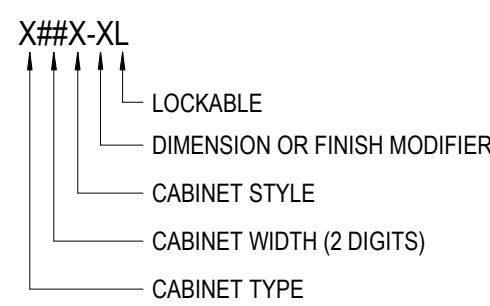
SINK SCHEDULE

MARK	DESCRIPTION	DIMENSIONS
SK-1	DROP IN EPOXY LAB SINK	2'-1" L x 1'-3" W x 10" D
SK-2	DROP IN EPOXY LAB SINK	1'-6" L x 1'-3" W x 10" D
SK-3	CUP SINK	1'-0" L x 4" W x 6" D
SK-4	SS UTILITY SINK	
SK-5	SS HANDWASH SINK W/ FAUCET	1'-6" L X 1'-4" W X 5.5" D

GENERAL NOTES

- LAB FURNISHINGS DIVISION 12 CONTRACTOR SHALL CAREFULLY EXAMINE THE LABORATORY FURNISHINGS DRAWINGS AND SPECIFICATIONS AND ALL OTHER DRAWINGS AND SPECIFICATIONS TO PROPERLY DETERMINE CONTRACTUAL RESPONSIBILITIES.
- FOR ACTUAL ROOM DIMENSIONS, REFER TO THE ARCHITECTURAL PLANS.
- LAB FURNISHINGS DIVISION 12 CONTRACTOR SHALL FIELD CHECK ALL DIMENSIONS BEFORE FABRICATION.
- OVERALL LENGTH OF TOPS SHALL BE DETERMINED BY CASEWORK AND DIMENSIONS AS INDICATED ON PLANS. SUCH LENGTHS SHALL REMAIN CONSTANT REGARDLESS OF SUCCESSFUL BIDDER'S STANDARDS. TOPS SHALL OVERHANG 1" AT EACH END AND 1" FROM FRONT OF BASE CABINET. WHEN OVERALL DIMENSIONS ARE GIVEN, 1" OVERHANG IS INCLUDED.
- ON WALL-TO-WALL CASEWORK ASSEMBLIES, THE "OPEN" SPACE DIMENSION SHALL BE DETERMINED IN THE FIELD. IF THERE IS MORE THAN ONE "OPEN" SPACE INDICATED, SPACE AVAILABLE FOR "OPEN" SPACE SHALL BE EVENLY DISTRIBUTED.
- DIMENSIONS FOR COUNTERTOP HEIGHTS ARE NOMINAL WITHIN 3/4" OF THE REQUIRED HEIGHT.
- ALL WALL BENCH TOPS SHALL BE 2'-6" DEEP INCLUDING THE BACKSPLASH, UNLESS OTHERWISE NOTED, AND ISLAND OR PENINSULA BENCHES 5'-0" WIDE UNLESS OTHERWISE NOTED ON DRAWINGS.
- TOP MATERIAL TO BE 1" THICK BLACK EPOXY RESIN CONSTRUCTION, UNLESS OTHERWISE NOTED. OTHER TOP MATERIALS ARE 1" THICK PHENOLIC RESIN CONSTRUCTION OR 1" THICK STAINLESS STEEL WITH MARINE EDGE CONSTRUCTION.
- FILLER PANELS (FP) SHALL BE USED BETWEEN BACK OF CABINETS OR HOODS AND WALLS AT EXPOSED ENDS AND WHEN BASE CABINETS AND/OR HOODS ARE SET BACK-TO-BACK, FILLER PANELS SHALL ALSO BE USED AT THE ENDS OF BENCHES, ALL KNEE SPACES, AND AT ALL EXPOSED CORE AREAS.
- ALL EXPOSED-TO-VIEW COUNTERTOP EDGES, BACKS OF SPLASHES, ALL EDGES OF TABLES, BACKS OF COUNTERTOPS AND SPLASHES SHALL BE CAULKED, FILLED, SEALED AND FINISHED.
- ALL FURNITURE EXPOSED-TO-VIEW BACKS AND SIDES AND FILLER PANELS TO BE FINISHED.
- HIGH CASEWORK AND FREE-STANDING SHELVING SHALL BE SECURE FROM OVERTURNING.
- ARCHITECT WILL SELECT COLORS FOR ALL COMPONENTS OF PROJECT INDICATED IN DRAWINGS. COLOR SELECTION WILL BE FROM THE MANUFACTURERS STANDARD COLORS.
- ALL PENETRATIONS THROUGH COUNTERTOP SHALL BE CAULKED BY THE LAB FURNISHINGS CONTRACTOR WITH APPROVED ACID-RESISTANT SEALANT.
- ANY TYPE OF UNISTRUT OR SLOTTED STANDARD FRAME SUPPORTS (USED FOR RACKS, SHELVING, ETC.) SHALL BE SPACED AND POSITIONED TO CLEAR FITTINGS, SINKS, AND CUPSINKS.
- ON WALLS WHERE UNISTRUTS OR SLOTTED STANDARDS RUN FULL HEIGHT AND INTERFERE WITH ELECTRICAL SERVICES, RACKWAYS SHALL BE WALL MOUNTED AND UNISTRUTS/STANDARDS CUT AS REQUIRED UNLESS OTHERWISE NOTED.
- FOR LOCATION OF OVERHEAD SERVICE CARRIERS, SNORKELS AND ANY OTHER FURNISHINGS THAT PENETRATE THE CEILING, SEE ARCHITECTURAL REFLECTED CEILING PLANS. UMBILICAL CEILING PENETRATIONS ARE SHOWN APPROXIMATE ON THE ARCHITECTURAL REFLECTED CEILING PLANS.
- FOR LAB SERVICE FITTINGS, TYPES, LOCATIONS AND ORDER, SEE THE LF PLANS AND SPECIFICATIONS. THESE FITTINGS SHALL BE FURNISHED AND DELIVERED BY THE LF CONTRACTOR AND INSTALLED BY THE PLUMBING OR MECHANICAL PIPING CONTRACTORS. SINKS SHALL BE FURNISHED AND INSTALLED BY THE LF CONTRACTOR.
- ALL PLUMBING/MECHANICAL PIPING SYSTEM SUPPORTS SHALL BE FURNISHED AND INSTALLED BY THE PLUMBING/MECH PIPING CONTRACTOR. THE SPACING HANGERS AND FASTENERS SHALL BE AS PER PIPE MANUFACTURER'S RECOMMENDATIONS.
- ALL SINKS TO BE EPOXY RESIN OR OTHER AS INDICATED ON PLANS.
- DIVISION 26 CONTRACTOR SHALL FURNISH AND INSTALL ALL ELECTRICAL PLUG STRIPS. FOR INSTALLATION SEE ELECTRICAL AND LAB FURNISHINGS DRAWINGS AND SPECIFICATIONS FOR QUANTITY, TYPE, AND LOCATION.
- UNLESS OTHERWISE NOTED, ALL UNISTRUT BRACKETS AND FITTINGS INDICATED ON THE LABORATORY FURNISHINGS DOCUMENTS SHALL BE SUPPLIED, INSTALLED, AND PAINTED BY THE LAB FURNISHINGS CONTRACTOR.
- FOR CHEMICAL FUME HOOD PRE-PIPING AND PRE-WIRING, SEE THE LAB FURNISHINGS PLANS, SPECIFICATIONS, AND DETAILS. SYSTEMS TESTING SHALL BE AS SPECIFIED BY DIVISIONS 11, 23, AND 26.
- LAB ABBREVIATIONS SHALL APPLY ONLY TO CASEWORK SHEETS.

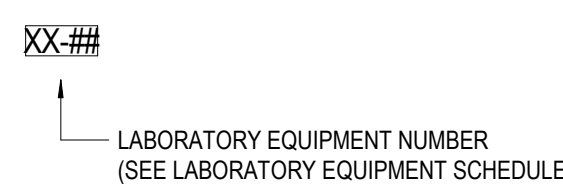
CASEWORK KEY



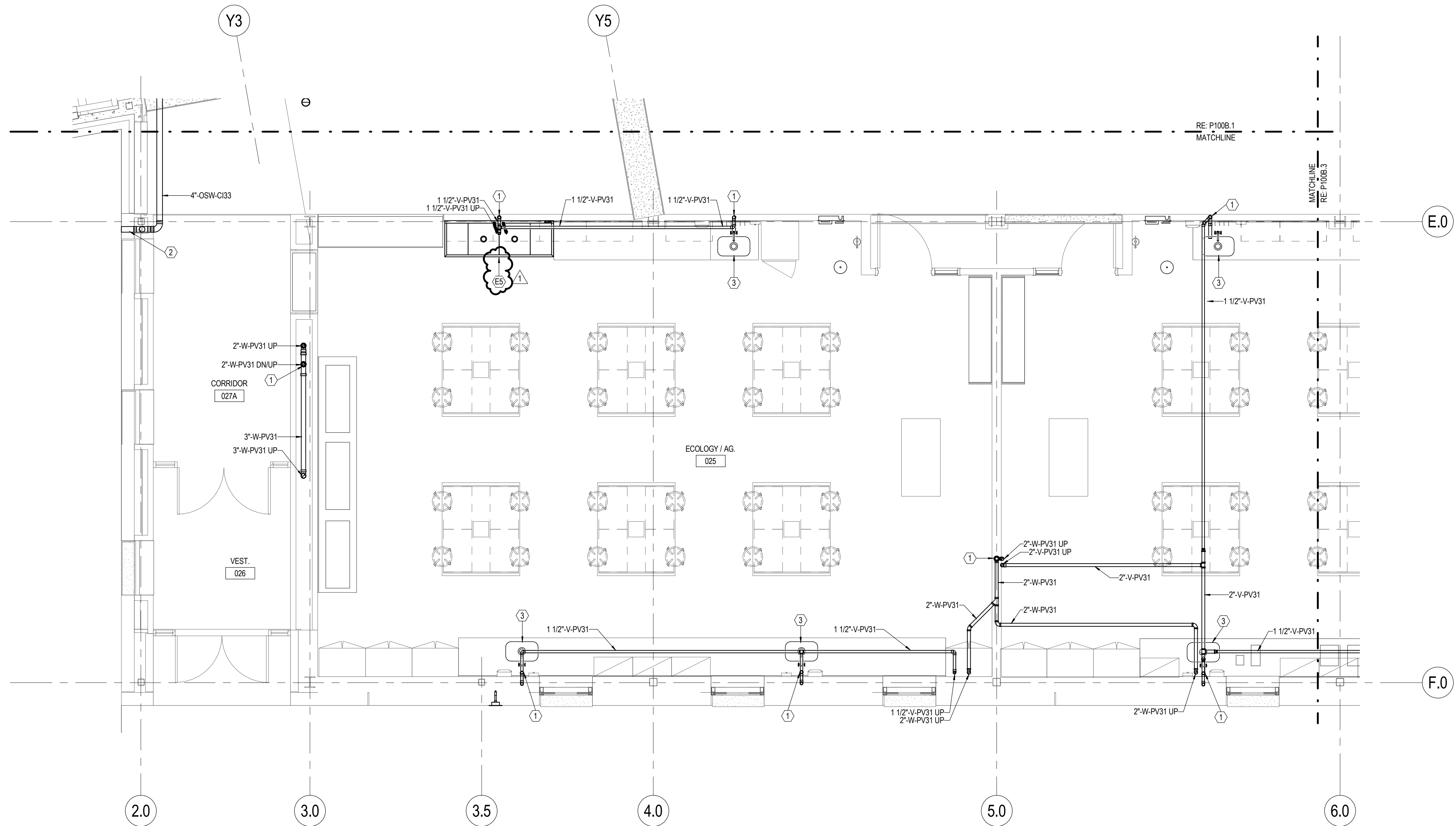
CASEWORK SCHEDULE NOTES

- PROVIDE EXTRA SHELF FOR ALL UNITS IN ROOM 231
- PROVIDE WRITABLE 6" GLASS SLIDING DOORS AND TRACK WHERE INDICATED IN ELEVATION IN ROOM 212.

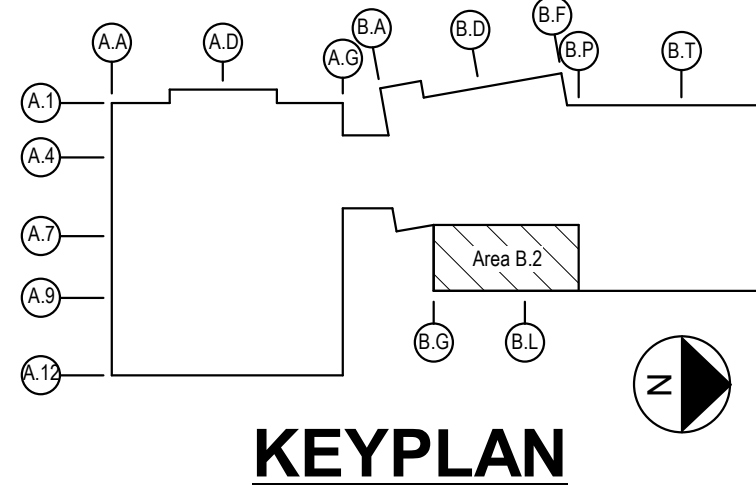
LABORATORY EQUIPMENT



PLAN DESIGNATION	DESCRIPTION	QUANTITY	NOT IN PLAN	MODEL NUMBER	CURRENT ROOM (EXISTING Q)	FUTURE ROOM	NEW/EXIST	RESPONSIBLE PARTY	WIDTH	DEPTH	HEIGHT	UNDER COUNTER/BENCH/WALL/FLOOR
AP1	Fridge	2				Biology Research & A&P Micro	New	OPOI	29	33	66	Floor
AP2	Prepared slides/histology/complete sets of 12	250	X			A&P Micro	New	OPOI				Inside AP3&4 Slide cabinets
AP3	Wooden slide cabinets (2000 slides; stacked)	2			Sci 105	A&P Micro	Exist	OPOI	34	14	22.5	Bench
AP4	Wooden slide cabinets (1000 slides; stacked)	2			Sci 105	A&P Micro	Exist	OPOI	17	14	22.5	Bench
AP5	3D human torso model	1			Sci 105	A&P Micro	Exist	OPOI	17	15		Bench, wall
AP6	3D human model, mini	1			Sci 105	A&P Micro	Exist	OPOI	14	14		Bench, wall
AP7	Wooden slide cabinet (1000 slides)	1			Sci 105	A&P Micro	New	OPOI	17	14	22.5	Bench stacked
AP8	Articulated female human skeleton	1				A&P Micro	New	OPOI	24	24	72	Floor
AP9	Articulated male human skeleton	1				A&P Micro	New	OPOI	24	24	72	Floor
AP10	Disarticulated female human skeleton	1	X			A&P Micro	New	OPOI				Wall storage
AP11	Disarticulated male human skeleton	1	X			A&P Micro	New	OPOI				Wall storage
AP12	Male/female human skull set	2	X			A&P Micro	New	OPOI				Wall storage
AP13	Articulated human skeletons (real)	2			Sci 105	A&P Micro	Exist	OPOI	17	15	72	Floor
AP14	Human skulls	7	X		Sci 105	A&P Micro	Exist	OPOI				Wall storage
AP15	3D models (eye, ear, spinal cord, brains, etc.)	6	X		Sci 105	A&P Micro	Exist	OPOI				Wall storage
AP16	Disarticulated human skeletons	4 bins	X		Sci 105	A&P Micro	Exist	OPOI	14	24	6	Wall storage
AP17	Blood pressure cuffs	12	X		Sci 105	A&P Micro	New	OPOI				Wall storage
AP18	Stethoscopes	12	X		Sci 105	A&P Micro	Exist	OPOI				Wall storage
AP19	Garbage disposal unit/sink	1	X			A&P Micro	New	CPCI				Under sink
AP20	Compound Microscopes (LED)	12	X		Sci 105	A&P Micro	Exist	OPOI				Wall storage
AP21	Compound Microscopes (LED)	12	X			A&P Micro	New	OPOI				Wall storage
AP22	Incubators	2				A&P Micro	Exist	OPOI	41"	21"	39"	Bench
B1	Water baths	3	X			Future General Biology	New	OPOI	14"	12"	10.5"	Bench
B3	Micropipettes (P20, P200, P1000 set)	8	X			Future General Biology	New	OPOI				Bench
B4	Compound Microscopes (LED)	24	X			Future General Biology	New	OPOI				Wall storage
B5	Dissecting Scopes	24	X		Sci 102	Future General Biology	Exist	OPOI				Wall storage
B6	Herbarium Cabinets	8			Biology Storage	Herbarium	New	OPOI	54	22	84	Floor
B8	Mammal, Bird, Insect, Fungus specimen cabinets	6				Herb/Animal	New	OPOI				stackable
B13	Saltwater aquarium	2				Ecology	Exist	OPOI	72"	24"	30"	Floor
B14	Prairie grasses display—specimen displays	1				Herb/Animal	New	OPOI				Wall
B15	Greenhouse table - 30" deep	5				Greenhouse	New	CPCI	60	30	36	Floor
B16	Greenhouse table - 15" deep	2				Greenhouse	New	CPCI	48	15	36	Floor
B17	Greenhouse table with shelf- 30" deep	4				Greenhouse	New	CPCI	60	30	60	Floor
B18	Plant growth chambers	3				Ecology/Ag Lab	Exist	OPOI	52"	18.5"	38"	Bench
BC1	Freezer/fridge (1 each lab listed)	3			Sci 105	Biochemistry Prep/BioChem/Ecology	Exist	OPOI	29	33	66	Floor
BC2	Bunsen burners with neoprene tubing	12	X			A&P Micro	New	OPOI				Under counter
BC5	Zebrafish Housing System	1			Sci 105	Biochem/Micro Research	Exist	OPOI	60	40	80	Floor
BC7	Freezer -20	2			Biology Storage	Biology Storage	Exist	OPOI				Floor
BC8	Incubators	1				Biochemistry/Genetics Lab	New	OPOI	21.25"	21"	39.35"	Bench
BC9	Incubators	1				Biochemistry/Genetics Lab	New	OPOI	10.2"	18.5"	16.3"	Bench
BC10	Thermocycler	1				Biochemistry/Genetics Lab	New	OPOI				Bench
BC11	Microwave	1				Biochemistry/Genetics Lab	New	OPOI				Bench
BC12	Micropipettors (P20, P200, P1000 set)	24	X			Biochemistry/Genetics Lab	New	OPOI				in drawers
BC13	Tabletop Microcentrifuge	1			Sci 105	Biochemistry/Genetics Lab	Exist	OPOI				Bench
BC14	Tabletop Microcentrifuge	1				Biochemistry/Genetics Lab	New	OPOI				Bench
BC15	PowerPac Basic Power Supply	3	X			Biochemistry/Genetics Lab	New	OPOI	8.3"	9.6"	2.6"	in cabinets
BC16	PowerPac Basic Power Supply	6	X			Biochemistry/Genetics Lab	New	OPOI	8.3"	9.6"	2.6"	in cabinets
BC17	SDS Electrophoresis Chambers	6	X		Sci 105	Biochemistry/Genetics Lab	Exist	OPOI	8"	8"	8"	in cabinets
BC18	SDS Electrophoresis Chambers	6	X			Biochemistry/Genetics Lab	New	OPOI	8"	8"	8"	in cabinets
BC19	Western Transfer Chambers	6	X		Sci 105	Biochemistry/Genetics Lab	Exist	OPOI				in cabinets
BC20	Western Transfer Chambers	6	X			Biochemistry/Genetics Lab	New	OPOI				in cabinets
BC23	Autoclave	2		Yamato SM510	Sci 105/storage	Biochemistry Prep/Bio. Research	Exist	OPOI	17	21	42	Floor
BC24	Heating Blocks	3			Sci 105	Biochemistry/Genetics Lab	Exist	OPOI				Bench
BC25	Water baths	5				(4) Biochemistry/Genetics Lab (1) A&P Micro	New	OPOI	15.5	13.5	7.5	Bench
BC26	Light Box	2				Biochemistry/Genetics Lab	New	OPOI				Bench
BC27	Ring Stands	24	X			Biochemistry/Genetics Lab	New	OPOI				Under counter
BC28	Stir Plates (heated)	12	X			Biochemistry/Genetics Lab	New	OPOI				in shelving
BC29	Scales (0.001 sensitivity)	3	X			Biochemistry/Genetics Lab	New	OPOI				in cabinets
BC30	Scales (0.01 sensitivity)	6	X			Biochemistry/Genetics Lab	New	OPOI				in cabinets
BC31	Compound Microscopes (halogen)	24	X		Sci 105	Biochemistry/Genetics Lab	Exist	OPOI				Wall storage
BC32	Dissecting Scopes	24	X		Sci 105	Biochemistry/Genetics Lab	Exist	OPOI				Wall storage
BC33	Flammable Cabinet	1			Sci 105	Biochemistry Prep	Exist	OPOI	17	16	21.5	Bench
BC34	Commercial Crushed Ice Machine	1				Biochemistry Prep	New	CPCI	24"	28"	40"	FLOOR
BC35	Sterile Hood	1			Sci 105	Biochemistry Prep Room	Exist	CPCI	52.5	31	100	FLOOR
BC36	Glassware	1	X		Storeroom + Sci 105	Biochemistry Prep Room	Exist	OPOI				in cabinets
BC37	Oven (vintage)	1			Sci 105	Biochemistry/Genetics Lab	Exist	OPOI	25"	30"	28"	Bench
BC38	-80 Freezer	1		Waverly Arctic™ Mini F7 ULT Freezer, -86°C		Biochem/Micro Research	New	OPOI	15.7"	24.8"	26.2"	Bench
BC39	Cell Culture/CO2 Incubators	2				Bio Research- Cell Culture	New	OPOI	25"	26"	40"	Floor-Stacked
BC41	Sterile Hood	2				Bio Research- Cell Culture	New	CPCI				FLOOR
BC42	Centrifuge	1				Biochem/Micro Research	New	OPOI				Bench
BC43	DNA Sequencer	1			Sci 205	Biology Genetics Research	Exist	OPOI				Bench
BC44	ELx800 Absorbance Reader	1			Sci 105	Biochem/Micro Research	Exist	OPOI	16.5"	15"	7"	Bench
BC45	Tabletop Centrifuge, High Speed	1			SCI 105	Biochem/Micro Research	New	OPOI	24.5"	23.8"	14.2"	Bench
BC46	Zebrafish Microinjection System	1				Biochem/Micro Research	New	OPOI				Bench
BC47	Zebrafish Microinjection System	1				Biochem/Micro Research	New	OPOI				Bench
BC48	LiCor C-Digit	1			Sci 105	Biochem/Micro Research	Exist	OPOI	11"	8.75"	2.9"	Bench
BC49	LiCor Odyssey Classic	1			Sci 205	Biochem/Micro Research	Exist	OPOI	21"	23"	14.5"	Bench
BC50	Biotech Synergy HTX Multi-Mode Microplate Reader	1				Biochem/Micro Research	New	OPOI	16"	15"	10"	Bench
BC51	PCR Workstation	1		AC632L FUVIC		Biology Genetics Research	New	OPOI	31"	23"	38"	Bench
BC52	qPCR System	1				Biology Genetics Research	New	OPOI	11"	9.5"	7.5"	Bench
BC53	Microtome	1				Biology Genetics Research	New	OPOI	16.5"	19.25"	11"	Bench
BC54	Ultrapure water purification system	1				Biochem/Micro Research	New	CPCI				Wall
BC55	AE30 Fluorescent Microscope	1			Joe Gubanyi's Office	Bio Research- Cell Culture	Exist	OPOI	26"	8"	21"	Bench
BC56	Scale (0.0001 sensitivity)	1				Biochem/Micro Research	New	OPOI	13"	19.5"	19"	Bench
GA1	Cadaver dissection table	1				Gross Anatomy Lab	Exist	OPOI	30"	86"	35"	Floor
GA2	Cadaver dissection table	1			102A	Gross Anatomy Lab	New	OPOI	30"	86"	35"	Floor
GA3	Sink (faucets as indicated in plan)	3		RE- P700 FIXTURE ES		Gross Anatomy Lab, Ecology, Agriculture Lab	New	CPCI	30"	86"	35"	Floor
GA4	Supply lights	4				Gross Anatomy Lab	New	CPCI				Ceiling Mounted
GA5	Skeleton model	1				Gross Anatomy Lab	New	OPOI				Floor



1 Lower Level Plumbing Waste & Vent – Area B.2
1/4" = 1'-0"



GENERAL NOTES

- WHERE USED, THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL."
- INVERT ELEVATIONS NOTED ARE IN REFERENCE TO FINISHED FLOOR ELEVATIONS. LOWER LEVEL FINISHED FLOOR IS 0'-0".
- DO NOT SCALE DRAWINGS.
- COORDINATE PLUMBING INSTALLATION WITH ALL OTHER TRADES PRIOR TO INSTALLATION. COORDINATE SERVICES WITHIN WALLS WITH ELECTRICAL PANELS, UTILITY STATIONS, LOW WALL RETURN, ETC. COORDINATE CONNECTION SIZES AND LOCATIONS WITH APPROVED SHOP DRAWINGS PRIOR TO INSTALLATION. COORDINATE UNDERGROUND PIPING WORK WITH SITE / CIVIL AND UTILITY DRAWINGS PRIOR TO STARTING WORK.
- FIELD VERIFY CONDITIONS (TIE-INS, INTERFERENCES, ETC.) PRIOR TO STARTING WORK. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES WITH PLANS.
- HANDLE MATERIAL DEBRIS IN AN EFFORT TO AVOID ANY DISRUPTIONS OF ONGOING BUILDING OPERATIONS. CLEAN PROJECT SITE DEBRIS AT THE END OF EACH WORK DAY.
- FOR PLUMBING SYMBOLS AND ABBREVIATIONS, RE: M0000.
- SEE SPECIFICATIONS, DETAILS, AND SCHEDULES FOR ADDITIONAL REQUIREMENTS (INSULATION, HANGERS, IDENTIFICATION, EQUIPMENT, TESTING, ETC.).
- SLOPE WASTE PIPING 2-1/2" AND SMALLER AT 1/4" PER FOOT UNLESS NOTED OTHERWISE. SLOPE WASTE PIPING 4" AND LARGER AT 1/8" PER FOOT UNLESS NOTED OTHERWISE. SLOPE VENT PIPING TO DRAIN TOWARDS THE DRAINAGE RISER UNLESS NOTED OTHERWISE.
- THE PLUMBING PLANS ARE TO A GREAT EXTENT SCHEMATIC IN NATURE AND THE INFORMATION PRESENTED IS AS EXACT AS COULD BE SECURED FROM SITE VISITS. THE CONTRACTOR SHALL OBTAIN EXACT LOCATIONS, MEASUREMENTS, LEVELS, ETC. AT THE SITE AND SHALL SATISFACTORILY ADAPT HIS WORK TO THE ACTUAL CONDITIONS. ACCURACY OF THE EXISTING INFORMATION IS NOT GUARANTEED.

SHEET NOTES

- CONNECT PIPING TO STUB UP INSTALLED IN THE UNDERGROUND PACKAGE.
- ROUTE OVERFLOW LINE THRU WALL AND TERMINATE WITH ZURN DOWNSPOUT COVER, MODEL Z199-DC. INSTALL 18" ABOVE GRADE.
- PLUMBING FIXTURE SPECIFIED IN THE CASEWORK PACKAGE.

REVISION SCHEDULE:	
0	04/01/2018 - Contract Documents
1	05/02/2018 - Addendum 2
DESIGN ARCHITECT:	
PROJECT ARCHITECT:	
DRAWN BY:	
DESIGNED BY:	
CHECKED BY:	
DATE: APRIL 30, 2018	
PROJECT CONSULTANTS:	
CLARK, RICHARDSON AND BISHOP CONSULTING ENGINEERS, INC. 1251 NW BRIARCLIFF PARKWAY SUITE 310 SAULSBURY CITY, MD 24416 PHONE: 410-880-9800 FAX: 410-880-9888	
PROJECT CONSULTANTS:	
R.O. YOLKER, INC. 1201 O Street, Suite 310 Annapolis, MD 21403 410-277-7840 Eng. Proj. No.: 17089	
CONCORDIA UNIVERSITY	
STEM Building	
Lower Level Plumbing Waste & Vent – Area B.2	
SHA PROJECT NO.	16022
P100B.2	



1	ROUTE OVERFLOW LINE THRU WALL AND TERMINATE WITH ZURN DOWNSPOUT COVER. MODEL Z199-DC. INSTALL 18" ABOVE GRADE.
2	PUMPED DISCHARGE FROM SP-01. TERMINATE ABOVE FLOOR RIM OF MOP SINK. CUT DISCHARGE END OF PIPE AT 45 DEGR ANGLE.
3	CONNECT PIPING TO STUB UP INSTALLED IN THE UNDERGROUND PACKAGE.
4	PLUMBING FIXTURE SPECIFIED IN THE CASEWORK PACKAGE.
5	SPECIFIED IN THE UNDERGROUND PACKAGE. SHOWN HERE FOR REFERENCE.
6	CONNECT VENT LINE A MINIMUM OF 6" ABOVE MOP SINK.
7	CONNECT VENT LINE A MINIMUM OF 6" ABOVE FLOOR.

YOUKER, INC.
ENGINEERS
111 O' Street, Suite 310
Lincoln, NE 68508
402.477.7640
Engr. Proj. No.: 17039

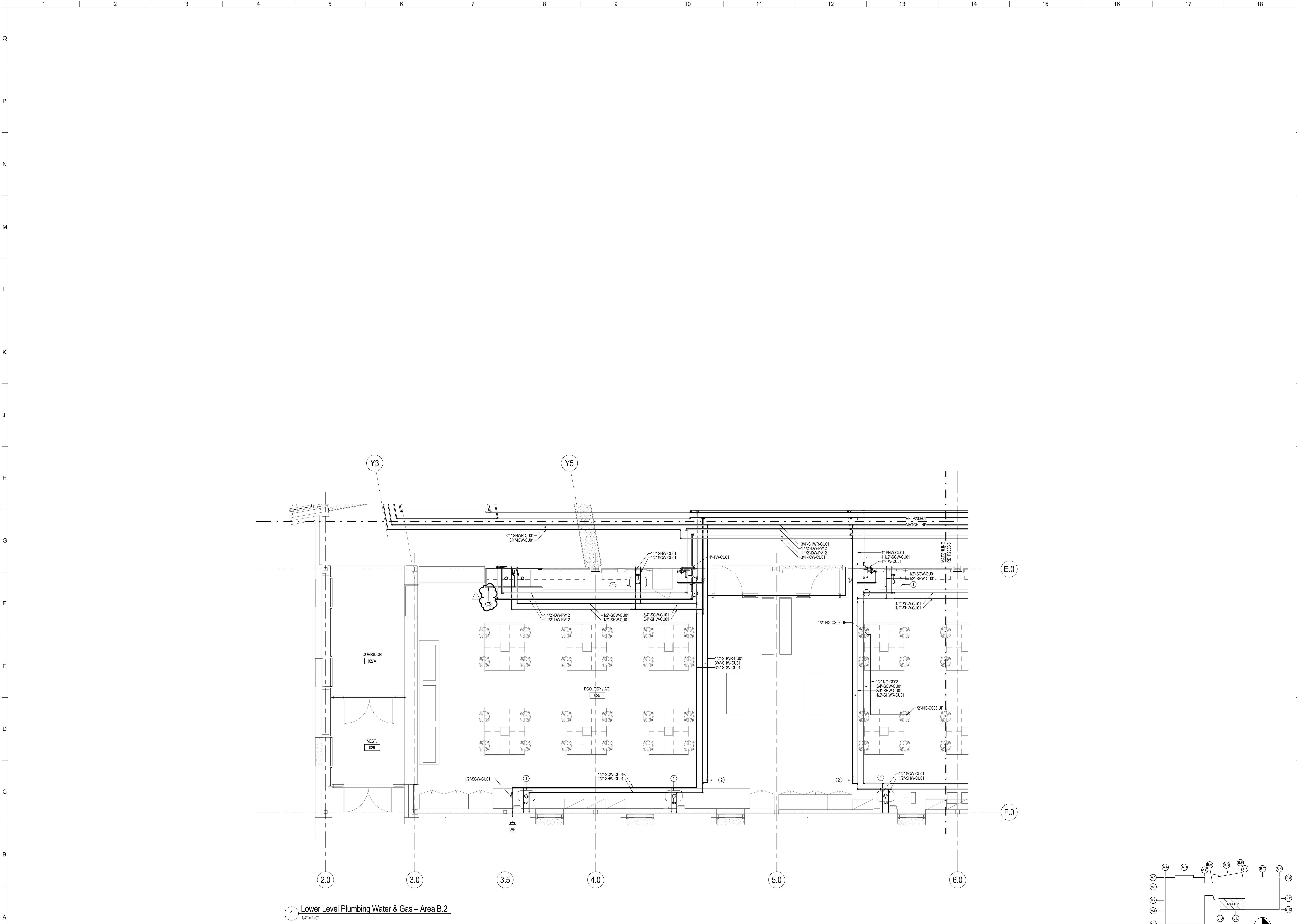
CLARK, RICHARDSON AND BISKUP
CONSULTING ENGINEERS, INC.
CORB ARCHITECTS-ENGINEERS P.C.
251 NW BRIARCLIFF PARKWAY
SUITE 500
KANSAS CITY, MO 64116
PHONE: 816-880-9900



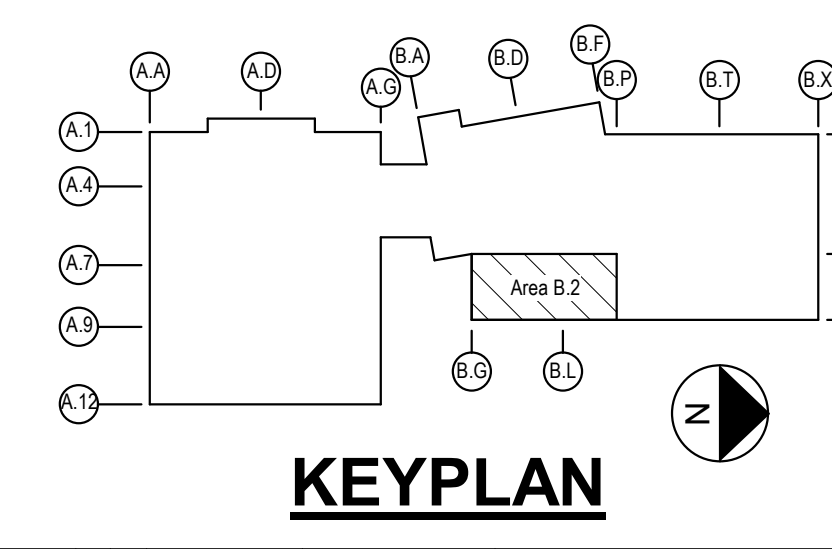
Concordia University
STEM Building

SHA PROJECT NO.	16022
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P100B.3



1 Lower Level Plumbing Water & Gas – Area B.2
1/4" = 1'-0"



GENERAL NOTES

- WHERE USED, THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL."
- ELEVATIONS NOTED ARE FROM 0'-0" ABOVE FINISHED FLOOR.
- DO NOT SCALE DRAWINGS.
- COORDINATE PLUMBING INSTALLATION WITH ALL OTHER TRADES PRIOR TO INSTALLATION. COORDINATE ALL SERVICES WITHIN WALLS WITH ELECTRICAL PANELS, UTILITY STATIONS, LOW WALL RETURNS, ETC. COORDINATE CONNECTION SIZES AND LOCATIONS WITH APPROVED SHOP DRAWINGS AND / OR PAID'S PRIOR TO INSTALLATION.
- VALVES SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION. VALVES INSTALLED IN INTERSTITIAL LEVELS SHALL BE ACCESSIBLE FROM EQUIPMENT PLATFORMS, ACCESS LEVELS, CONCRETE FLOORS, OR WALKABLE CEILING AREAS. PROVIDE AND LOCATE ACCESS PANELS IN NON ACCESSIBLE CEILINGS AND WALLS FOR PROPER MAINTENANCE ACCESS TO VALVES AND ACCESSORIES. COORDINATE LOCATIONS WITH OTHER TRADES. SEE ARCHITECTURAL SPECIFICATIONS FOR ACCESS PANEL REQUIREMENTS.
- FOR ALL PENETRATIONS, CONTRACTOR IS RESPONSIBLE FOR MAINTAINING INTEGRITY OF RATED ASSEMBLIES. PROVIDE U.L. FIRESTOP SYSTEMS WHERE REQUIRED. COORDINATE WITH ARCHITECT IF NEEDED.
- FIELD VERIFY CONDITIONS (IE-INS, INTERFERENCES, ETC.) PRIOR TO STARTING WORK. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES WITH PLANS.
- HANDLE MATERIAL DEBRIS IN AN EFFORT TO AVOID ANY DISRUPTIONS OF ONGOING BUILDING OPERATIONS. CLEAN PROJECT SITE DEBRIS AT THE END OF EACH WORK DAY.
- INSTALL ALL PLUMBING COMPONENTS AND ACCESSORY MATERIALS ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
- SLOPE ALL PIPING PER PAIDS AND AS NOTED ON PLANS. SEE PIPING SPECIFICATIONS FOR MINIMUM SLOPE REQUIREMENTS.
- FOR PLUMBING SYMBOLS AND ABBREVIATIONS, RE: M0000.
- SEE SPECIFICATIONS, DETAILS, AND SCHEDULES FOR ADDITIONAL REQUIREMENTS (INSULATION, HANGERS, IDENTIFICATION, EQUIPMENT, TESTING, ETC.).
- THE PLUMBING PLANS ARE TO A GREAT EXTENT SCHEMATIC IN NATURE AND THE INFORMATION PRESENTED IS AS EXACT AS COULD BE SECURED FROM SITE VISIT. THE CONTRACTOR SHALL OBTAIN EXACT LOCATIONS, MEASUREMENTS, LEVELS, ETC. AT THE SITE AND SHALL SATISFACTORILY ADAPT HIS WORK TO THE ACTUAL CONDITIONS. ACCURACY OF THE EXISTING INFORMATION IS NOT GUARANTEED.

SHEET NOTES

- PLUMBING FIXTURE SPECIFIED IN THE CASEWORK PACKAGE. SET BALANCE VALVE TO 1 GPM.
-

REVISION SCHEDULE:

0	04/20/18	Contract Documents
1	05/02/18	Addendum 2

DESIGN ARCHITECT:

PROJECT ARCHITECT:	PROJECT ARCHITECT:
DRAWN BY:	DESIGN ENGINEER:
DATE:	DATE:
APRIL 30, 2018	APRIL 30, 2018

R.O. YOLKER, INC.
1201 V Street, Suite 310
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402.477.7840
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PROJECT CONSULTANTS:

CLARK, RICHARDSON AND BISHOP CONSULTING ENGINEERS, INC. 1251 NW BRIARCLIFF PARKWAY SUITE 200 LINCOLN, NE 68504 PHONE: 402-880-8800 FAX: 402-880-8888	CRB ARCHITECTS-ENGINEERS P.C. 1251 NW BRIARCLIFF PARKWAY SUITE 200 LINCOLN, NE 68504 PHONE: 402-880-8800 FAX: 402-880-8888
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Concordia University
STEM Building

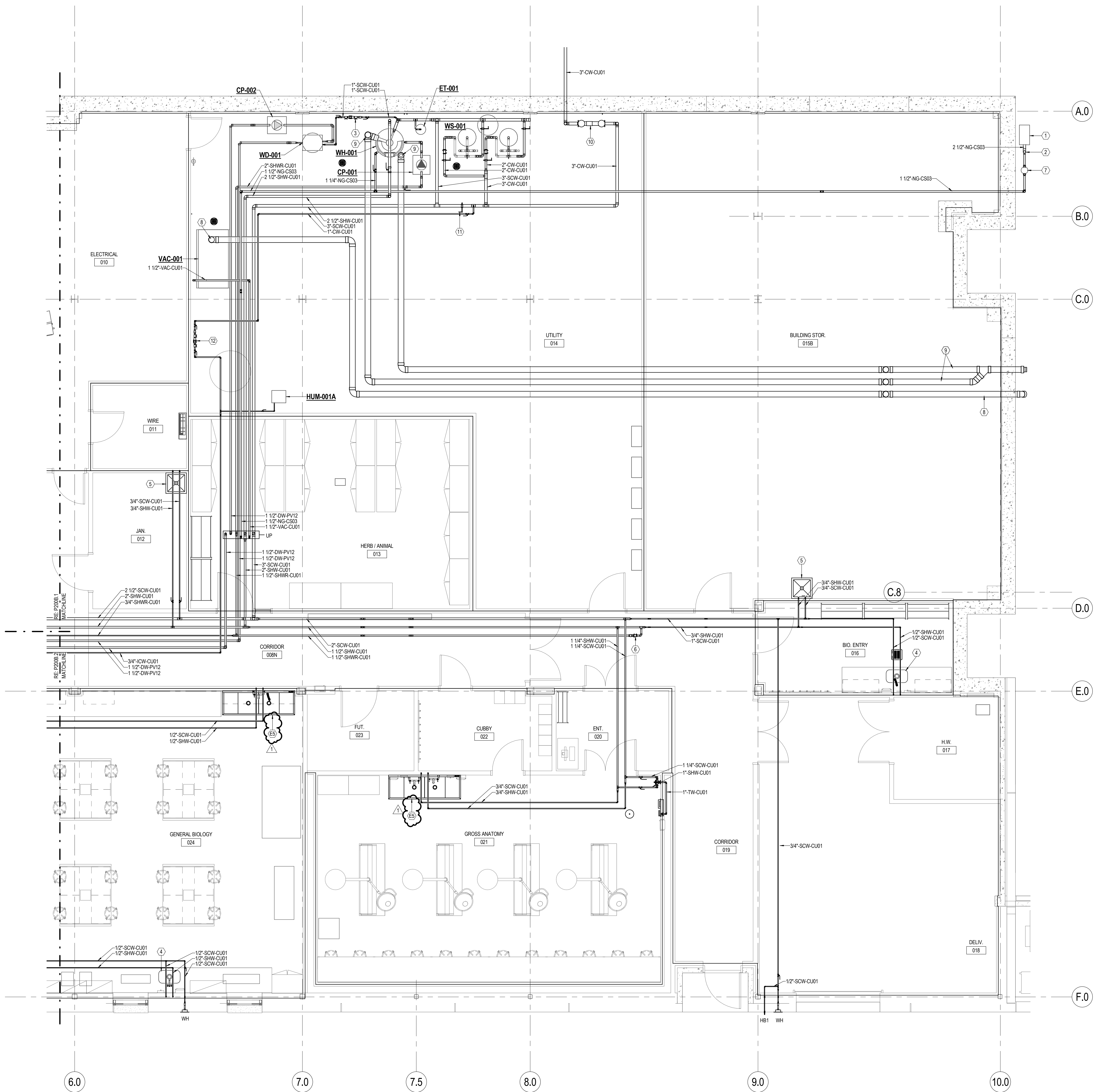
SINCLAIR Hille architects
Lincoln, NE 68508
T: 402.476.7331 F: 402.476.8341
700 Q St.

Lower Level Plumbing Water & Gas – Area B.2

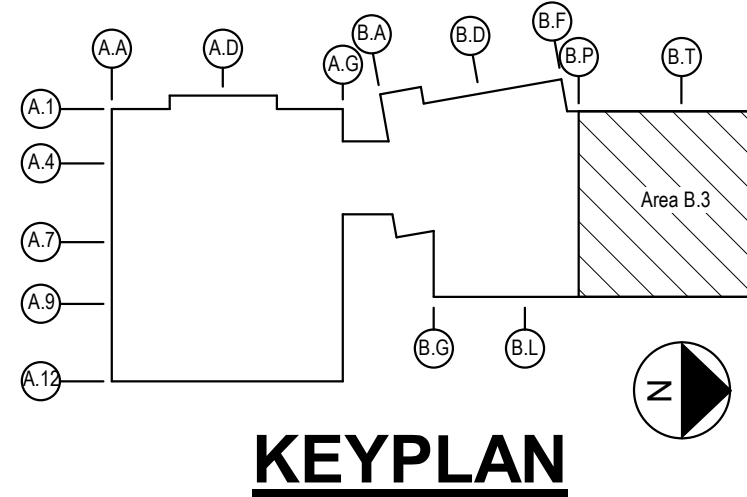
SHA PROJECT NO.: 16022

P200B.2

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1 Lower Level Plumbing Water & Gas - Area B.3
1/4" = 1'-0"



GENERAL NOTES

- WHERE USED, THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL."
- ELEVATIONS NOTED ARE FROM 0'-0" ABOVE FINISHED FLOOR.
- DO NOT SCALE DRAWINGS.
- COORDINATE PLUMBING INSTALLATION WITH ALL OTHER TRADES PRIOR TO INSTALLATION. COORDINATE ALL SERVICES WITHIN WALLS WITH ELECTRICAL PANELS, UTILITY STATIONS, LOW WALL RETURNS, ETC. COORDINATE CONNECTION SIZES AND LOCATIONS WITH APPROVED SHOP DRAWINGS AND / OR PAID'S PRIOR TO INSTALLATION.
- VALVES SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION. VALVES INSTALLED IN INTERSTITIAL LEVELS SHALL BE ACCESSIBLE FROM EQUIPMENT PLATFORMS, ACCESS LEVELS, CONCRETE FLOORS, OR WALKABLE CEILING AREAS. PROVIDE AND LOCATE ACCESS PANELS IN NON ACCESSIBLE CEILINGS AND WALLS FOR PROPER MAINTENANCE ACCESS TO VALVES AND ACCESSORIES. COORDINATE LOCATIONS WITH OTHER TRADES. SEE ARCHITECTURAL SPECIFICATIONS FOR ACCESS PANEL REQUIREMENTS.
- FOR ALL PENETRATIONS, CONTRACTOR IS RESPONSIBLE FOR MAINTAINING INTEGRITY OF RATED ASSEMBLIES. PROVIDE ALL FIRESTOP SYSTEMS WHERE REQUIRED. COORDINATE WITH ARCHITECT IF NEEDED.
- FIELD VERIFY CONDITIONS (IE-INS, INTERFERENCES, ETC.) PRIOR TO STARTING WORK. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES WITH PLANS.
- HANDLE MATERIAL DEBRIS IN AN EFFORT TO AVOID ANY DISRUPTIONS OF ONGOING BUILDING OPERATIONS. CLEAN PROJECT SITE DEBRIS AT THE END OF EACH WORK DAY.
- INSTALL ALL PLUMBING COMPONENTS AND ACCESSORY MATERIALS ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
- SLOPE ALL PIPING PER PAIDS AND AS NOTED ON PLANS. SEE PIPING SPECIFICATIONS FOR MINIMUM SLOPE REQUIREMENTS.
- FOR PLUMBING SYMBOLS AND ABBREVIATIONS, RE: M0000.
- SEE SPECIFICATIONS, DETAILS, AND SCHEDULES FOR ADDITIONAL REQUIREMENTS (INSULATION, HANGERS, IDENTIFICATION, EQUIPMENT, TESTING, ETC.).
- THE PLUMBING PLANS ARE TO A GREAT EXTENT SCHEMATIC IN NATURE AND THE INFORMATION PRESENTED IS AS EXACT AS COULD BE SECURED FROM SITE VISIT. THE CONTRACTOR SHALL OBTAIN EXACT LOCATIONS, MEASUREMENTS, LEVELS, ETC. AT THE SITE AND SHALL SATISFACTORILY ADAPT HIS WORK TO THE ACTUAL CONDITIONS. ACCURACY OF THE EXISTING INFORMATION IS NOT GUARANTEED.

SHEET NOTES

- NEW GAS METER, APPROXIMATE CONNECTED LOAD OF 6,100 CFH. COORDINATE WITH GAS PROVIDER: BLACK HILLS ENERGY - 402-437-1700.
- 2" NG AT 2 PSI LINE ROUTED UP TO ROOF. COORDINATE PAINT COLOR WITH ARCHITECT.
- 1" REDUCED PRESSURE TYPE BACKFLOW PREVENTER FOR SERVICE TO MAKE UP/ILL CONNECTION TO WATER DISTILLER SYSTEM. PROVIDE AIR GAP FITTING AND DRAIN LINE. RUN FULL SIZE TO TERMINATE OVER FLOOR DRAIN. MOUNT AT 18" AFF.
- PLUMBING FIXTURE SPECIFIED IN THE CASEWORK PACKAGE. SPECIFIED IN THE UNDERGROUND PACKAGE. SHOWN HERE FOR REFERENCE.
- SET BALANCE VALVE TO 4 GPM.
- PRV SET TO 7' W.C.
- LAB VACUUM EXHAUST. ROUTE FULL SIZE (6") TO EXTERIOR WALL AND INSTALL WITH 45 DEGREE ELBOW MINIMUM 24" ABOVE GRADE. COORDINATE CONNECTION TO EQUIPMENT WITH MANUFACTURER.
- WATER HEATER FLUE & INTAKE. ROUTE FULL SIZE (6") TO CONCENTRIC VENT KIT MOUNTED MINIMUM 24" ABOVE GRADE. COORDINATE CONNECTION TO EQUIPMENT WITH MANUFACTURER.
- ELECTRICAL DEMOLITION NOTES
- BYPASS NORMALLY CLOSED.
- 1" REDUCED PRESSURE TYPE BACKFLOW PREVENTER FOR SERVICE TO INDUSTRIAL COLD WATER SYSTEM. PROVIDE AIR GAP FITTING AND DRAIN LINE. RUN FULL SIZE TO TERMINATE OVER FLOOR DRAIN. MOUNT AT 18" AFF.

PROJECT CONSULTANTS

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STEM Building

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T: 402.476.7331 F: 402.476.8441

Lower Level Plumbing Water & Gas -
Area B.3

SHA PROJECT
NO.

16022

P200B.3

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PLUMBING EQUIPMENT SCHEDULE

UNIT NO.	EQUIPMENT	MANUFACTURER & MODEL NO.	LOCATION	SERVICE	TYPE	CAPACITY (GAL)	ELECTRICAL			OPERATING WEIGHT (LBS)	REMARKS
							V/PH/Hz	HP	KW		
WH-001	TANK TYPE WATER HEATER	A.O. SMITH BTH-400(A)	MECHANICAL 013	DOMESTIC HOT HEATER	NATURAL GAS	119	120/1/60	1/4	VS*	855	STORAGE TYPE NATURAL GAS WATER HEATER WITH 399,900 BTU/HR INPUT. STORAGE RECOVERY TIME OF 460 GPH @ 100° F.
WS-001	WATER SOFTENER	CULLIGAN HI-FLO Xn-150-2	MECHANICAL 013	SOFTENED WATER	ELECTRIC	110 GAL	120/1/60	N/A	N/A	550	TWO-TANK SOFTENER SKID WITH BRINE TANK. NORMAL FLOW RATE OF 148 GPM WITH A PEAK FLOWRATE OF 216 GPM. SOFTENER CAPACITY IS 1,800,000 GRAINS.
WD-001	WATER DISTILLER	DURASTILL 4280	MECHANICAL 013	DISTILLED WATER	ELECTRIC	80 GAL	208/3/60	1/20	5	765	COMMERCIAL WATER DISTILLER. 42 GALLONS PER DAY WITH 80 GALLON STORAGE TANK. 304 SS DISTILLER CABINET.
VAC-001	VACUUM PUMP	POWEREX LCPDT0502	MECHANICAL 013	CENTRAL VACUUM SYSTEM	ELECTRIC	58 SCFM	460/3/60	5	VS*	1,900	DUPLEX LABORATORY CLAW VACUUM PACKAGE WITH HMI/PBMI
ET-001	EXPANSION TANK	AMTROL ST-12	MECHANICAL 013	DOMESTIC HOT WATER	-	4.4	N/A	N/A	N/A	9	MAXIMUM WORKING PRESSURE : 150 PSI. MAXIMUM TEMPERATURE 240° F COMMERCIAL. BUTYL DIAPHRAGM, FOR PERMANENT SEPARATION OF AIR AND WATER, WITH NO WATERLOGING.
ET-003	EXPANSION TANK	AMTROL AX-15(V)	MECHANICAL 013	DISTILLED WATER	-	8	N/A	N/A	N/A	45	MAXIMUM WORKING PRESSURE : 150 PSI. MAXIMUM TEMPERATURE 200° F COMMERCIAL. HEAVY DUTY BUTYL/EPDM DIAPHRAGM, FOR PERMANENT SEPARATION OF AIR AND WATER, WITH NO WATERLOGING.
CP-001	CIRCULATING PUMP	BELL & GOSSETT SERIES e-60 3x5.25	MECHANICAL 013	DOMESTIC HOT WATER	ELECTRIC	-	460/3/60	1	VS*	VS*	REFER TO 230540
CP-002	CIRCULATING PUMP	BELL & GOSSETT SERIES e-80 4x4x13.5	MECHANICAL 013	DISTILLED WATER	ELECTRIC	-	460/3/60	5	VS*	VS*	REFER TO 230540
SP-001	ELEVATOR SUMP PUMP	LIBERTY PUMP	ELEVATOR PIT	WASTE WATER	ELECTRIC	-	120/1/60	1/2	VS*	VS*	25 GPM, OIL-SENSING. REFER TO 230540.

PLUMBING FIXTURE & BRANCH SCHEDULE

MARK	DESCRIPTION	MANUFACTURER	MODEL	DRAIN - WASTE - SOIL - VENT					COLD WATER		HOT WATER		NOTES
				TRAP	ARM	VERT.	HORIZ.	VENT	SUPPLY	BRANCH	SUPPLY	BRANCH	
A1	ADA SINK SYSTEM, WALL HUNG, INFRARED WASHBAR, INSULATE SUPPLY AND WASTE PIPING WITH PLUMBEREX TRAP GEAR, INSTALL WITH PROVIDED VALVE ASSEMBLY, DRYER AND SOAP DISPENSER INTEGRAL TO WASH BAR AT EACH STATION.	BRADLEY	#VERGE WASHBAR	1 1/2	1 1/2	1 1/2	2	1 1/2	3/8	1/2	3/8	1/2	SET OUTLET TEMPERATURE TO 105°F.
B1	WATER CLOSET, 1.6 GPF FLUSHOMETER TOILET SYSTEM WITH EVERCLEAN, WALL MOUNTED ELONGATED FLUSHOMETER VALVE TOILET, VITREOUS CHINA, HIGH EFFICIENCY, LOW CONSUMPTION, HET (HIGH EFFICIENCY TOILET), SELF-CLEANING PISTON FLUSH VALVE, MECHANICAL OVERRIDE BUTTON, BATTERY OPERATED. #5901.100SS SEAT WITH OPEN FRONT AND SELF-SUSTAINING CHECK HINGE, HANDICAP.	AMERICAN STANDARD AMERICAN STANDARD	#3351.660 AFWALL MLLENIUM #6065.161.002 SELECTRONIC	INT.	4	4	4	2	1	1 1/4	-	-	-
B2	WATER CLOSET, 1.6 GPF FLUSHOMETER TOILET SYSTEM WITH EVERCLEAN, WALL MOUNTED ELONGATED FLUSHOMETER VALVE TOILET, VITREOUS CHINA, HIGH EFFICIENCY, LOW CONSUMPTION, HET (HIGH EFFICIENCY TOILET), SELF-CLEANING PISTON FLUSH VALVE, MECHANICAL OVERRIDE BUTTON, BATTERY OPERATED. #5901.100SS SEAT WITH OPEN FRONT AND SELF-SUSTAINING CHECK HINGE.	AMERICAN STANDARD AMERICAN STANDARD	#3351.660 AFWALL MLLENIUM #6065.161.002 SELECTRONIC	INT.	4	4	4	2	1	1 1/4	-	-	-
C1	URINAL, 0.125 GPF EXPOSED TOP SPUD, WALL MOUNTED, VITREOUS CHINA, ULTRA HIGH EFFICIENCY, FLUSH VALVE, SELF-CLEANING PISTON, MECHANICAL OVERRIDE BUTTON, BATTERY OPERATED, HANDICAP.	AMERICAN STANDARD AMERICAN STANDARD	#5990.525 WASHBROOK FLOWISE #6063.013 FLUSH VALVE	INT.	2	2	2	1 1/2	3/4	1	-	-	-
C2	URINAL, 0.125 GPF EXPOSED TOP SPUD, WALL MOUNTED, VITREOUS CHINA, ULTRA HIGH EFFICIENCY, FLUSH VALVE, SELF-CLEANING PISTON, MECHANICAL OVERRIDE BUTTON, BATTERY OPERATED.	AMERICAN STANDARD AMERICAN STANDARD	#5990.525 WASHBROOK FLOWISE #6063.013.002 FLUSH VALVE	INT.	2	2	2	1 1/2	3/4	1	-	-	-
D1	24"x24"x12" SERVICE BASIN, TERRAZZO, STAINLESS STEEL CAPS ON CURBS, FAUCET WITH VACUUM BREAKER, WALL BRACE AND PAIL HOOK, MOP BRACKET AND FLAT STAINLESS STEEL STRAINER.	FIAT	#TSB 100-830AA	3	3	3	3	1 1/2	1/2	1/2	1/2	1/2	-
E1	STAINLESS STEEL SINK, SINGLE COMPARTMENT, COUNTER TOP, 18 GAUGE, 304 STAINLESS STEEL SINK WITH SOUND DAMPENING UNDERCOATING, DECK MOUNTED FAUCET WITH 9-1/4" SWING SPOUT, 1.5 GPM PRESSURE COMPENSATING AERATOR, AND WING HANDLES.	ELKAY CHICAGO FAUCET	#LR2219 "LUSTERTONE" #201-AE3S-1004BCP	1 1/2	1 1/2	1 1/2	2	1 1/2	3/8	1/2	3/8	1/2	-
E2	STAINLESS STEEL SINK, DOUBLE COMPARTMENT, COUNTER TOP, 18 GAUGE, 304 STAINLESS STEEL SINK WITH SOUND DAMPENING UNDERCOATING, WALL MOUNTED FAUCET WITH 30" HOSE, 1.6 GPM PRESSURE COMPENSATING AERATOR, AND LEVER HANDLES.	ELKAY CHICAGO FAUCET	#DLR322121 #LK943C	1 1/2	1 1/2	2	2	1 1/2	3/8	1/2	3/8	1/2	-
E3	STAINLESS STEEL SINK, SINGLE COMPARTMENT, COUNTER TOP, WITH MANUAL STYLE FAUCET, WRIST BLADE HANDLES, 1.5 GPM AERATOR.	ELKAY CHICAGO FAUCET	#LR40221980 "LUSTERTONE" #WB0-D66AE3S-317AB	1 1/2	1 1/2	1 1/2	2	1 1/2	3/8	1/2	3/8	1/2	-
E4	WALL HUNG 14 GAUGE, TYPE 304 STAINLESS STEEL, SINGLE 10.5" DEEP COMPARTMENT, REAR CENTER DRAIN, BACK MOUNT FAUCET WITH GOOSE NECK SPOUT.	ELKAY CHICAGO FAUCET	#EWS2020W4C #H45-02AE3AS2CP	2	2	2	2	1 1/2	3/8	1/2	3/8	1/2	-
E5	FREE STANDING STAINLESS STEEL, DOUBLE BOWL SINK WITH INTEGRAL DRAINBOARDS ON LEFT AND RIGHT, PUNCH FAUCET HOLES IN THE FIELD AS COORDINATED WITH FLUJETS. FAUCET SPECIFIED IN THE CASEWORK PACKAGE.	ELKAY	#SS8236LR	2	2	2	2	1 1/2	3/8	1/2	3/8	1/2	-
F1	TWO LEVEL BARRIER-FREE 18 GAUGE STAINLESS STEEL WATER COOLER WITH BOTTLE FILLING STATION, FILTER SYSTEM, CHILLING CAPACITY OF 8.0 GALLONS PER HOUR OF 50°F DRINKING WATER, BASED UPON 80°F INLET WATER AND 90°F AMBIENT.	ELKAY	#L2STLRBWSVRSK	1 1/4	1 1/4	1 1/4	2	1 1/4	3/8	1/2	-	-	-
FD-1	FLOOR DRAIN WITH SEDIMENT BUCKET AND NICKEL BRONZE TOP (MECHANICAL AREAS)	JAY R. SMITH	#2630 SERIES	2.34	2.34	2.34	2.34	2.34	-	-	-	-	-
HB	HOSE BIBB, FROST-PROOF AUTOMATIC SELF-DRAINING WALL HYDRANT, BRASS VACUUM BREAKER.	WATTS	#FHB-2	-	-	-	-	-	1/2	1/2	-	-	-
WH	FREEZE PROOF WALL HYDRANT	ZURN	#Z1300	-	-	-	-	-	1/2	1/2	-	-	-
FPRH	FREEZE PROOF, AUTOMATIC DRAINING ROOF HYDRANT WITH DUAL CHECK BACKFLOW PREVENTER PROTECTION AND 3/4" FEMALE HOSE THREAD INLET	WOODFORD	#SRHMS	-	-	-	-	-	3/4	-	-	-	REFER TO PLANS FOR BRANCH SIZES.
ORDRD	COMBINATION ROOF DRAIN WITH OVERFLOW, CAST IRON BODY WITH CAST IRON DOME.	ZURN	#ZC163	-	-	-	-	-	-	-	-	-	-
RD	ROOF DRAIN, CAST IRON BODY WITH CAST IRON DOME.	ZURN	#ZC100	-	-	-	-	-	-	-	-	-	-

REVISION SCHEDULE:

0	04/01/2018	Contract Documents
1	05/02/2018	Addendum 1
2	05/02/2018	Addendum 2

DESIGN ARCHITECT:

PROJECT ARCHITECT:

DRAWN BY:

DESIGNED BY:

CHECKED BY:

DATE:

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Plumbing Schedules

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